Immersion Versus Transcendence: How Pictures and Words Impact Evaluative Associations Assessed by the Implicit Association Test

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Abstract

Research indicates that words activate high-level construal (processing that highlights central, goal-relevant features of events) whereas pictures activate low-level construal (processing that highlights idiosyncratic, peripheral features). We examine how these differences between words and pictures impact evaluative associations. Research has demonstrated that high-level relative to low-level construal promotes evaluative associations that enhance self-control, promoting associations that link smaller proximal rewards (temptations) with negativity and larger-distal rewards (goals) with positivity. Examining dieting as a self-control conflict, we find that words promote sensitivity to goal-relevant dimension of stimuli (i.e., health) while pictures promote sensitivity to temptation-relevant dimension of stimuli (i.e., taste) among those concerned with dieting in a single-category implicit association test (SC-IAT). An additional study finds that changing the presentation format of the IAT from pictures to words increases the tendency to associate temptations (i.e., desserts) with negativity among those concerned with dieting. Theoretical, methodological, and practical implications of these findings are discussed.

Keywords

picture versus words, verbal versus visual processing, construal level, evaluative associations

The adage "a picture is worth a thousand words" implies that pictures are richer, more effective, and convey more information than words do. We accept that pictures and words function differently in communication, but challenge the idea that pictures are necessarily better or more effective than words. Previous research has found that whereas pictures immerse people into the specifics of events, words promote transcendence from them (e.g., Amit, Algom, & Trope, 2009a). In this article, we examine the implications of such differences in processing on people's evaluative associations—the ease with which people associate objects with positivity and negativity—in the context of a self-control conflict and discuss some of the theoretical, methodological, and practical implications.

On How Words Transcend and Pictures Immerse

Research on differences between pictures and words has largely focused on how pictures are more emotionally evocative than words (e.g., De Houwer & Hermans, 1994; Holmes & Matthews, 2005; Kensinger & Schacter, 2006). This difference in emotionality can have important implications for how people think about and evaluate objects and events. The tripartite model of attitudes, for example, suggests that attitudes are composed of affective, cognitive, and behavioral components, which need not be consistent (e.g., Breckler, 1984; Ostrom, 1969). When these components are inconsistent, the same object may be evaluated differently depending on which component is highlighted. For example, people may evaluate flu shots positively on a cognitive dimension (e.g., they promote health), but negatively on an affective dimension (e.g., they can be painful). Highlighting the affective rather than cognitive dimension should promote more negative evaluations of flu shots. Thus, to the extent that pictures relative to words promote greater affective processing of stimuli, they should promote more negative evaluations of inoculation (Breckler & Wiggins, 1989).

Pictures and words, however, can differ on dimensions other than emotionality. Evidence from construal level theory (CLT)

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suggests that pictures and words vary in level of construal (Amit, Algom, Trope, & Liberman, 2009b). Central to CLT is the notion of psychological distance—removal of an event from direct experience (e.g., Trope & Liberman, 2010). Direct experience provides information about the specific, incidental features of objects that render them unique from similar objects (low-level construal). This attunement to idiosyncratic detail promotes immersion into the immediate context, allowing one to tailor affective, cognitive, and behavioral responses to the specific demands of the here and now. When objects are removed from direct experience, detailed particulars become increasingly unreliable and unavailable. Lacking such information, people instead represent objects by their more essential features common across multiple instances of the object (high-level construal). Orienting around essential invariances enables transcendence, allowing one to consider remote content not immediately apparent in the here and now.

There are many parallels between pictures versus words and low-level versus high-level construal, respectively. Pictures more closely capture the direct experience of objects—they physically resemble the objects that they represent, and highlight many of the specific, idiosyncratic features that distinguish a given stimulus from similar others—a representational process akin to low-level construal. Words, by contrast, do not physically resemble the objects that they represent, and instead highlight the categorical features of a stimulus that are invariant across instances—a representational process akin to high-level construal. Indeed, as CLT predicts, people associate pictures and words with psychological proximity and distance, respectively (e.g., Amit et al., 2009a; Amit, Wakslak, & Trope, 2013). For example, participants were faster to identify objects in pictorial form when they were presented in what appeared to be a spatially proximal location and in verbal form when they were presented in what appeared to be a spatially distant location (Amit et al., 2009a). Research has further shown that pictures facilitate low-level construal whereas words facilitate high-level construal. For example, participants formed fewer yet broader categories when the to-be-sorted objects were presented as words than when they were presented as pictures, suggesting high-level construal (Rim, Amit, Fujita, Trope, Halbeisen, & Algom, in press). Collectively, this suggests that whereas pictures promote immersion, words promote transcendence.

In the present studies, we examine the consequences of these differences in construal level between pictures and words. Research suggests that construal level is particularly important in self-control decision making (e.g., Fujita, 2008; Fujita & Carnevale, 2012)—when the availability of proximal rewards threatens the attainment of more valued yet distal rewards (e.g., Ainslie, 1975; Fujita, 2011; Mischel, Shoda, & Rodriguez, 1989). The dual-motive nature of self-control conflicts (proximal vs. distal rewards) produces objects that can be multiply categorized along two dimensions. For example, a dieter might categorize a donut as a tasty treat along the dimension of proximal, taste rewards but as a diet-buster along the dimension of distal, weight-loss rewards.

Whereas the immersion of low-level construal undermines self-control by promoting sensitivity to proximal rewards (e.g., the donut's flavor), the transcendence of high-level construal promotes self-control by highlighting the distal, goal-relevant implications of present choices (e.g., weight loss; Fujita & Han, 2009; Fujita, Trope, Liberman, & Levin-Sagi, 2006).

We specifically focus on people's evaluative associations—the ease with which people associate objects with positivity and negativity. Evaluative associations are an important component of attitude formation and activation and are critical for understanding how people orient toward various objects, including those that evoke self-control conflict (e.g., Fazio & Olson, 2003; Greenwald, McGhee, & Schwartz, 1998). Indeed, research indicates that inducing high-level relative to low-level construal among those concerned about weight loss enhances the ease of associating fattening versus healthful foods with negativity and positivity, respectively (Fujita & Han, 2009). The sensitivity of people's evaluative associations to changes in construal level makes self-control conflicts the ideal context in which to examine picture–word differences because pictures and words should activate very different evaluative associations. Presentation format, picture versus word, should shift the construal level, which in turn will change the salient category dimension. This should reduce the ambiguity of the self-control conflict by shifting categorization toward one category over another. Highlighting one category dimension over another has a critical impact on evaluative associations because the proximal versus distal rewards available in self-control conflicts generally point in different evaluative connotation directions (i.e., a donut is good now because it tastes good, but bad for later because it is fattening). Specifically, pictures should promote low-level construal, facilitating evaluative associations that undermine self-control, whereas words should promote high-level construal, facilitating evaluative associations that promote self-control.

Beyond theory, this research also has important practical and methodological implications. For example, understanding how presenting the same message pictorially or verbally impacts people's evaluations may inform more effective communication. Similarly, the impact of presenting stimuli as pictures or words on participants' responses is a critical methodological concern for researchers.

Studies 1a and 1b first tested the proposition the words versus pictures sensitize people to different category dimensions of stimuli. Participants completed a categorization task with stimuli relevant to the self-control conflict of dieting (vegetables and desserts), which were presented as words versus pictures. We predicted that among the dieters, words relative to pictures would enhance sensitivity to the goal-consistent weight-loss dimension of these stimuli (Study 1a), and pictures relative to words would enhance sensitivity to the goal-undermining taste dimension (Study 1b).

A third experiment then examined the consequences of these shifts in categorization for evaluation. Specifically, we used the Implicit Association Test (IAT; Greenwald et al., 1998) to assess evaluative associations between
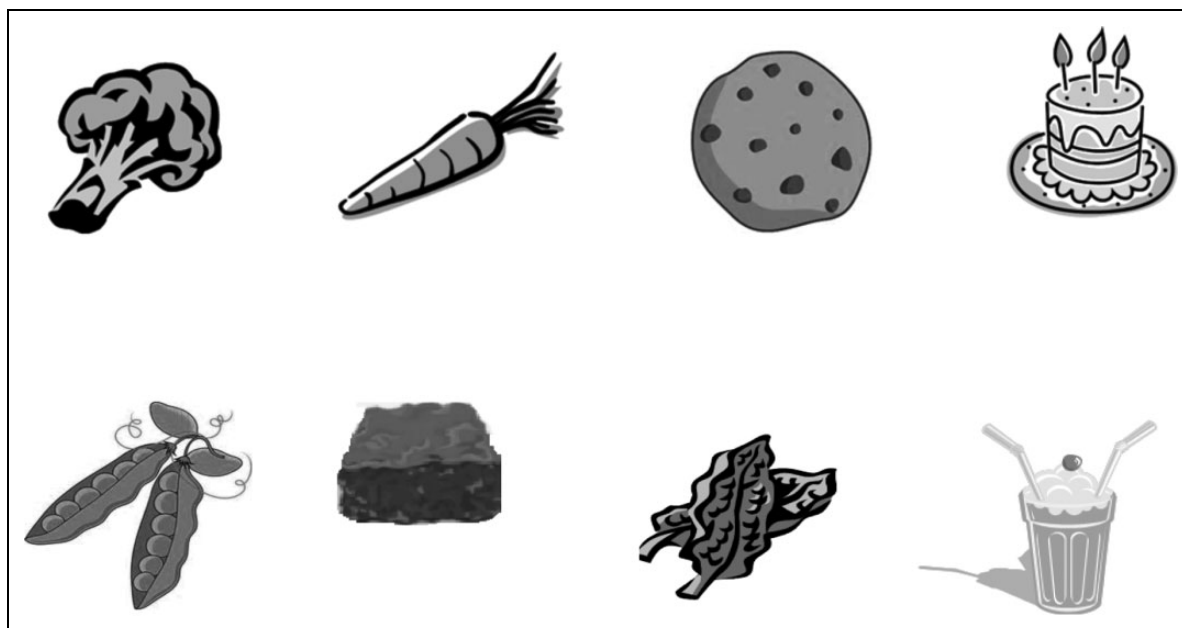
Figure 1. Stimuli used in picture version of implicit association test (IAT).

goal-undermining versus goal-consistent objects (presented between-subjects as pictures vs. words) and positivity versus negativity. We selected an implicit, rather than an explicit measure, of associations because explicit measures increase the possibility that participants might effortfully override the explicit expression of an unwanted association (e.g., that unhealthy foods are good), which is a mechanism distinct from the one that we hypothesize from our theoretical framework. We predicted that among dieters, words relative to pictures would promote ease of associating healthy versus unhealthy foods with positivity versus negativity, respectively.

Studies 1a and 1b

Overview

Self-control relevant stimuli are multiply categorizable along dimensions that highlight short-term and long-term rewards (i.e., tastiness and healthiness in the case of foods; Young & Fazio, 2013). Therefore, we expected individuals would be more sensitive to the distal goal-relevant dimensions of stimuli when those stimuli are presented as words rather than pictures, but be sensitive to the temptation-relevant dimension of stimuli when they are presented as pictures rather than words. To test this hypothesis, we presented participants with single-category implicit association tests (SC-IATs) in Studies 1a and 1b. The SC-IAT assesses the degree to which pairing a single other category with another category dimension facilitates categorization of stimuli (Karpinski & Steinman, 2006). The versions that we implemented assessed to what degree words versus pictures of vegetables and desserts facilitated categorizing stimuli on the dimension of weight loss (Study 1a) and tastiness (Study 1b). We selected vegetables and desserts as the target stimuli because these objects are relevant to self-control conflicts in

the dieting domain. We predicted that presenting stimuli as words rather than pictures to dieters would enhance sensitivity to the weight-loss dimension of the stimuli, thereby facilitating performance when vegetables were paired with weight loss, whereas presenting stimuli as pictures should enhance sensitivity to the tastiness dimension, thereby facilitating performance when desserts were paired with tastiness. We expected this effect to be less apparent among non-dieters, because healthy and unhealthy foods are less multiply categorizable for those who do not have a distal weight-loss goal.

Method

Participants. Students at the Ohio State University participated in both studies in exchange for partial course credit. They were randomly assigned to condition. Two hundred three participated in Study 1a. We excluded data from two participants because of computer malfunctions and from three participants who indicated that they did not understand the directions for the SC-IAT, leaving a sample of 198 (111 male; 87 female). One hundred seventy-eight students participated in Study 1b (61 male, 117 female).

Stimuli selection. Because it was crucial to keep level of emotionality constant across the picture and word conditions, emotionally impoverished pictures of food stimuli (vegetables and desserts) were obtained from Microsoft ClipArt in order to minimize the likelihood that the pictures would be more emotionally evocative than the words (Figure 1). We conducted a pilot study to provide evidence for this assertion. Participants ($N = 82$) recruited using Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011) rated the emotionality of various vegetable (Broccoli, Carrot, Peas, and Spinach) and dessert
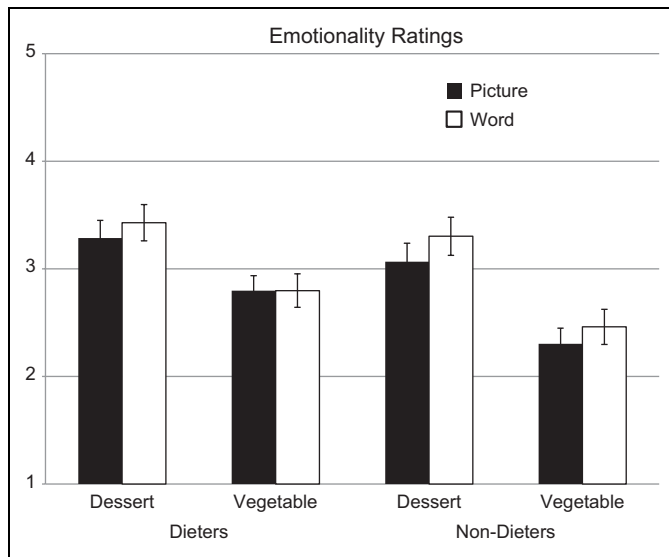
Figure 2. Food type by presentation format by dieting status interaction on ratings of strength of emotional response from 1 (*very weak*) to 5 (*very strong*).

(Brownie, Cake, Cookie, and Milkshake) stimuli using a 5-point Likert-type scale (i.e., How strong of an emotional response do you have to what you see below? with 1 = *very weak*, 5 = *very strong*). Participants rated picture and word stimuli in counterbalanced order, with no participants rating both versions of the same stimulus. Participants also reported their dieting status (Are you now watching what you eat in order to lose weight?). We identified 44 dieters and 38 nondieters. Emotionality ratings were analyzed using a 2 (food type: vegetable vs. dessert) × 2 (presentation format: picture vs. word) × 2 (dieting status: dieters vs. nondieters) repeated measures analysis of variance (ANOVA) with food type and presentation format as within-subjects factors and dieting status as a between-subjects factor. Desserts ($M = 3.27$, $SD = .98$) were generally rated as more emotional than vegetables ($M = 2.58$, $SD = .86$), $F(1, 78) = 27.90$, $p < .001$, $r = .95$ (see Figure 2). Unexpectedly, words ($M = 3.00$, $SD = .81$) were generally rated as marginally more emotional than pictures ($M = 2.87$, $SD = .76$), $F(1, 78) = 3.27$, $p = .08$, $r = .35$. Critically, presentation format did not appear to differentially impact emotional responses to the two types of stimuli, $F(1, 78) = .66$, $p = .42$, $r = .07$, nor did this effect vary by dieting status, three-way $F(1, 78) = .06$, $p = .82$, $r < .01$. These results suggest that the picture versions of the stimuli were no more emotionally evocative than the word versions—perhaps because of the emotionally impoverished nature of the pictures that we selected. Thus, any apparent differences between picture versus word conditions is unlikely to be due to differences in emotionality.

Materials and procedure. We followed procedural recommendations described by Karpinski and Steinman (2006) in implementing the SC-IAT. We presented participants with the

same vegetable and dessert stimuli that were used in our stimuli selection pilot study, displaying them as words in one condition and as pictures in the other. At the same time, participants sorted weight loss–related words (Calories, Diet, Fitness, Lean, Skinny, Thin, and Slim) into the single category of "weight loss" in Study 1a and taste-related words (Sweet, Yummy, Delicious, Decadent, Mouthwatering, Comforting, and Delish) into the single category of "tasty" for Study 1b. The SC-IAT consisted of two stages, which all participants completed in the same order. Each stage consisted of 24 practice trials followed by 72 critical trials. In Stage 1, participants responded to vegetable and weight loss using the "A" key on the left side of the keyboard and to dessert using the "5" key on the right side of the keyboard (on the number pad). To prevent response bias, vegetables, weight loss–related words, and desserts were presented in a 7:7:10 ratio, so that 58% of correct responses used the "A" key and 42% of correct responses used the "5" key. Stage 2 of the SC-IAT was identical to the first, but with key pairings reversed. After completing the SC-IAT, participants indicated their dieting status (Are you now watching what you eat in order to lose weight?). We identified 85 dieters in Study 1a and 69 dieters in Study 1b. Participants were then debriefed and dismissed.

Results and Discussion

We analyzed SC-IAT responses using the *D*-score algorithm with 400 ms incorrect response penalties as recommended by Karpinski and Steinman (2006). In Study 1a, we identified blocks in which vegetable/weight loss were assigned the same response key as compatible (dessert/weight-loss blocks = incompatible). In Study 1b, we identified blocks in which dessert/tasty were assigned to the same response key as compatible (vegetable/tasty = incompatible). Higher *D*-scores indicate greater facility in categorizing stimuli during compatible relative to incompatible blocks. *D*-scores were analyzed using a 2 (dieting status: dieters vs. nondieters) × 2 (IAT format: picture vs. word) ANOVA. There was no main effect of IAT format or dieting status in either study. Analyses of both studies, however, revealed the predicted (albeit marginally significant) interaction between dieting status and IAT format—Study 1a: $F(1, 194) = 2.80$, $p = .10$, $r = .20$; Study 1b: $F(1, 174) = 2.66$, $p = .10$, $r = .20$.

In Study 1a, the word ($M = .14$, $SD = .39$) relative to picture ($M = -.04$, $SD = .44$) version of the SC-IAT enhanced dieters' performance on weight loss/vegetable (vs. weight loss/dessert) pairings, $F(1, 194) = 3.92$, $p = .03$, $r = .27$ (see Figure 3). In Study 1b, just the opposite was true. As predicted, the picture ($M = .22$, $SD = .37$) versus word ($M = .07$, $SD = .41$) version of the SC-IAT enhanced dieters' performance on taste/dessert (vs. taste/vegetable) pairings, $F(1, 174) = 2.93$, $p = .05$, $r = .22$ (see Figure 4). There were no significant differences among nondieters between the picture and word versions of the task in either study—Study 1a: $F(1, 194) = .07$, $p = .79$, $r < .01$; Study 1b: $F(1, 174) = .22$, $p = .76$, $r = .02$.
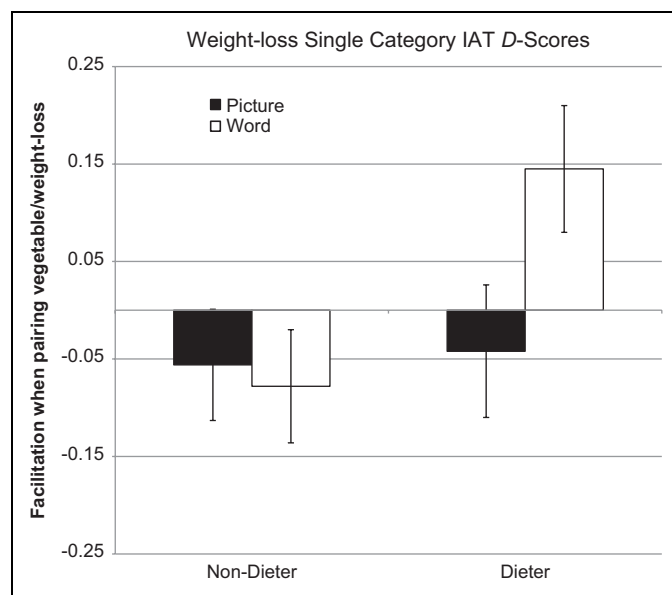
Figure 3. Study 1a—implicit association test (IAT) performance as a function of dieting status and IAT type when vegetable/weight loss are paired.

Figure 4. Study 1b—implicit association test (IAT) performance as a function of dieting status and IAT type when dessert/tasty are paired.

Collectively, these findings are consistent with our proposition that words and pictures change how people construe stimuli in the IAT. As predicted, dieters became more sensitive to the diet-consistent properties of stimuli when they were presented as words rather than pictures and more sensitive to the tempting hedonic properties of stimuli when they were presented as pictures rather than words, consistent with the suggestion that words (pictures) promote high-level (low-level) construal. In Study 2, we examine the influence of such shifts in categorization on evaluative associations of self-control relevant stimuli using the standard IAT. The standard IAT requires participants to sort target stimuli rapidly into one of four categories (on two-category dimensions). Two categories are mapped onto each response key. Typically, one category dimension assesses evaluative attributes while the other category dimension assesses the target category of interest. The logic of the IAT is that faster responding results when associated concepts are mapped onto the same response key. For example, faster responding when "women" and "unpleasant" are mapped onto the same keyboard key (vs. when "women" and "pleasant" share the same response key) indicates greater ease in associating women with negativity (Greenwald, Nosek, & Banaji, 2003).

Study 2

Overview

Participants completed a vegetable–dessert IAT. Participants completed either a word or a picture version of the IAT (manipulated between subjects), with target stimuli (i.e., vegetables and desserts) presented as words or pictures,
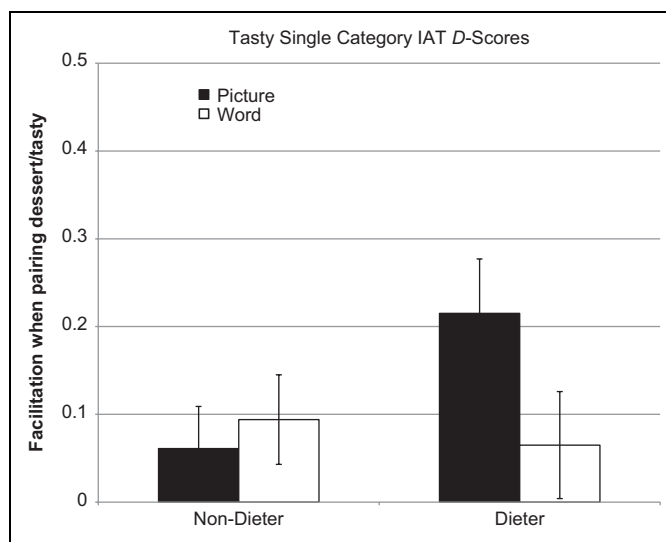
respectively. We hypothesized that pictures and words should lead to different associations with these diet-consistent versus diet-undermining objects, respectively. Specifically, those in the word condition, as compared to the picture condition, should show goal-consistent associations (i.e., associations between vegetables/good and desserts/bad). Critically, we only expected this pattern of associations for those for whom dieting presents a self-control conflict—dieters. We expected this effect to be less apparent among nondieters, because unhealthy foods are less multiply categorizable for those who do not value the distal rewards of weight loss.

Method

Participants. One hundred fifty-four Ohio State University undergraduates completed this study in a laboratory for partial course credit and were randomly assigned to condition. We excluded data from 11 participants because of computer malfunctions, leaving a sample of 143 (60 male, 83 female).

Materials and procedure. All participants completed a vegetable–dessert IAT. Each IAT consisted of seven blocks. Block 1 required categorizing stimuli as vegetables or desserts (materials identical to Studies 1a and 1b). Block 2 required participants to categorize valenced words (e.g., cancer and rainbow) as good or bad. Blocks 3 and 4 constituted a combined critical block in which vegetables were paired with negativity and desserts with positivity (or vice versa, counterbalanced). Block 5 was another practice, with key pairings reversed from Block 1. Blocks 6 and 7 were also critical trials, reversing key pairings of Blocks 3 and 4. Error feedback was provided for incorrect responses. Participants were randomly assigned to the picture or word condition.

After completing the IAT, participants in Study 2 indicated their dieting status as in Studies 1a and 1b. We identified 51
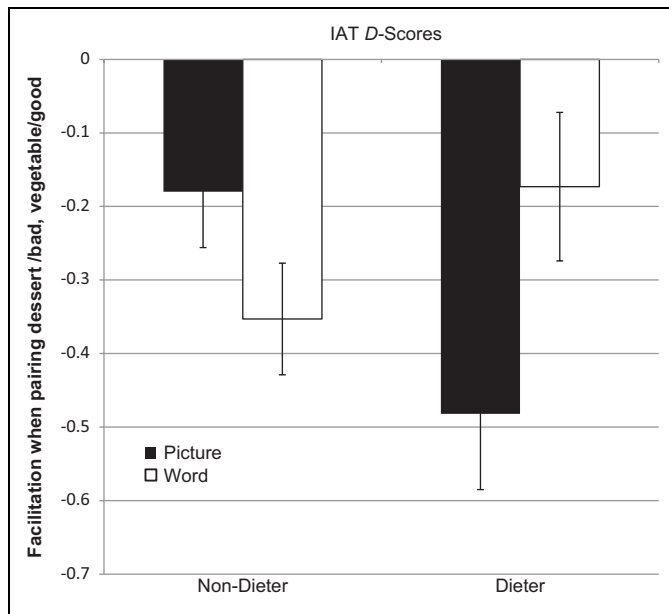
Figure 5. Study 2—implicit association test (IAT) performance as a function of dieting status and IAT type when dessert/bad and vegetable/good are paired.

dieters and 92 nondieters. Participants were then debriefed and dismissed.

Results and Discussion

We analyzed IAT responses using the *D*-score algorithm with a 600-ms penalty for incorrect responses (Greenwald et al., 2003). Higher *D*-scores indicate evaluative associations that promote self-control—namely, greater ease of categorizing stimuli when vegetable/good and dessert/bad response categories were paired (vs. vegetable/bad and dessert/good). Overall, *D*-scores were negative—dessert/good and vegetable/bad response pairings facilitated response times ($M = -.29$, $SD = .52$), $t(143) = 6.58$, $p < .001$, $r = .48$. To test the impact of dieting status and IAT format on moderating this effect, we analyzed *D*-scores using a 2 (dieting status: dieters vs. nondieters) $\times$ 2 (IAT format: picture vs. word) ANOVA. As predicted, there was a significant dieting status by IAT format interaction, $F(1, 142) = 7.22$, $p = .008$, $r = .52$ (see Figure 5). Specific comparisons revealed that among dieters, completing the word ($M = -.17$, $SD = .57$) relative to the picture ($M = -.48$, $SD = .49$) version of the IAT facilitated performance when dessert/bad (and vegetable/good) were paired, $F(1, 139) = 4.63$, $p = .02$, $r = .37$. Among nondieters, word ($M = -.35$, $SD = .37$) and picture versions of the IAT ($M = -.18$, $SD = .61$), if anything, produced the opposite pattern of results, with words impeding performance when dessert/bad and vegetable/good categories were paired, $F(1, 139) = 2.59$, $p = .07$, $r = .21$. These results thus suggest that presenting stimuli as words versus pictures not only changes people's sensitivity to different category dimensions (in this case, weight loss and taste, respectively), but can also

facilitate associating distal goal (vs. proximal goal) stimuli with positivity.

General Discussion

These experiments examined how pictures and words impact evaluative associations in the context of self-control. Studies 1a and 1b provided evidence that words relative to pictures changed how dieters construe food stimuli. Words were more likely than pictures to enhance dieters' sensitivity to the diet-relevant dimension of food stimuli whereas pictures were more likely than words to enhance dieters' sensitivity to the hedonic-relevant dimension of the same stimuli. Study 2 revealed that words relative to pictures reduced the ease of associating desserts (relative to vegetables) with positivity among the dieters in our sample. These studies are consistent with our proposition that words versus pictures promote high-level versus low-level construal, respectively. This, in turn, can impact how people evaluate objects and events, particularly when stimuli are relevant to self-control conflicts, a domain in which evaluative associations are construal-dependent. Whereas words promote evaluative associations that should promote distal goals by enhancing sensitivity to those features, pictures promote evaluative associations that should promote more proximal, goal-undermining temptations by enhancing sensitivity to hedonism-relevant stimulus features.

These findings have a number of important theoretical, methodological, and practical implications. Theoretically, they contribute to a growing literature highlighting the relationship between media (words vs. pictures) and level of construal (Amit et al., 2009a; Amit et al., 2013; Rim et al., in press). Whereas past research has focused on words' and pictures' associations with psychological distance (Amit et al., 2009a) and construal level (Rim et al., in press), this work is among the first to examine the implications of these associations for evaluation (see also Amit & Greene, 2012). That words and pictures can promote different construal levels is important to consider, given past research documenting how the two media differ in emotionality (e.g., De Houwer & Hermans, 1994; Holmes & Matthews, 2005; Kensinger & Schacter, 2006).

It may be tempting to suggest that low-level construal is more emotional than high-level construal. CLT, however, suggests that the emotional experiences people have depend on the high-level and low-level features of the event. Some emotions may represent acute responses to the unique, idiosyncratic features of the here and now, whereas other emotions may result from understanding the event in a broader context (see also Libby & Eibach, 2011). Whereas low-level construal is associated with the concrete feeling of lust, for example, high-level construal is associated with the more abstract feeling of love (e.g., Epstude & Förster, 2011). Similarly, whereas low-level construal is associated with primary emotions such as happiness, high-level construal is associated with secondary self-reflective emotions such as pride (e.g., Eyal & Fishbach, 2010). The critical point is that high-level and low-level construal may not differ on degree of emotionality;

rather, they may differ on the type of emotions experienced. One might even suggest a distinction between "immersive" and "transcendent" emotions that may be induced via pictures and words, respectively, although this speculation awaits empirical support.

The distinction between emotionality and construal level is further supported by our stimuli selection pilot data, which found that pictures used in our three experiments were no more emotionally evocative than the words. Instead, Studies 1a and 1b demonstrated that words and pictures changed dieters' sensitivity to the diet and taste-relevant (i.e., goal and temptation-relevant) dimensions of target stimuli. Together, this suggests that words and pictures can change the construal of objects without necessarily changing the level of emotionality. We hasten to add, however, that with most stimuli, emotionality and construal level are likely confounded. We are not attempting to repudiate past work on the emotional differences between words and pictures; rather, we highlight an additional dimension (i.e., construal level) that may produce effects that are independent of emotionality.

Methodologically, this work suggests that the decision whether to use word or picture stimuli to assess evaluations may influence participants' responses. To the extent that any evaluation of interest is construal-dependent, the use of word versus picture stimuli may impact participants' apparent evaluations, and thus the conclusions researchers draw from such data. This work suggests that these decisions require nuanced consideration.

Our findings provide an interesting contrast to previous work comparing the use of faces (pictures) versus names (words) as stimuli in the IAT (e.g., Dasgupta, McGhee, Greenwald, & Banaji, 2000; Foroni & Bel-Bahar, 2010). For example, Foroni and Bel-Bahar (2010) report that the use of pictures of Black versus White faces as stimuli rather than prototypical names (Tyrone vs. Brandon) produces smaller apparent prejudice. The precise mechanisms for these differences is yet unknown, although some have suggested differences in processing fluency as a possibility (e.g., Dasgupta et al., 2000; Foroni & Bel-Bahar, 2010). While the findings from Study 2 echo this pattern among nondieters (e.g., words vs. pictures enhanced IAT effects), this pattern reversed among dieters (e.g., words vs. pictures reduced IAT effects). These differences suggest that different mechanisms may underlie comparative picture–word IATs that involve self-control conflicts versus those that do not. Research has yet to investigate the interplay between motivational (i.e., goals) and cognitive factors (i.e., construal level) as potential mechanisms, as this work does. Research integrating the present work with Race IAT findings is currently ongoing in our lab and may hinge on whether people perceive completing the Race IATs as a self-control conflict (i.e., a trade-off between proximal vs. distal rewards; e.g., Ainslie, 1975; Fujita, 2011; Mischel et al., 1989).

We might note an additional difference between name-face IATs and this work: namely, the correspondence between word and picture stimuli. In our studies, word and picture stimuli referred to the same objects. By contrast, in name–face IATs, name and face stimuli do not necessarily correspond to the same individuals. This methodological difference may introduce mechanisms that are distinct from the construal-based mechanism that we document in this article.

Future research should examine whether these findings are specific to the IAT. Although the IAT is a popularly used measure of evaluative associations, it is also unique in that it requires participants to make explicit categorical judgments. Other measures, such as evaluative priming (e.g., Fazio, Jackson, Dunton, & Williams, 1995) and the affective misattribution procedure (e.g., Payne, Cheng, Govorun, & Stewart, 2005), do not require such categorization. Future research might test whether picture versus word stimuli promote similar effects when using an alternative assessment of evaluative associations.

Finally, this research has a number of practical implications. Evaluative associations play an important role in the formation and activation of attitudes (e.g., Fazio & Olson, 2003; Greenwald et al., 1998). Those looking to create new attitudes or change existing attitudes may wish to be more sensitive to the impact of pictures and words on how people process information. For example, marketers may want to market vice products that appeal to our momentary desires (e.g., chocolate) visually as pictures, yet market virtuous products that require delayed gratification (e.g., savings accounts) verbally as words. Public health officials may likewise want to change the presentation format of their health advocacy campaigns, transmitting information about healthy behaviors in words rather than pictures, particularly if those healthy behaviors involve a long-term goal at the expense of short-term unpleasantness. The use of pictures versus words may also be a potent tool to "nudge" people toward more normative decisions (Thaler & Sunstein, 2008). For example, public health advocates may be able to increase healthy eating choices by presenting food temptations as words rather than pictures on menus. We might observe that policies adopted by the U.S. Food and Drug Administration to control cigarette smoking embrace the opposite strategy, imposing graphic warning labels on cigarette packaging (U.S. Food and Drug Administration, 2013). Pictures, especially graphic ones, solicit more attention than words, but this research suggests that word may be more effective in antitobacco campaigns when controlling for attention. With this in mind, we encourage future research adopting a construal level perspective to examine what impact words and pictures may have on evaluative processes beyond evaluative associations, and with what practical consequences for attitude formation and change.

Conclusion

Although much has been written about the power of pictures over words, we propose that the transcendent properties of words (as compared to the immersive qualities of pictures) lead to evaluative associations that are more consistent with distal goals in the context of self-control conflicts. By appreciating the differences in processing that these two media evoke, we might ultimately better understand the function of words and

pictures in human interaction. We encourage and look forward to future research along these lines.

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