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Affect in the Abstract:

Abstract Mindsets Promote Sensitivity to Affect

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Abstract

Affective information is a key element of abstract, gist-based representations. Given this central role of affect in abstract representations, the authors hypothesized that those in an abstract mindset may show more sensitivity to affective information when attending to, interpreting, or responding to external stimuli. Across 5 studies, the authors present consistent evidence that those who tend to view the world in more abstract versus concrete terms, or who have been experimentally induced into an abstract (vs. concrete) mindset, have their attention automatically captured by highly-affective stimuli (Studies 1a, 1b, and 1c), automatically extracted the affective connotation of stimuli presented outside of awareness (Study 2), and behaved more consistently with their affective construal of stimuli (Study 3). These findings suggest that the numerous dispositional and situational factors that influence the level at which one construes the world may also have, heretofore overlooked, consequences for basic affective processing. The present research also emphasizes the interdependence of so-called affective and cognitive processes, bridging major literatures on construal and affect that have developed largely independently.

Research Highlights

People who dispositionally tend to think, or experimentally were led to think, abstractly (versus concretely) showed stronger emotional Stroop effects.

Experimentally placing people in abstract mindsets (versus concrete mindsets) enhanced tendencies to extract affective information non-consciously and to behave consistently with relevant affective responses.

Although the concrete presence of stimuli has been shown to evoke stronger affective responses, abstract mindsets may prioritize affective information.

KEYWORDS: affect, level of construal, abstract and concrete mindsets, attitude-behavior consistency, emotional Stroop

Affect in the Abstract:

Abstract Mindsets Promote Sensitivity to Affect

Do you see the forest or the trees? One of the most fundamental aspects of processing stimuli is whether we construe them in an abstract versus concrete manner (e.g., Jeannerod, 1997; Miller, Galanter, & Pribram, 1960; Rosch, 1973, 1975; Trope & Liberman, 2003; Vallacher & Wegner, 1987). Whereas abstract construals reflect general, gist-based representations that contain central defining properties of the stimuli (i.e., the forest), concrete construals consist of detail-oriented, literal descriptions (i.e., the trees). There are individual differences in the tendency to construe the world more or less abstractly (Vallacher & Wegner, 1987, 1989), as well as situational factors that prompt more concrete or abstract thought. For example, when construing a stimulus from greater psychological distance (e.g., spatial, temporal), people tend to use more abstract versus concrete representations (e.g., Liberman, Trope, & Stephan, 2007; Trope & Liberman, 2003).

What implications, if any, does thinking in an abstract versus concrete manner have for the kinds of information in the environment that are prioritized,

even non-consciously? In this paper, we examine the implications of construal for people's sensitivity to affective information. The merger of two lines of research predicts that those in an abstract (versus concrete) mindset should be more sensitive to affective information. First, according to construal level theory (CLT; Liberman, Trope, & Stephan, 2007), those in an abstract mindset rely on "gist" representations—construals that emphasize central aspects of events, objects or experiences (Liberman & Trope, 2008). Second, research on gist memory suggests that affective information is a critical gist component. According to fuzzy-trace theory, gist representations include evaluations of stimuli as good or bad (Reyna, 2004). As Rivers, Reyna, and Mills (2008) stated, "The valence component of gist is a central component of meaning associated with a stimulus" (p. 123). Taken together, these two lines of work imply that people in an abstract versus concrete mindset might be more sensitive to, and thus more influenced by, affective information.

The prediction that abstract thinking increases one's sensitivity to affective information has some indirect support. The desirability of a stimulus guides decisions about psychologically distant stimuli (e.g., Sagristano, Trope, & Liberman, 2002), which—according to construal level theory—tend to be represented more abstractly. Consistent with this, research in clinical psychology suggests that high-level or abstract thinking is associated with breadth and emotional awareness, whereas low-level strivings are associated with concrete, non-affective goals (Emmons, 1992; Pennebaker, 1989). These findings together provide indirect

support for the—as yet untested—prediction that being in a more generalized abstract mindset increases one's sensitivity to affective information.

How would increased sensitivity to affect manifest itself? If affective information is a key part of abstract representations, then those approaching the world with an abstract mindset should show an automatic readiness to attend to and extract affective information from the environment. Just as a goal will lead people to automatically process goal-relevant information in their environments (e.g., Aarts, Dijksterhuis, & DeVries, 2001; Bruner, 1957; Förster, Liberman, & Higgins, 2005; Moskowitz, 2002), a mindset that prioritizes affective information should by analogy lead to automatic affective processing.

We tested for three indications that abstract mindsets promote sensitivity to affect. First, we tested whether those in abstract mindsets are more likely to automatically attend to highly affective information (Studies 1a through 1c). Second, we hypothesized that they should be more likely to automatically extract the affective connotation of stimuli (Study 2). Finally, if abstract mindsets promote automatic affective processing of stimuli, then people's behavioral responses to stimuli should be more in line with their affective reactions to those stimuli (Study 3). Evidence of this type would demonstrate that abstract mindsets lead people to attend to, automatically extract, and behave in line with affective information.

If abstract mindsets do indeed increase sensitivity to affective information, this suggests that such mindsets produce a significant shift in the kind of information that the person automatically extracts from the environment, with a range of consequences for emotion, judgment, and behavior. Indeed, the affective

quality of a stimulus is one of a small class of features that are used in forming initial snap judgments about a target (Kahneman, 2003; Slovic & Peters, 2006). It can influence how one interprets and behaves toward the stimulus itself (e.g., Chen & Bargh, 1999; Custers & Aarts, 2005; Dovidio, Kawakami, & Gaertner, 2002; Fazio, Jackson, Dunton, & Williams, 1995; Ferguson, 2007) as well as the stimuli around it (e.g., Niedenthal, 1990; Stapel, Koomen, & Ruijs, 2002). As such, any change in the degree to which people attend to, extract, or rely on affective information while behaving is likely to have many consequences for how they behave in the world.

Abstract Mindset Manipulation

Vallacher and Wegner's (1989) Behavioral Identification Form comprises twenty-five behaviors (e.g., joining the army), each followed by two redescriptions. One redescription describes the behavior at a higher, abstract level (helping the nation's defense); the other, at a lower, concrete level (signing up). Participants select which redescription better describes the behavior. In Study 1a, we used this inventory to assess individual differences in abstract versus concrete thought.

For Studies 1b through 3, we adapted the form to create abstract and concrete mindset manipulations. Participants were presented with each basic level behavior and asked to reframe the behavior in either more abstract or more concrete terms. After mentally formulating their ideal concrete or abstract description, participants rated from 1 (not at all well) to 5 (perfectly) how well the provided description (the relevant abstract or concrete answer choice from the original form) captured abstractly why or concretely how one would do each behavior. Thus, participants were asked to repeatedly reconstrue stimuli in more

abstract or more concrete terms. According to processing shift theory (Schooler, 2002), the processing style exercised on one task will carry over to influence subsequent tasks. And indeed, the general structure of this task—having participants repeatedly perform the same cognitive operation—has been used in other research to induce distinct cognitive mindsets (e.g., Freitas, *et al.*, 2004; Fujita, *et al.*, 2006).

Studies 1a, 1b, and 1c

The first three studies test for a correlational (Study 1a) and a causal (Studies 1b and 1c) connection between abstract thinking and an indication that one's attention is automatically captured by affective information. The emotional Stroop task is a particularly good measure of attention capture for two reasons. First, it provides a particularly conservative test given recent findings that those in abstract mindsets show smaller (non-emotional) Stroop effects than those in concrete mindsets (Friedman & Förster, 2005). This minimizes concerns that a connection between abstract thinking and Stroop interference would be due to an emotion-unrelated aspect of the task. Second, recent research has found that emotional Stroop effects do not emerge with the paradigm used in the present study (Fox, 1996; Larsen, Mercer, & Balota, 2006). As such, if an abstract mindset causes an emotional Stroop effect to emerge, it would be because abstract mindsets would increase attention to affect (that is not there at baseline) and not due to a disabling of executive control (an alternative that would require an emotional Stroop effect under baseline conditions.)

Study 1a

Method

***Participants and design*.** Sixty-two undergraduates at Cornell University completed the emotional Stroop task before completing Vallacher and Wegner's (1987) Behavioral Identification Form. Unless otherwise specified, participants in all studies received extra course credit.

Materials and Procedure

On each trial of the emotional Stroop task, a line of dashes and a fixation cross would first blink. Then, a target word in one of four colored fonts (red, orange, green, or blue) would appear in the middle of the screen. Either directly above or directly below the word, one of the four color words would be written in black font. If the color word matched the font color of the target word, participants were to press the key labeled "SAME." If the color word did not describe the font color of the target word, they were to press the key labeled "DIFFERENT." It was stressed that both speed and accuracy were important.

After a practice block, participants completed six experimental blocks of twelve trials each. For each trial, the target word was either a negatively valenced (brainwashing, execution, hatred, nightmares, serpent, threatened), positively valenced (affection, cheerful, ecstasy, kindness, optimistic, smiling), or an affectively neutral (e.g., conceptual, initially) word. The words had been matched for frequency and length (Larsen, Mercer, & Balota, 2006). Pretesting found that the affective and non-affective words did not differ in their participant-rated abstractness, $t(78) = 1.51$, $p > .13$.

The computer recorded the speed with which the participant responded to each trial. Error trials were not included in the analyses reported below (*M* = 3.9%). We subtracted the average reaction time for the non-affective trials from the average reaction time for the affective trials to get an emotional Stroop score for each participant.

Results and Discussion

Across participants, the size of the emotional Stroop effect was slightly positive (*M* = 5.89 ms, *SD* = 65.25 ms). On the Behavioral Identification Form, the average participant selected the abstract behavioral description on 12.18 (*SD* = 3.87) of the 25 items. Consistent with our central hypothesis, the size of participants' emotional Stroop effect correlated with their tendency to construe stimuli in a more abstract fashion, $r(60) = .36$, $p = .004$.

Study 1b

Study 1b moved beyond the correlational design of Study 1 by experimentally inducing participants into an abstract or concrete mindset. We predicted that those in an abstract mindset would subsequently show a stronger emotional Stroop effect than those placed into a concrete mindset or those in a no-mindset control condition.

Method

Participants and design. Twenty-six Cornell University undergraduates were randomly assigned to an abstract mindset, concrete mindset, or no mindset (control) condition.

Procedure

All participants completed the mindset manipulation, and then completed the emotional Stroop task.

Results and Discussion

All error trials (M = 3.7%) were excluded from the subsequent analyses. First, we conducted a one-way ANOVA that demonstrated that the emotional Stroop effect differed by mindset condition, $F(2, 23) = 3.71$, $p = .04$ (see Figure 1). Those in the abstract mindset (M = 23.66 ms) showed a greater emotional Stroop effect than those in the no mindset control condition (M = -33.07 ms), $t(23) = 2.46$, $p = .02$, and marginally greater than those in the concrete mindset condition (M = -24.13 ms), $t(23) = 1.84$, $p = .08$. The latter two conditions did not differ, $t < 1$, $p > .76$. The experimental design of Study 1b supports our claim that construing the world abstractly *causes* an increase in people's sensitivity to affective information. Inclusion of a control condition showed that abstract mindsets *increase* attention to affect; concrete mindsets do not suppress such attention.

Study 1c

The affective and non-affective words used in the emotional Stroop task were equated on a host of relevant features (frequency, length, abstractness). Nonetheless, the (perhaps remote) possibility remains that the two sets of words differed on some other unidentified feature, and that that feature was responsible for the effects in Studies 1a ad 1b. Study 1c tested more precisely whether the enhanced emotional Stroop effect of those in an abstract mindset was due specifically to the affective nature of the stimuli. In Study 1c, participants were first primed to construe the target stimuli according to either their affective significance

or a non-affective property (grammatical category) before being placed into an abstract or a concrete mindset. If the affective nature of the words is what those in an abstract mindset are more attentive to, we should see that those in an abstract mindset would show a greater emotional Stroop effect especially (or perhaps only) to the extent that they had been primed to construe the emotional targets in the Stroop task in affective terms.

Method

Participants and design. Twenty Cornell University undergraduates were randomly assigned to one condition of a 2(mindset: abstract or concrete) X 2 (target construal priming: affective or non-affective) full factorial design. Participants received extra course credit or $2.50 for their participation.

Procedure

Participants first completed one of two priming tasks. Those in the affective priming condition provided ratings from 1 (extremely negative) to 11 (extremely positive) their attitude toward each of the words. Those in the non-affective priming condition identified the grammatical category (noun, verb, or adjective) of each of the words. In this way, participants would begin the emotional Stroop task primed to construe the affective words in more or less affective terms.

Next, participants completed the abstract or concrete mindset manipulation and the emotional Stroop task.

Results and Discussion

As before, all error trials (M = 3.8%) were excluded from the subsequent analyses. We submitted the emotional Stroop indices to a two-way 2(mindset) X

2(target construal priming) ANOVA. The predicted mindset by target construal priming interaction was significant, $F(1, 15) = 17.51$, $p = .001$. As can be seen in Figure 2, those primed to construe the target words in more affective terms showed significantly more attention to affect when in an abstract mindset ($M = 120.93$ ms) than when in a concrete mindset ($M = 7.22$ ms), $t(15) = 4.38$, $p = .001$. By contrast, when primed to construe the target words in non-affective (part of speech) terms, those in an abstract mindset showed no more attention to affect ($M = -7.07$ ms) than those in a concrete mindset ($M = 28.67$ ms), $t(15) = -1.46$, $p > .16$. Given that abstract mindsets prioritized affective stimuli only to the extent participants were primed to construe the stimuli in affective terms, we can be more confident that abstract mindsets enhanced attention to the highly-affective stimuli due to their affective nature.

Study 2

Study 2 moves beyond initial attention capture to test whether the affective content of a stimulus is automatically extracted. In this study, participants were subliminally exposed to highly-affective positive or negative stimuli. Given that participants were exposed to these stimuli unknowingly, we used an indirect measure to assess whether the affective information had been automatically extracted: self-reported mood. Past research has found that self-reported mood changes when people unknowingly extract affective information from their environment (Chartrand, van Baaren, & Bargh, 2006). We therefore predicted that the self-reported mood of those in an abstract (as opposed to concrete) mindset

would be more influenced by the affective valence of stimuli presented outside of the participant's awareness.

Method

Participants and design. One hundred seventy-three Cornell University undergraduates were randomly assigned to one condition of a 2(mindset: abstract or concrete) X 2(prime valence: positive or negative) full factorial design. Participants received either course credit or $2.50 in exchange for their participation.

Materials

Mood priming task. This task was modified from Chartrand et al. (2006). On each trial, a fixation cross surrounded by a string of dashes would flash three times on the computer screen before revealing a string of characters ("oeurgtZzgdR"). For each trial, one of the leftmost three characters, one of the rightmost three characters, or none of the characters was replaced by a dash. The participant was to indicate where the dash appeared (or if it did not appear at all) by pressing keys marked "LEFT," "RIGHT," or "NONE."

Unbeknownst to participants (except those excluded), just before the target string of characters appeared, one of four highly positive (Friday, sunshine, friends, music) or highly negative (cancer, crime, war, cockroach) primes appeared on the screen for 17ms before being masked by the target string. Participants were exposed to words of one valence only. In each condition, participants completed 140 trials, being exposed to each word thirty-five times. Although reaction times and accuracy were not recorded, the bolded, italicized, and underlined word

INCORRECT appeared in all capitals for two full seconds after each incorrect response.

Mood measure. Participants were asked, "How are you feeling right now, at this moment?" The first eight items were used by Chartrand et al. (2006), originally from Bargh, Chen, and Burrows (1996, Experiment 2C). For each item, participants rated their current mood on a -5 to +5 bipolar scale (e.g., displeased-pleased, disappointed-satisfied, bad-good). The final seven items were taken from a mood scale used by McFarland, Cheam, and Buehler (2007). Participants rated the extent to which seven words—happy, satisfied, pleased, disappointed (reverse scored), sad (reverse scored), proud, and competent—described their current moods on scales from 1 (not at all) to 9 (extremely), with the midpoint of 5 labeled as "somewhat." We excluded the item *calm—excited*, as its inclusion lowered the reliability of the scale. The remaining 14 items—standardized and averaged to create a positive mood index—demonstrated high internal reliability (α = .93).

Procedure

Participants first completed the abstract or concrete mindset manipulation. They then completed the mood-priming task, which was presented as a test of participants' responsiveness to minimal perceptual cues. Participants were then presented with the mood measure, supposedly in order to "control for [their] current mood."

Results and Discussion

We submitted the positive mood index to a 2 (mindset: abstract or concrete) X 2 (prime valence: positive or negative) ANOVA. The predicted mindset X prime

valence interaction emerged, $F(1, 150) = 8.70$, $p = .004$ (see Figure 3). As expected, those in the abstract mindset showed evidence of having extracted the affective connotation of the affective stimuli, with those in the positive prime condition reporting more positive moods ($M = .352$, $SD = .518$) than those in the negative prime condition ($M = -.097$, $SD = .806$), $t(150) = 2.85$, $p = .005$. In contrast, those in the concrete mindset appeared not to be affected by the primes, with those in the positive prime condition actually reporting their mood as non-significantly less positive ($M = -.236$, $SD = .875$) than those exposed to the negative primes ($M = -.016$, $SD = .536$), $t(150) = -1.35$, $p > .17$. In combination with Studies 1a through 1c, this suggests that abstract mindsets prioritize affect: automatically guiding attention to and facilitating extraction of affect.

Study 3

The first four studies demonstrated that abstract thinking increases people's automatic sensitivity to affective information; however, what might be a behavioral implication of this kind of effect? If people in abstract mindsets are more sensitive to the affective connotation of stimuli, then their behavior toward any given stimulus should be more influenced by that affective connotation. Participants took part in a "consumer product rating task" in which they were asked to eat an unspecified number of chocolate candies. We predicted that the number of candies participants consumed would be more strongly related to their previously stated affective liking for the candies while in an abstract (compared to a concrete) mindset.

Method

Participants and design. One hundred eighty-six undergraduates at Cornell University were randomly assigned to an abstract or concrete mindset condition.

Procedure

First, participants stated their explicit attitudes toward ten targets related to chocolate candies and eating. For each word, participants indicated "the extent to which you find the word positive or negative" from 1 (*extremely negative*) to 11 (*extremely positive*). A principal components analysis found these items measured two distinct latent constructs. One factor reflected attitudes toward candy: candy, sweets, sugar, M&Ms, chocolate, dessert, Nestle's (α = .89). The second factor reflected attitudes toward food and eating: food, eating, snacks (α = .81).

Second, participants completed either the abstract or concrete mindset manipulation. Third, participants sampled a product while rating it on a number of dimensions. Participants received a bowl of chocolate candies and a rating sheet. They were told to "sample the product to help [them] make the requested ratings." We were not interested in these product ratings, but instead in the quantity of candies eaten. As such, the experimenter put 150g of candies in each participant's bowl. Unbeknownst to participants while they sampled the candies, the experimenter would later weigh the bowl again to determine how many grams of candies the participant had eaten. A single candy weighed approximately 1g.

To control for individual differences in a non-affective influence on eating, all participants completed a modified version of the twelve-item Cognitive Restraint of Eating subscale of Stunkard and Messick's (1985) Three-Factor Eating

Questionnaire on a web-based pretest. The items (e.g., "I do not eat some foods because they make me fat") had high internal reliability (α = .87).

Results and Discussion

We regressed the number of grams of candies that participants consumed on their mindset condition (-1 = abstract, +1 = concrete), their candy-related attitudes, their food-related attitudes, the mindset X candy attitudes interaction, and the mindset X food attitudes interaction, while controlling for dispositional eating restraint. The complete output of the regression can be seen in Table 1. The mindset X candy attitudes interaction was marginally significant, ß = -.13, $t(178) = 1.79$, $p = .07$. As depicted in Figure 4, this reflected that the candy eating behavior of those in the abstract mindset was predicted by their candy-related attitudes ß = .26, $t(178) = 2.46$, $p = .02$, whereas those in a concrete mindset showed no correspondence between their candy-related attitudes and eating behavior, ß = -.02, $t < 1$, *ns*. Although there was a trend for the more general food-related attitudes toward eating to predict greater candy consumption, ß = .12, $t(178) = 1.52$, $p > .13$, the interaction with mindset was non-significant, $t < 1$.

These results suggest that the influence of affect on those in abstract mindsets extends to guiding behavior. Although not predicted *a priori*, the effect of mindset only moderated the relationship between eating behavior and candy-related attitudes, not the general food-related attitudes. In fact, the main effect of food-related attitudes on eating behavior was non-significant. This is consistent though with research showing that attitudes better predict behavior to the extent

that they closely correspond to the measured behavior (e.g., Ajzen & Fishbein, 1980).

General Discussion

Across five studies with a variety of tasks, stimuli, and dependent measures, those in abstract mindset showed an increased sensitivity to affective stimuli. Those thinking abstractly attentionally prioritized affective stimuli (Studies 1a, 1b, and 1c), non-consciously extracted the affective content from subliminal stimuli (Study 2), and ultimately behaved toward stimuli consistently with their affective responses to those stimuli (Study 3). The studies presented a natural linear progression, showing that abstract mindsets enhance people's tendency to identify, interpret, and respond to affective information in their environments. Although we used distinct methods to capture each predicted effect, it is evident that these effects are necessarily connected. For example, for an affective stimulus to capture attention, one must have extracted (even preconsciously) its affective significance. Similarly, before one can respond to a stimulus in affective terms, one must have interpreted the stimulus in affective terms.

These results move beyond the findings in multiple literatures arguing that abstract representations are characterized by affect to instead show that an abstract mindset causally increases a more generalized processing sensitivity to affect with accompanying behavioral effects. In this way, the present research distinguishes itself from, for example, research inspired by Construal Level Theory (CLT). Such research typically examines the consequences of viewing a specific stimulus that is at a greater or lesser psychological distance, as opposed to how one reacts to stimuli

more generally while engaging in more abstract or concrete thought. Furthermore, research in the CLT tradition has demonstrated that those at a psychological distance from a given stimulus make deliberate judgments and decisions about the stimulus that are more consistent with its affective or desirability-based implications. Our findings qualitatively extend these results by demonstrating that those in an abstract mindset are more likely to unintentionally and nonconsciously attend to affective information more generally.

Because affective information is a key element in abstract representations, we have argued that those who are thinking abstractly more generally will be especially sensitive to affective information. But instead, might abstract mindsets lead people to be more sensitive to all accessible information? For example, because Study 3 participants stated their attitudes toward candies during the experimental session (instead of on a pretest), those explicitly stated attitudes were likely still accessible when participants confronted the taste test. Although we are aware of no reason why abstract thought would lead one to rely unconditionally on accessible information, this account is not consistent with the findings of Study 1a through 1c. For example, in Study 1c all emotional stimuli were made accessible by both the affective (attitude-naming) and the non-affective (grammatical) priming tasks. If abstract mindsets lead people to be more sensitive to accessible information in general, regardless of affective connotation, we would have seen more of an emotional Stroop effect for abstract participants across these twp types of conditions. Instead, in line with our explanation of the findings, only participants

who were primed to interpret the stimuli in affective terms showed the predicted effect of construal on interference.

Relation to Similar Work

Williams and Bargh (2008) found that priming psychological distance mutes emotional responses. Given that psychological distance is associated with abstract mindsets (Liberman, Trope, & Stephan, 2007), this may seem inconsistent with our findings. But crucially, Williams and Bargh did not examine affective responses, but rather more complex emotional responses that depend on the felt closeness to the emotionally evocative stimulus. In one study, participants primed with psychological distance found it less troubling to read an embarrassment-related excerpt from a novel. In this case, the emotion-eliciting power of the stimulus depends on one's sense of closeness to it, much in the same way that the potential to walk up to the front of class to display one's dance moves is more terrifying as an immediate prospect than as a mere hypothetical (Van Boven, Loewenstein, & Dunning, 2005). In our studies, one's mindset increased sensitivity to mere valence-based, affective infomation.

Second and related, our findings may seem surprising given that several research programs appear to suggest a link between concreteness and affective intensity (Kross, Ayduk, & Mischel, 2005; Metcalfe & Mischel, 1999; Strack, Schwarz, & Gschneidinger, 1985). First, summarizing work on *delay of gratification*, Metcalfe and Mischel noted that temptations that are concretely present in one's environment can be withstood once people literally or metaphorically (through cognitive reframing) abstract themselves out of the situation. Second, Kross, Ayduk,

and Michel (2005) found that people are able to maintain emotional distance from a past event by thinking abstractly about why the situation occurred instead of focusing concretely on the exact emotions at play. And, finally, Strack, Schwarz, and Gschneidinger (1985) found that people had more emotionally intense reactions when people imagined the course of an event concretely and vividly as opposed to considering abstractly why the event transpired. But in each of these examples that would seem to contradict the present findings, abstraction and concreteness were not defined in terms of the level of construal at which people were thinking. Instead, concreteness was equated with the real, vivid presence of a stimulus (or reliving that real, vivid presence); abstraction was equated either with a physically (or figuratively) absent stimulus, or with intellectualizing analyses that encouraged one to emotionally distance oneself from an emotionally-arousing episode (i.e., focusing on why the event took place). Thus, our studies are the first to test whether abstract as opposed to concrete thought—defined by level of construal—leads to greater sensitivity to affective information.

Fujita, Henderson, Trope, Liberman, and Levin-Sagi (2006) demonstrated that those in abstract mindsets displayed better self-control than those in concrete mindsets. On the one hand, this may seem inconsistent with our findings given that temptations, which are impediments to self-control, are typically affectively laden. Would this not imply that such temptations should wield greater influence in abstract mindsets? Not necessarily. Long-term goals, those desired end-states that people exercise self-control in order to attain, are affective themselves (see Ferguson, 2007). For example, in Fujita et al.'s (2006) Study 1, those in an abstract

mindset delayed a small immediate reward in order to later attain a large more desirable award. Those in an abstract mindset did not neglect affect—they were in fact more motivated to attain the more-positive delayed reward. Successful self-control does not demand that one ignore affect, but that one place greater value on ultimate goals and recognize that temptations thwart such hoped-for states. In fact, Fujita et al. (2006) also found that those in an abstract mindset reported more negative attitudes toward temptations that would serve as impediments to goal progress. This demonstrates that the mere enhancement of affect does not undermine self-control. If impediments are viewed more negatively in the context of goal pursuit, a mindset that enhances these (negative) affective reactions should (and does) aid in self-control.

Finally, readers may notice connections between the present work and Förster and Dannenberg' (2010) GLOMO^{SYS} account. GLOMO^{SYS} posits two distinct processing systems—global and local—that guide both perceptual and conceptual processing. For example, activation of the global system leads people both to prefer abstract representations of behavior (using the measure used in Study 1a) and to process visual images with a focus on abstract, global features versus concrete, local ones (Liberman & Förster, 2009). In an attempt to identify what best differentiates the elicitors and goals of the two processing systems, Förster and Dannenberg (2010) note the global system is relied upon in an attempt to understand or make meaning of stimuli. The valence of a stimulus is a central property key to understanding the relevance of a stimulus. Thus, although GLOMO^{SYS} does not directly predict that abstract mindsets promote sensitivity to affect, it supports this prediction indirectly through its connection

of global processing with understanding meaning. The applicability of GLOMO^{SYS} to our results could be further tested by assessing whether global and local *perceptual* primes—not merely the conceptual primes used here—produce similar sensitivity to affect.

Conclusion

This research reflects an initial effort to bridge construal and affect. In so doing, we have emphasized the interdependence of so-called affective and cognitive processing. We believe it is fruitful, as a general research strategy, to use mindset manipulations not merely as an experimental tool to alter the construal of specific stimuli, but as a way to examine more general properties of abstract or concrete thought.

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Table 1. Regression Analyses predicting grams of chocolate candies eaten (Study 3).

	ß	*t*	*p*
Mindset (-1 = abstract, +1 = concrete)	-.11	1.46	.15
Candy Attitudes	.11	1.46	.15
Abstract mindset	.26	2.46	.02
Concrete mindset	-.02	.19	.85
Candy Attitudes X Mindset	-.13	1.79	.07
Food Attitudes	.11	1.52	.13
Food Attitudes X Mindset	.06	.81	.42
Eating Restraint	-.07	.94	.35

Note. The two subheadings under Candy Attitudes—Abstract mindset and Concrete mindset—refer to the independent predictive power of Candy Attitudes on consumption for those in an abstract versus concrete mindset.

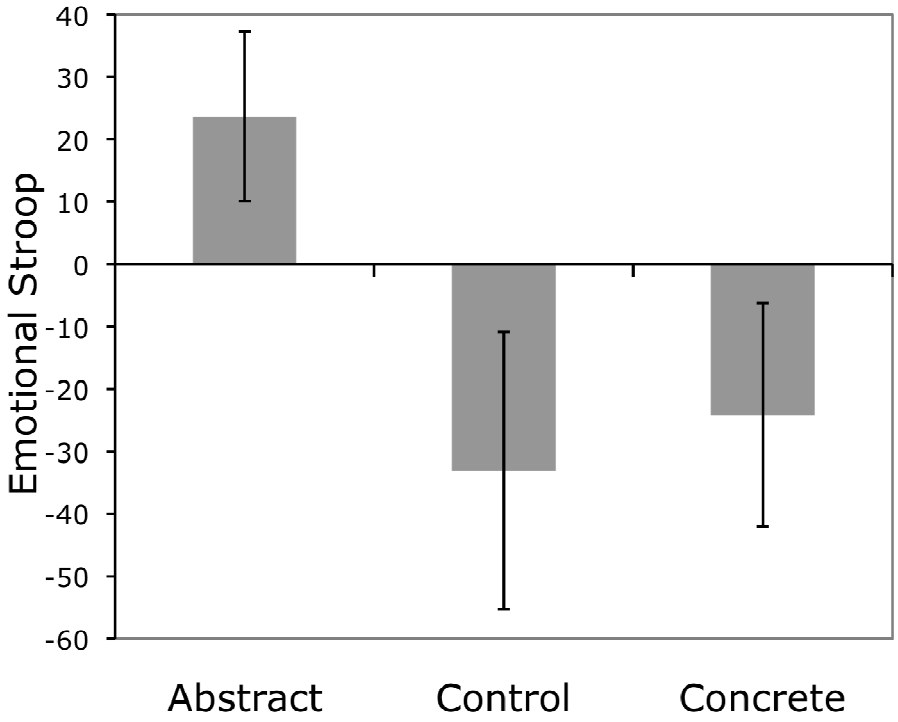

Figure 1. Emotional Stroop effect by mindset condition (Study 1b). Note: The depicted values are the average response latencies to affective trials minus the average response latencies to neutral trials.

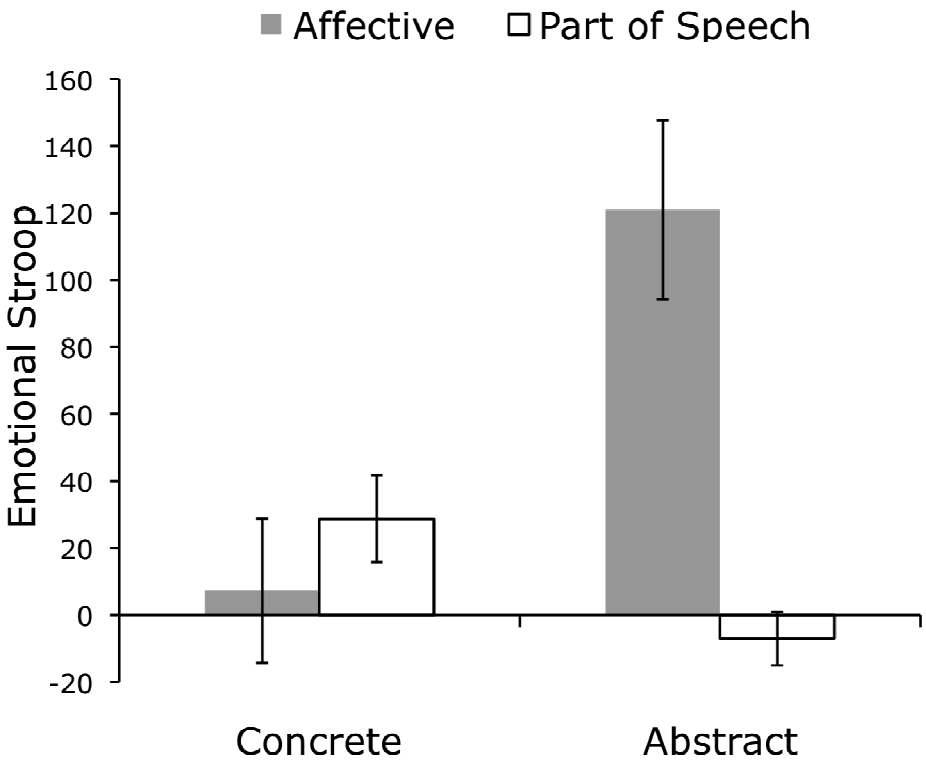

Figure 2. Emotional Stroop effect by mindset condition and target construal priming. (Study 1c). Note: The depicted values are the average response latencies to affective trials minus the average response latencies to neutral trials.

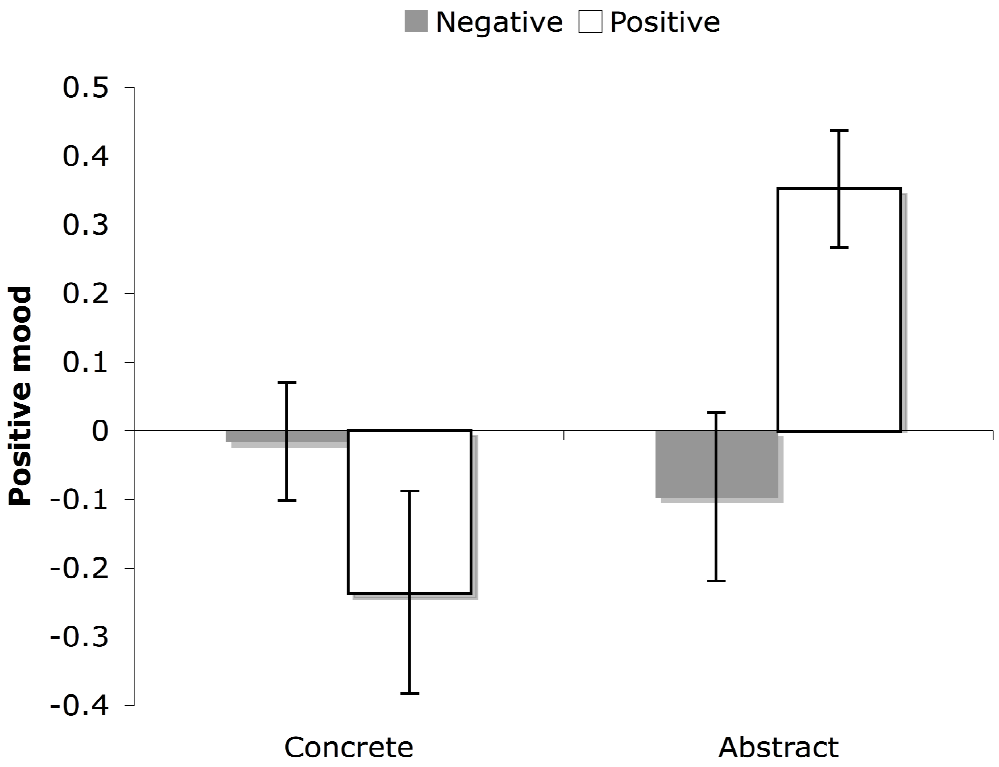

Figure 3. Self-reported positive mood by mindset condition and priming valence. (Study 2).

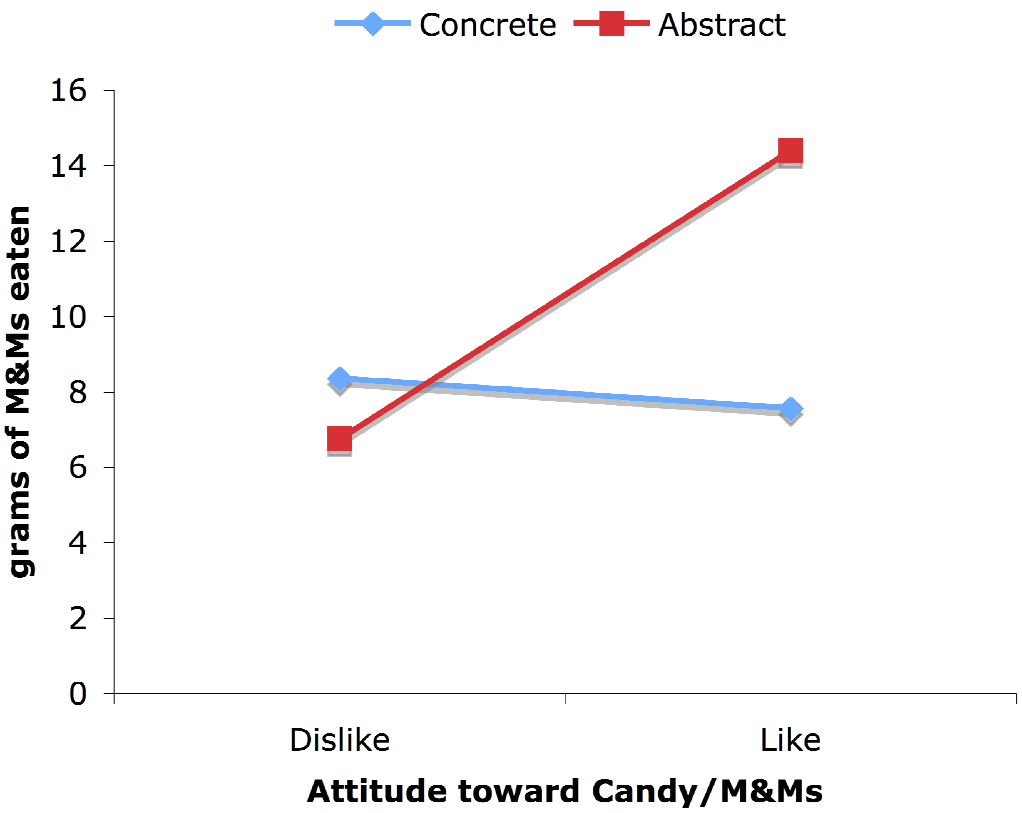

Figure 4. Average number of grams of chocolate candy consumed as a function of mindset condition and attitudes toward candies. (Study 3). Note: Means are plotted one standard deviation above and below mean liking for the candies.