Construal Level and Procrastination

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ABSTRACT—*According to construal-level theory, events that are distant in time tend to be represented more abstractly than are events that are close in time. This mental association between level of abstractness and temporal distance is proposed to be a bidirectional relationship, such that level of representation of an event should also have effects on the time when the activity is performed. In the present studies, participants were asked to respond to a questionnaire via e-mail within 3 weeks. The questionnaire was designed to induce either an abstract or a concrete construal. Using a variety of manipulations of construal level, the studies supported the predictions of construal-level theory. Individuals were less likely to procrastinate performing the task when the questionnaire induced a more concrete construal. Furthermore, this effect did not depend on the attractiveness, importance, or perceived difficulty of the task.*

Why do people wait until the last minute to get started on tasks? It may be only when a deadline is looming that they first consider the specifics of a task, including what will be required to complete it, the context in which it will take place, and other details. If thinking about a task more concretely enables people to get started, manipulating this variable directly should affect when they are likely to complete the task. For example, would thinking about writing a review in concrete terms (e.g., "writing a page of comments") make one do it sooner than thinking about the same action in abstract terms (e.g., "contributing to the scientific feedback process")? We suggest a positive answer, on the basis of our research. Specifically, we propose that forming a concrete representation of a task will reduce procrastination, independently of any effects of planning or understanding of the task.

Construal-level theory (CLT; Liberman & Trope, 1998, Liberman, Trope, & Stephan, 2007; Trope & Liberman, 2003)

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holds that greater psychological distance is associated with more abstract, higher-level construals, such that more distal objects are represented on a higher level, and also that objects represented on a higher level seem more distant. A number of studies have demonstrated that compared with more proximal events and behaviors, those in the distant future are more likely to be represented in terms of superordinate goals (Liberman & Trope, 1998), are placed into a smaller number of broader categories (Liberman, Sagristano, & Trope, 2002), and are explained using more abstract dispositional traits (Nussbaum, Trope, & Liberman, 2003). Showing the reverse direction of influence, we (Liberman, Trope, McCrea, & Sherman, 2007) found that higher-level construals foster a perception of more distal times. Participants reported that they would engage in an activity at a later point in time when it was described in abstract (rather than concrete) terms, when they had first considered why (rather than how) they would engage in the activity, and when they had first indicated which traits are implied by the activity (rather than which objects one would use to engage in the activity). These effects held both for participants' predictions of their own behavior and for their predictions of the behavior of other people. Furthermore, effects of construal level were not mediated by differences in the perceived importance, pleasantness, or frequency of engaging in the activity.

The association between distance and level of construal is assumed to be a heuristic, learned on the basis of what individuals typically know about and need to do with respect to near and distant future events (Trope & Liberman, 2003). Individuals typically first decide whether to engage in a behavior, taking into consideration the desirability of the behavior and the likelihood of fulfilling overarching goals. Often, only these general aspects of the activity can be known when it is still distant. As the activity nears, it becomes important to plan action, and the context in which the event will occur becomes clearer. This movement over time from deliberation about whether or not to engage in a behavior to implementation of action is also consistent with the model of action phases (Heckhausen & Gollwitzer, 1987). Because of the generalized nature of these mental associations, it is assumed that links between level of construal and distance

become habitual and automatic (see Bar-Anan, Liberman, & Trope, 2006, for a demonstration of an association between distance and level of construal using an Implicit Association Test).

Although past research has shown that more concrete construals of difficult tasks (Vallacher, Wegner, & Somoza, 1989) and more specific plans (Gollwitzer & Sheeran, 2006) result in better task performance, it remains an open question whether more concrete representations of a task lead to earlier execution of it. Research on planning provides some initial support for this hypothesis. Placing individuals into an implemental mind-set requiring the consideration of how to go about a task leads to earlier anticipated action than does placing individuals into a deliberative mind-set requiring the consideration of whether to go about a task (Gollwitzer, Heckhausen, & Ratajczak, 1990). Forming concrete plans concerning the when, where, and how of pursuing a goal (called implementation intentions) also leads to earlier enactment of goal-directed behavior and goal completion (Bamberg, 2002; Gollwitzer & Brandstätter, 1997). Unique to the present research is the idea that a concrete construal of the task leads to its more timely completion, beyond any effects of formation of plans or receipt of more specific information about the task.

OVERVIEW OF THE STUDIES

The goal of the studies reported here was to extend our previous findings (Liberman, Trope, McCrea, & Sherman, 2007) to the actual completion time of activities. Thus, we examined whether manipulations of construal level would influence when individuals completed a task for a reward. Participants in these studies were given the goal to complete a task prior to a deadline (cf. Bamberg, 2002; Gollwitzer & Brandstätter, 1997). Because delaying the task increased participants' risk that they would not receive compensation, and at a minimum delayed receipt of the reward, we viewed task delay as indicative of procrastination, an interpretation consistent with previous definitions of procrastination as maladaptive (cf. Ferrari, 2001; Sigall, Kruglanski, & Fyock, 2000). At the same time, we did not conceptualize timely completion of the task as necessarily reflecting the successful application of self-control. Self-control involves overcoming temptations to fulfill an obligation or higher-order goal. For example, the classic self-control problem of delaying gratification requires overcoming the temptation to take a smaller reward immediately rather than to wait for a larger reward in the future (Mischel, Shoda, & Rodriguez, 1989). CLT predicts that the application of self-control should be aided by more abstract task construals that remind individuals of the superordinate goals that are fulfilled by engaging in the task (Fujita, Trope, Liberman, & Levin-Sagi, 2006). However, we designed the tasks in our experiments to be relatively easy to complete and only moderately important to participants. Manipulating construal level should therefore have had little effect on the value of

engaging in the task, and the task should not have induced a self-control conflict.[1] Rather, on the basis of past findings (Liberman, Trope, McCrea, & Sherman, 2007), we predicted that participants induced to have a more concrete construal of the task would complete the task sooner, as a result of a simple association between level of construal and temporal distance.

We tested this hypothesis with a take-home task (a questionnaire) that participants were asked to complete via e-mail within a 3-week period. The questionnaire also contained a manipulation of construal level, either through the task itself (Studies 1 and 2) or through a prime embedded in the questionnaire (Study 3). The construal-level inductions were designed such that all participants received the same instructions regarding composing an e-mail message with responses within a 3-week period.

STUDY 1: TRAITS VERSUS MEANS

In our initial study, participants received a questionnaire designed to induce an abstract or a concrete construal of the task. Specifically, participants wrote about how one would go about engaging in various activities (concrete construal) or what traits are implied by engaging in those activities (abstract construal; cf. Fujita et al., 2006).

Method

Participants and Design
Participants were 34 students at the University of Konstanz. They received €2.50 or a half-hour of research-participation credit upon completion of the study. Participants were randomly assigned to one of two construal-level conditions.

Questionnaire
The questionnaire listed 10 activities (e.g., "write in a diary," "open a bank account"; see also Liberman, Trope, McCrea, & Sherman, 2007). In the abstract-construal condition, participants were asked to write two sentences describing what characteristics are implied by each activity. In the concrete-construal condition, participants were asked to write two sentences concerning how one would go about each activity. Participants in both conditions were then asked to rate how important, difficult, pleasant, and convenient it was for them to complete the task via e-mail; responses were given on a scale from 1 (*not at all*) to 7 (*very much*).

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[1]Although people tend to consider every maladaptive failure to complete a task an instance of procrastination, not every task completion is indicative of successful application of self-control. Tasks may be completed early for other reasons, such as a good fit with daily activities or impulsiveness (which is typically seen as a self-control failure).

TABLE 1
Mean Ratings in Studies 1 Through 3

	Task rating						
Study	Important	Difficult	Pleasant	Convenient	Interesting	Duration (minutes)	Frequency of checking e-mail
Study 1 (posttask ratings)	2.79 (0.98)	2.48 (1.38)	3.90 (1.23)	5.14 (1.66)	—	—	—
Study 2 (pretask ratings)	2.94 (1.61)	1.96 (1.21)	4.42 (1.23)	4.62 (1.76)	3.82 (1.84)	8.86 (4.35)	3.34 (0.94)
Study 3 (pretask ratings)	2.90 (1.43)	2.65 (1.45)	4.53 (1.10)	5.31 (1.70)	4.45 (1.36)	15.62 (11.77)	3.45 (1.08)

Note. Standard deviations are given in parentheses.

Procedure

Participants were recruited to participate in a "pretest" of materials for a future study and were told the researchers were examining whether such a study could be conducted using e-mail. Therefore, participants were asked to take a short questionnaire with them and return their responses via e-mail within the next 3 weeks. After a participant's e-mail message was received, an appointment would be scheduled for the participant to receive his or her compensation.

After agreeing to participate and providing their e-mail address, participants randomly received either the abstract-construal or the concrete-construal questionnaire. The experimenter explained the nature of the task and told participants to include all of their responses in the e-mail message. Thus, upon leaving the lab, participants were aware of what the task required; this ensured that the manipulation of construal level would be salient. The experimenter noted the date and time that each participant had received the questionnaire.

Upon receiving the e-mail response, the experimenter recorded the date and time stamp of the message, and an appointment was made with the participant via e-mail. At that appointment, the participant received compensation and a complete debriefing as to the purpose of the experiment.

Results and Discussion

Task Ratings

Among those participants who sent a response ($n = 30$), condition did not have a significant effect on ratings of task importance, difficulty, pleasantness, or convenience, all ts < 1, n.s. Overall means are presented in Table 1.

Procrastination

We examined procrastination in two ways. First, responses were categorized relative to the task deadline. Responses received prior to the due date were assigned a score of 1, those received on the due date were assigned a score of 2, those received after the deadline were assigned a score of 3, and cases in which no response was received were assigned a score of 4.[2] Scores were

thus ordered with regard to amount of delay, which allowed us to be conservative in treating cases in which participants failed to respond (see Rummel, 1970). A Mann-Whitney test (using the normal approximation and correcting for ties—see Bergmann, Ludbrook, & Spooren, 2000) revealed that, as predicted, participants were more likely to respond in a timely fashion in the concrete-construal condition than in the abstract-construal condition, $z = 2.02$, $p = .02$ (one-tailed), $p_{rep} = .92$ (frequencies and mean ranks are presented in Table 2).

Second, we calculated the number of hours elapsed between the time the participant received the questionnaire and our receipt of the e-mail response (excluding missing scores: $M = 206.01$ hr, $SD = 261.94$, minimum = 0.45 hr, maximum = 1,007.37 hr). When no response was ever received, a score reflecting the maximum observed delay plus an additional 2 weeks (1,343.37 hr) was assigned to replace the missing value (after replacement: $M = 339.82$ hr, $SD = 445.70$).[3] To reduce skewness, we transformed scores on this measure by calculating the square root ($M = 14.69$, $SD = 11.31$).[4] Participants responded sooner in the concrete-construal condition than in the abstract-construal condition, $t(32) = 2.57$, $p = .007$ (one-tailed), $p_{rep} = .96$, $\eta^2 = .17$ (see Table 2).

STUDY 2: EXAMPLES VERSUS CATEGORIES

One could argue that initial perceptions of a task are more relevant for predicting procrastination than are perceptions of the task after it was completed. Therefore, we designed Study 2 to replicate Study 1, but measuring perceptions of the task at the initial experimental session. We also utilized a different manipulation of construal: Participants generated examples (concrete condition) or category labels (abstract condition) for a variety of objects (Fujita et al., 2006).

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[2]E-mails received on the due date were separately coded to reflect "last minute" responding. When these responses were coded as received prior to the deadline, significant construal-level effects were still observed in all three studies.

[3]Analyses in which we replaced missing responses with the maximum delay observed across the studies (1,007.37 hr) also revealed significant construal-level effects in all three studies.

[4]Skewness was not problematic in Studies 2 and 3. Analyzing raw scores in Study 1 (as was done in those studies) also revealed a significant construal-level effect, $t(32) = 2.28$, $p = .01$ (one-tailed), $p_{rep} = .94$, $\eta^2 = .14$.

TABLE 2

Results From Study 1

| Condition | Response time (hours) | Response time transformed (square root) | Response-time category (frequency) | | | | Mann-Whitney mean rank |
			Returned before due date	Returned on due date	Returned after due date	Not returned	
Concrete	175.78 (320.68)	10.07 (8.89)	16	0	0	1	15.09
Abstract	503.85 (499.70)	19.30 (11.81)	11	1	2	3	19.91

Note. Standard deviations are given in parentheses. Mean ranks for the Mann-Whitney test were calculated using the response-time category scores.

Method

Participants

Participants were 50 University of Konstanz students, paid €2.50 as compensation.

Questionnaire

The questionnaire listed 20 sentence fragments involving various objects. In the concrete-construal condition, participants were asked to complete each sentence by providing an example of the category (e.g., "An example of a bird is _____"). In the abstract-construal condition, participants were asked to complete each sentence by providing a category label (e.g., "A bird is an example of _____").

Procedure

The procedure was largely identical to that of Study 1, with participants randomly assigned to receive either the concrete (examples) or abstract (category labels) questionnaire. However, after explaining the procedure to participants, the experimenter asked them to complete an additional questionnaire. Participants in both conditions were asked to rate how important, difficult, pleasant, convenient, and interesting it would be to complete the task via e-mail; responses were made on a scale from 1 (*not at all*) to 7 (*very much*). They also indicated how often they checked their e-mail, using a scale ranging from 1 (*less than once a week*) to 6 (*more than 10 times a day*) and how long (in minutes) they thought it would take to complete the task. The remainder of the procedure was the same as in Study 1.

Results and Discussion

Pretask Ratings

The conditions did not differ in pretask ratings of how important, difficult, pleasant, convenient, and interesting the task would be; in how much time participants anticipated it would take to complete the task; or in participants' frequency of e-mail use, all ts < 1.77, ps > .08. Overall means are presented in Table 1.

Procrastination

Responses were categorized relative to the due date and analyzed as in Study 1 (frequencies and mean ranks are presented in Table 3). Participants were more likely to respond in a timely fashion in the concrete-construal condition than in the abstract-construal condition, $z = 2.34$, $p = .01$ (one-tailed), $p_{rep} = .97$.

The number of hours elapsed between the experimental session and the receipt of the e-mail response was also calculated (excluding missing scores: $M = 207.55$ hr, $SD = 223.10$, minimum = 1.23 hr, maximum = 744.18 hr). When no response was received, a score reflecting the maximum observed delay plus 2 weeks (1,080.18 hr) was assigned to the missing value (after replacement: $M = 416.98$, $SD = 423.46$). Individuals responded sooner in the concrete-construal condition than in the abstract-construal condition, $t(48) = 1.98$, $p = .03$ (one-tailed), $p_{rep} = .91$, $\eta^2 = .08$ (see Table 3).

STUDY 3: PRIMING CONSTRUAL LEVEL

In the prior studies, the task contained the manipulation of construal level. Although we controlled for a wide range of variables, it is possible that the task differed between the con-

TABLE 3

Results From Study 2

| Condition | Response time (hours) | Response-time category (frequency) | | | | Mann-Whitney mean rank |
		Returned before due date	Returned on due date	Returned after due date	Not returned	
Concrete	301.76 (313.76)	19	1	3	2	21.34
Abstract	532.20 (489.89)	12	1	2	10	29.66

Note. Standard deviations are given in parentheses. Mean ranks for the Mann-Whitney test were calculated using the response-time category scores.

ditions in some other unforeseen way. To rule out this possibility, we conducted a final study in which the task itself was held constant for all participants, and construal level was manipulated via a visual prime on the cover sheet of the questionnaire. We utilized a color print of a painting by Seurat, drawing participants' attention to the technique of pointillism (concrete condition) or the desired effect of the painting (abstract condition). All participants then completed the same rating task, responding by e-mail. We predicted that, as in the prior studies, there would be more procrastination in the abstract condition than in the concrete condition.

Method

Participants
Participants were 51 University of Konstanz students, paid €2.50 as compensation.

Procedure
The procedure was largely identical to that of the previous studies. Participants were told that the study concerned pretesting materials for future experiments on the topic of art preferences. In the abstract condition, the cover sheet of the questionnaire was titled "Art and Color: A General Overview" and displayed a color print of the painting *La Parade* (1889) by Seurat. Below the print was a note explaining that this painting "demonstrates Neo-Impressionism. The artist used color in order to evoke harmony and emotion." In the concrete condition, the cover sheet of the questionnaire was titled "Art and Color: A Detailed Examination" and displayed a color print of a close-up from the same painting. The picture presented the detail of a man's face, such that one could see individual points of color. Below the print was a note explaining that the detail of this painting "shows how the artist used contrasting points of color as part of the pointillism technique."

The remainder of the questionnaire was the same for all participants. Participants were asked to rate how important a role color played in 13 different works of art, using a scale from 1 (*not at all important*) to 7 (*very important*). During the initial session in which they received the questionnaire, participants completed the same pretask ratings as in Study 2.

Results and Discussion

Pretask Ratings
Overall means for the pretask ratings are presented in Table 1. The conditions did not differ in ratings of how important, difficult, pleasant, and convenient the task would be; in how much time participants thought it would take to complete the task; or in participants' frequency of e-mail use, all $ts < 1.23$, $ps > .22$. However, the task was rated as more interesting in the abstract condition ($M = 4.84$, $SD = 1.11$) than in the concrete condition ($M = 4.08$, $SD = 1.49$), $t(49) = 2.07$, $p = .04$, $p_{rep} = .92$, $\eta^2 = .08$.

Procrastination
Responses were categorized relative to the due date and analyzed as in the prior studies. Participants were more likely to respond in a timely fashion in the concrete-construal condition than in the abstract-construal condition, $z = 1.69$, $p = .04$ (one-tailed), $p_{rep} = .88$ (frequencies and mean ranks are presented in Table 4). An ordinal regression examined the effect of condition while controlling for pretask interest. In this analysis, there was no effect of pretask interest, odds ratio $= 0.68$, Wald criterion $z = 2.75$, $p = .10$. The construal-level effect remained significant, odds ratio $= 3.75$, Wald criterion $z = 4.30$, $p = .02$ (one-tailed), $p_{rep} = .93$.

The number of hours elapsed between the experimental session and the receipt of the e-mail response was calculated (excluding missing scores: $M = 80.18$ hr, $SD = 130.78$, minimum $= 0.23$ hr, maximum $= 483.33$ hr), and when no response was received, a score reflecting the maximum observed delay plus 2 weeks (819.33 hr) was assigned to the missing value (after replacement: $M = 413.52$, $SD = 383.69$). Individuals tended to return their responses sooner in the concrete condition than in the abstract condition, $t(49) = 1.43$, $p = .08$ (one-tailed), $p_{rep} = .84$, $\eta^2 = .04$ (see Table 4). Controlling for pretask interest in an analysis of covariance revealed a significant effect of construal level, $F(1, 48) = 2.89$, $p < .05$ (one-tailed), $p_{rep} = .88$, $\eta^2 = .06$, and no effect of pretask interest, $F(1, 48) = 1.27$, $p = .27$.

GENERAL DISCUSSION

To date, there has been relatively little experimental investigation of situational influences on procrastination. Research has

TABLE 4
Results From Study 3

| Condition | Response time (hours) | Response-time category (frequency) | | | | Mann-Whitney mean rank |
		Returned before due date	Returned on due date	Returned after due date	Not returned	
Concrete	338.75 (371.47)	17	0	0	9	23.00
Abstract	491.29 (388.08)	10	1	0	14	29.12

Note. Standard deviations are given in parentheses. Mean ranks for the Mann-Whitney test were calculated using the response-time category scores.

instead examined personality characteristics associated with chronic procrastination behavior (for a review, see Steel, 2007). Studies of the effects of task characteristics have focused on the desirability and utility of engaging in the task, and have suggested that individuals tend to avoid tasks that are unpleasant (e.g., Milgram, Sroloff, & Rosenbaum, 1988). Similarly, hyperbolic temporal discounting (Loewenstein & Prelec, 1992) suggests that individuals prefer to delay difficult or costly tasks, particularly when there is no incentive to finish early (O'Donoghue & Rabin, 1999; Steel & König, 2006).

The research reported here adds a new perspective to this literature, showing that the way the task is represented influences when individuals complete it. Across a variety of manipulations of construal level, we observed that procrastination was reduced when participants were induced to construe the task more concretely. This research demonstrates that level of construal affects not only expected enactment times, as shown in our previous work (Liberman, Trope, McCrea, & Sherman, 2007), but also actual completion times. As in our prior study, the effects we observed were not mediated by the perceived importance, attractiveness, or difficulty of the task. Rather, we think that the effect of construal level on completion times reflected an association between concrete construal and sooner time.

The results are consistent with other theoretical perspectives suggesting that goal pursuit is more successful when individuals represent the task at a more concrete level. For example, according to action-identification theory (Vallacher & Wegner, 1987), individuals are likely to respond to difficulties encountered in executing a task by thinking about the task at an even more specific level. Furthermore, performance on a difficult task is improved when the task is represented more concretely (Vallacher et al., 1989). Setting more specific subgoals increases the utility of action by reducing the delay of rewards (Steel & König, 2006). Forming implementation intentions has also been shown to facilitate goal pursuit by allowing the individual to delegate action control to the situation (Gollwitzer, 1999). As a result, individuals are quicker to identify opportunities to act (Parks-Stamm, Gollwitzer, & Oettingen, 2007; Webb & Sheeran, 2004), to initiate responses (Orbell & Sheeran, 2000; Parks-Stamm et al., 2007), and to complete assigned tasks prior to a deadline (Bamberg, 2002; Gollwitzer & Brandstätter, 1997) when they have formed an implementation intention.

Taking a different perspective, Fujita et al. (2006) found that higher-level construals can improve self-control by allowing the individual to focus on the reasons why he or she is engaging in a difficult behavior (e.g., dieting or strenuous exercise). One might question why abstract construals were not more beneficial than concrete construals in the present research. In other words, what is the critical difference between the self-control tasks examined by Fujita et al. and the tasks we examined here? We think that this difference is best explained in CLT terms. Specifically, we think that, in classic self-control situations, a high-level construal of a self-control action leads to a more positive evaluation of the task than does a lower-level construal of the same action. This was not the case in our tasks—level of construal did not affect task valence. Indeed, we designed the tasks to be relatively easy and only moderately important to participants in order to minimize self-control conflict. Furthermore, although delaying the task past the deadline represented procrastination in the sense that participants lost the chance to receive a reward, we cannot be certain that delaying the task represented a self-control failure. Participants may have had other, more important tasks to complete.

In principle, in some cases, inducing a high level of construal may reduce procrastination by increasing the value of completing the task by the deadline and emphasizing the importance of adhering to duties and obligations. Obviously, this was not the case in our studies. Rather, a higher-level construal of a task made participants think that the distant future would be more appropriate for completing it. Future research should examine the role of possible moderators of construal-level effects on procrastination, such as the evaluative effects of high- versus low-level construals. Thus, in our example of writing a review, a concrete representation may lead to less procrastination than an abstract representation does, as long as "writing a page of comments" is not viewed as aversive. In contrast, to the extent that writing comments is perceived negatively, being reminded of the importance of feedback to the scientific process (the abstract framing) may reduce procrastination.

Researchers should also extend these findings to individual differences in chronic procrastination (see Ferrari, Driscoll, & Diaz-Morales, 2007; McCown & Johnson, 1991). Our results suggest that chronic procrastinators are more likely than other people to represent tasks abstractly. Dewitte and Lens (2000) found, however, that chronic procrastinators represent tasks less abstractly than do nonprocrastinators. They argued that chronic procrastinators focus on task details to such an extent that they feel overwhelmed. Alternatively, the tendency to represent tasks concretely may increase the salience of task delay and thus inflate self-reports of procrastination. Future research should examine these issues, as well as the possibility that the value of high- versus low-level construals moderates the relationship between chronic procrastination and construal level.

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