When Feeling Depleted Helps? the Positive Effect of Regulatory Depletion

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Past research has widely documented the negative effects of regulatory depletion on task performance. The current research demonstrates in three experiments that regulatory depletion can enhance the performance of tasks that require construing things at the lower-level. Theoretical and practical implications are discussed.

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**Construal Levels: New Antecedents, Insights and Implications**

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**Paper #1: Why Does Psychological Distance Influence Construal Level? The Role of Processing Mode**

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**Paper #2: Do Lilliputians See the Big Picture? The Effect of Physical Level on the Level of Construal**

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**Paper #3: When Proximity Prompts Abstraction: High-Level Construal as a Means of Counteractive Control**

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**Paper #4: When Feeling Depleted Helps: The Positive Effect of Regulatory Depletion**

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**SESSION OVERVIEW**

Since the publication of Liberman and Trope (1998), considerable work has been devoted to the theme of construal level theory. Despite the large amount of research in this area, some critical gaps remain. The objective of this session is to address these underexplored questions. Below, we briefly describe these gaps and how each paper seeks to bridge them.

First, while it is now well established that psychological distance influences construal levels, the fundamental question of why this is so has received limited attention. The paper by Yan et al. suggests one possible mechanism, arguing for an intervening role of mode of processing (visual vs. verbal). Consistent with this argument, their studies reveal that people tend to process psychologically near events visually by forming mental images, while processing distant events verbally. In turn, visual (vs. verbal) processing leads to more concrete, lower level construals, thus explaining the oft-observed impact of psychological distance.

Second, extant research on the antecedents of construal level has primarily focused on the four dimensions of psychological distance (e.g., temporal, social, etc.). Surprisingly little attention has been devoted to identify other possible drivers (for exceptions, see Labroo and Patrick 2009; Lee, Keller, and Sternthal 2010). Drawing on perspectives on grounded cognition, the paper by Aggarwal and Zhao identifies a novel antecedent: the physical height at which people are currently imagining themselves to be. This paper proposes and shows that locations higher up (e.g., a hot-air balloon ride) are associated with a big-picture perspective and induce a higher level of construal, while locations lower down (e.g., a deep-sea diving trip) are associated with a detail-oriented perspective, inducing lower levels of construal.

Third, research on the antecedents of construal level has typically adopted a cognitive perspective, arguing in terms of existing, overgeneralized associations between antecedent factors such as psychological distance, and the evoked level of construal (Trope and Liberman 2003); indeed, the paper by Aggarwal and Zhao above, while it identifies a novel antecedent, also draws on an association-based perspective. Much less is known, however, about motivational factors underlying the activation of construal levels. The paper by Fujita and MacGregor, to our knowledge, is among the first to examine this possibility. Specifically, the authors propose and find that in order to resist proximal temptations (which break down defenses by activating low-level construals), people deliberately activate high-level construals, which in turn facilitates self-control.

Finally, in addition to exploring novel questions regarding the antecedents of construal level, this session also provides new insights into the consequences end of the spectrum. A large body of empirical studies in psychology and marketing has shown a negative impact of regulatory depletion: performing a prior self-control task impairs performance on a subsequent task. In contrast, the paper by Wan and Agrawal draws on construal level theory to predict and demonstrate the reverse: experiencing regulatory depletion shifts individuals’ construals to lower levels, and therefore enhances performance on subsequent tasks that require attending to lower-level, contextual details.

**Why Does Psychological Distance Influence Construal Level? The Role of Processing Mode**

**EXTENDED ABSTRACT**

Construal level theory proposes that people tend to construe psychologically distant (proximal) events at higher (lower) levels. Much empirical evidence has since been obtained for the proposition (Trope and Liberman 2010). Surprisingly little, however, is known about the mechanisms underlying the effect of psychological distance on construal levels. The objective of the present research is to fill this gap by proposing and testing such a mechanism.

Our argument conjoins two premises: a) proximal (vs. distal) events are more likely to induce imagery-based (vs. verbal) processing; b) visual (vs. verbal) processing leads to more concrete, low-level construals (vs. abstract, high-level construals). The paper on which this abstract is based reviews several lines of thought supporting each premise; here, we report one such supportive argument for each. The first premise is consistent with research showing that when an event is temporally closer or more likely to happen (vs. distant or less likely to happen), people are more likely to form implementation intentions (Trope and Liberman 2003); in turn, forming implementation intentions usually involves mentally imagining the steps that must be taken to achieve a goal (Gollwitzer 1999). The second premise is consistent with definitions of “concrete”, which comprise ideas such as “capable of being perceived by the senses”, “real”, “actual”, etc. Because visualized information (as opposed to verbal information) can be directly perceived by the senses, it should induce a more concrete construal. Relatedly, much research suggests that imagining an event makes it more “real” (Carroll 1978; Rajagopalan and Montgomery 2011) – again, this argues for a link between visual/verbal processing on the one hand, and concrete/abstract construals on the other.

We tested our proposition in four studies. Study 1 used a 2 (task orientation: visual vs. verbal) x 2 (temporal distance: proximal vs. distant) design. Participants were first asked to write a short essay about “this weekend” or “a weekend in 2020”. They then tried to solve a puzzle that involved either a hidden figure or a hidden word. Consistent with the premise that near (far) events induce visual (verbal) processing, participants in the proximal condition performed better in the hidden figure task ($M_{proximal} = 6.68$ vs. $M_{distant} = 5.27$; $t = 2.80, p < .01$), but worse in the hidden word task ($M_{proximal} = 2.09$ vs. $M_{distant} = 6.68$ vs. $M_{distant} = 5.27$; $t = 2.80, p < .01$), but worse in the hidden word task ($M_{proximal} = 2.09$ vs. $M_{distant} = 2.09$ vs. $M_{distant} = 2.09$).
In study 2, participants were first asked to imagine that a friend was visiting Hong Kong either tomorrow or a year from now and they were to show her around. Then they were shown a list of 40 tourist attractions in Hong Kong and asked to categorize them into groups. Participants also responded to two items that measure their extent of mental imagery while completing the categorization task. Participants generated more categories (M_{visual} = 5.59 vs. M_{auditory} = 4.17; F(1, 65) = 10.43, p < .01) and were more likely to form mental imagery when the event was proximal vs. distant (M_{proximal} = 3.72 vs. M_{distant} = 2.64; F(1, 65) = 128.37, p < .001). Importantly, a mediation analysis showed that the extent of mental imagery mediated the effect of temporal distance on construal level.

Study 3 tested our proposition by examining theoretically-derived boundary conditions for the impact of psychological distance. If processing mode indeed mediates the effect of distance on construal level, this effect should attenuate both for chronic visualizers and verbalizers. That is, visualizers (verbalizers) should construe both distant and proximal events at a higher (lower) level. Hypothetical distance was used to operationalize psychological distance. Participants were asked to imagine that their friend was planning to visit Hong Kong, with a likelihood of either 95% or 5%. They then completed the same categorization task as in study 2, before filling out the Style of Processing Scale (SOP: Childers, Houston & Heckler 1985), which assesses the chronic tendency to form visual images. As expected, lower hypothetical distance (t = 2.80, p < .01) and higher scores on SOP (t = 6.92, p < .001) both led to more categories being formed. More importantly, spotlight analyses revealed that the effects of hypothetical distance on construal level became non-significant for chronic verbalizers, and also for chronic visualizers (p’s > .10).

Study 4 replicated these findings while manipulating processing mode and examining the social dimension of psychological distance. A 2 (social distance) x 3 (visualizing vs. verbalizing vs. control) between-subject design was employed. Participants first completed either a hidden figure or word puzzle (visualizing vs. verbalizing conditions). Those in the control condition did not perform any task. Afterwards, participants received information about a target person, described as being very similar or very dissimilar to them. All respondents then completed the BIF measure (Behavioral Identification Form; Vallacher and Wegner 1989), which is a standard assessment of activated construal level; higher means indicate more abstraction. The control condition obtained the usual effect of social distance on construal level: distance produced more abstract construals (M_{proximal} = 14.77 vs. M_{distant} = 16.59; F(1, 187) = 3.45, p = .07). Further, those in the visualizing condition reported more concrete construals than those in the verbalizing condition (M_{visualizing} = 14.73 vs. M_{verbalizing} = 16.52; F(2, 187) = 2.97, p = .05). Most importantly, the visualizing condition led to relatively concrete construals irrespective of social distance (M_S = 14.52 vs. 14.94, t < 1, p > .60), while the verbalizing condition produced abstract construals irrespective of distance (M_S = 15.95 vs. 16.79, t < 1, p > .30). These findings are consistent with the proposition that the effect of social distance on construal level was indeed driven by the processing mode.

Our paper contributes to the construal level literature by identifying one possible mechanism that underlies the effects of psychological distance on construal level. We also add to the mental imagery literature by identifying a new factor (psychological distance) that can influence the tendency to engage in visual versus verbal processing.
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rewards over the SS (smaller-sooner) rewards compared to those in the low (scuba diving) condition \( (M_S = 6.69 \text{ vs. } 4.63, F(1, 40) = 4.37, p < .05) \). Finally, in Study 4, we take a more direct measure of the underlying process and find that those located on the upper level of a building prefer a job requiring a big-picture orientation relative to those on the lower level of the building \( (M_S = 5.32 \text{ vs. } 7.39, F(1, 44) = 4.58, p < .05) \). Across the four studies, we rule out alternative explanations, including affect, perceived power, and physical distance.

This research contributes theoretically to growing research on embodied cognition, metaphorical representation and construal level theory. It also suggests itself to future investigation linking physical height (across gender, cultures, etc.) to their perspectives. In addition, the findings provide some very interesting managerial implications for industries such as real estate, airlines and subways.

When Proximity Prompts Abstraction: High-Level Construal as a Means of Counteractive Control

EXTENDED ABSTRACT

The allure of salient concrete and immediate rewards frequently tempts people to forgo the attainment of abstract and delayed goals. Research on counteractive control theory has revealed a number of cognitive and behavioral means by which people counteract the negative impact of proximal temptations on goal pursuit (e.g., Fishbach and Trope 2007). The present research proposes that high-level construal can serve a counteractive control function to promote self-control.

Construal level theory (CLT) suggests that one way that proximal temptations undermine self-control is by prompting low-level construal. CLT proposes that psychological distance impacts the way people subjectively represent or construe events (Liberman and Trope 2008; Trope and Liberman 2003; 2010). Psychological distance refers to the removal of an event from direct experience of the here-and-now. People often lack detailed information about distant events. To prepare and plan for such events, people engage in high-level construal, using cognitive abstraction to extract the central, primary, and goal-relevant features likely to be present in all possible manifestations of the events. As detailed specifics become increasingly available and reliable with greater proximity, people are able to engage in low-level construal, incorporating this information into concrete representations that highlight those secondary features that render a particular event unique. This association between distance and construal is over-generalized, apparent even when equivalent information about psychologically near and distant events is available.

Research indicates that the low-level construal that the proximity of temptations triggers is deleterious to self-control (e.g., Fujita 2008). The focus on concrete and idiosyncratic features promoted by low-level construal may distract one from one's abstract and distant goals. Supporting this assertion, for example, female undergraduate students, a population generally concerned about their weight, are more likely to prefer candy bars over apples as a snack when engaged in low-level rather than high-level construal (Fujita and Han 2009). This and other research suggests that proximal temptations promote self-control failure by prompting low-level construal (Fujita 2008).

The present research proposes that people have mechanisms that allow them to counteract the tendency for proximal temptations to trigger low-level construal, and to engage instead in high-level construal. If indeed high-level construal serves as a means of counteractive self-control, it should be evident when people anticipate temptations will undermine valued goals (Study 1) and have no alternative means of control available (Study 2). Engaging in counteractive high-level construal should promote successful self-control (Study 3).

Study 1 tested the hypothesis that people engage in high-level construal when they anticipate temptations will undermine valued long-term goals. Undergraduate students were recruited a week prior to a midterm examination. Those in the high threat salience condition were asked to list upcoming exams along with temptations that interfere with exam, whereas those in the low threat condition were not. Participants then reported which of two paired abstract and concrete descriptions of studying best corresponded to their own thoughts as an assessment of construal (e.g., “reading chapters in my textbook” vs. “mastering course material”). Participants also reported their academic achievement motivation. Threat salience condition had no effect on academic achievement motivation, \( t(86) = .67, p = .51 \). As predicted, however, threat salience and goal motivation interacted to predict construal level, \( b = .32, SE = .15, p = .04 \). Salient threats led undergraduates to prefer more abstract descriptions of studying as their academic goal motivation increased, \( b = .57, SE = .21, p = .01 \). By contrast, academic goal motivation was not related to construal when threats were not made salient. People thus appear to engage in counteractive high-level construal to the extent that they anticipate temptations will undermine valued goals.

The availability of alternative means of control should reduce the need to engage in counteractive high-level construal (Fishbach & Trope, 2005). To test this, participants were led to believe that they would be sampling a new cookie product that was tasty yet unhealthy and fattening. Half were told that it was up to them to decide how many cookies they desired to eat (self-control condition), whereas the other half were told that the experimenter would decide how many cookies they could eat (other-control condition). As an assessment of construal, participants were asked to what extent their thoughts about the upcoming cookie taste test took the form of words versus pictures. Research indicates that whereas words are associated with high-level construal, pictures are associated with low-level construal (Amit, Trope, and Algom 2009; Yan, Sengupta, and Hong, this symposium). As predicted, those in the self-control condition reported using words more than pictures, as compared to those in the other-control conditions, \( F(1, 106) = 3.86, p = .05 \). People appear to engage in counteractive high-level construal, then, to the extent that they have no alternative means of control.

Study 3 sought to demonstrate that counteractive high-level construal promotes successful self-control behavior. Undergraduate students were recruited a week prior to their final exam. All participants were asked to list their exams and temptations that interfered with exam preparation. They then reported whether their thoughts about studying took the form of words versus pictures as an assessment of construal. Students also reported their academic goal mo-
When Feeling Depleted Helps: The Positive Effect of Regulatory Depletion

EXTENDED ABSTRACT

Past research on regulatory depletion theory posits that exerting self-control consumes regulatory resource (Muraven and Baumeister 2000), and predicts a negative impact of regulatory depletion: performing a prior self-control task impairs the performance on a subsequent task that also involves volitional action, a phenomena termed as the depletion effect (Baumeister et al. 1998; Muraven and Baumeister 2000). A large body of empirical studies in psychology and marketing has demonstrated the depletion effect in diverse domains. For example, Baumeister et al. (1998) found that participants who exerted regulatory resources to resist the temptation of food, compared with those who did not engage in this self-control act, were less persistent on trying to solve a challenging puzzle subsequently. Likewise, suppressing thoughts undermines individuals’ control on impulse purchases (Vohs and Faber 2007). Other studies have documented this effect in the contexts such as alcohol consumption (Muraven, Collins, and Nienhaus 2002), processing health-risk information (Agrawal and Wan 2009), and making deliberative choices (Vohs et al. 2008; Wang et al. 2010).

The current paper bridges the research on regulatory depletion and the literature on construal level theory to propose a new case in which depletion might exert a positive effect on task performance. Recent research on self-control has suggested that exerting self-control alters the way in which individuals construe information. Wan and Agrawal (2011) suggest that engaging in self-control systematically shifts individuals’ construals to lower levels. Their studies showed that highly depleted (vs. less depleted) participants relied on feasibility (vs. desirability) attributes, favored secondary (vs. primary) features, and chose products framed in a proximal (vs. distal) perspective. Similarly, Bruyneel and Dewitte (2006) showed that depletion leads to a narrow attention span and breadth of categorization which are consistent with the mental representations at lower-level construals.

The literature on construal levels suggests that construal levels influence individuals’ cognitive style and information processing (e.g., Liberman and Trope 1998; Trope and Liberman 2003). At lower-level construals, individuals are likely to attend to subordinate, incidental features, and concrete and contextual details, whereas being at higher-level construals emphasize subordinate features, and abstract and global pictures. If experiencing depletion shifts individuals’ construals to lower levels, we predict that regulatory depletion will enhance the performance on tasks that require attending to low-level and contextual details.

Three experiments tested our proposition. In experiment 1, participants first completed a cross-off-letter task adopted from past research to manipulate regulatory depletion (Baumeister et al. 1998). Then participant performed the picture completion subtest of the Wechsler task (Wechsler 1991), a task used to examine people’s ability to observe contextual details (Wakslak and Trope 2009). Specifically, all participants were presented with thirty pictures, each of which contains a missing part. Their task was to identify the missing parts within three minutes. Our results showed that highly depleted participants identified more missing objects than did less depleted participants (p < .05), supporting our prediction that depletion enhances the performance on tasks that require the attention to details.

In experiment 2, participants first performed the same cross-off-letter task that manipulated depletion, followed by an Embedded Figure Test (Witkin et al. 1971) in which eleven objects are embedded within a more complex big figure. Participants’ task was to identify the embedded objects. Past research has shown that, to identify the embedded objects, people need to focus on the contextual details and ignore the big picture. Participants were given five minutes to perform the task. The results showed that highly depleted participants identified more embedded objects than did less depleted participants (p < .05), replicating the finding in experiment 1 and again supporting our prediction.

Experiment 3 tested our prediction in a product evaluation context with a 2 (high vs. low depletion) x 3 (information omission with cue vs. information omission without cue vs. full information) between-subject design. Participants first performed a thought suppression task adopted from past research (Vohs and Faber 2007) to manipulate depletion, followed by reading the message about a laptop computer. In the full information condition, the message described the computer on five major attributes. In the information omission without cue condition, the important attribute of memory size was omitted from the attribute list. In information omission with cue condition, the memory size information was omitted but was listed as “information unavailable to customer.” Participants evaluated the computer, and recalled if any attributes were missing from the message. A 2 x 3 ANOVA on product attitudes indicated a significant interaction (p < .05). When there was a missing attribute without the omission cue, highly depleted participants evaluated the product less favorably than did less depleted participants (p < .01). However, participants in the full information did not differ in their attitudes whether they were highly or less depleted (F < 1). Similarly, in the omission with cue condition highly depleted and less depleted participants did not differ in their attitudes (F < 1). We also found the same pattern on the number of recalled missing attributes. Moreover, in the information omission conditions the number of recalled missing attributes mediated the effect of depletion on product evaluation. These results suggest that depletion enhances performance on detecting details, which has influenced their evaluation of the target products.

The current research contributes to the literature by identifying novel effects of regulatory depletion through the lens of variations in construals, and enhances the understanding the psychological processes underlying self-control.