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Six studies examine the influence of positive affect on self-control in intertemporal choice (consumers' willingness to wait for desired rewards) and the cognitive processes underlying this effect. Two studies measure participants' levels of thinking in two different ways, showing that positive affect can promote forward-looking, high-level thinking. Two studies using a delay-of-gratification paradigm demonstrate this forward-looking thinking and show it to be a mindful process. Participants in positive (vs. neutral) affect were more likely to choose a larger mail-in rebate over a smaller instant rebate when the reward differences were moderate (but not when they were small). Two studies demonstrate the impact of positive affect on intertemporal preference in another way, showing that participants in positive affect do not discount the value of delayed outcomes as much as people in neutral affect do (decreased present bias). Together, the results indicate that positive affect promotes cognitive flexibility and fosters a higher level of thinking and a more future-oriented time perspective, without obscuring practical considerations and other needed detail, including context and opportunity costs, when evaluating intertemporal options.

*Keywords:* intertemporal choice, self-control, positive affect, cognitive flexibility, construal level, action identification, time perspective

## Positive Affect, Intertemporal Choice, and Levels of Thinking: Increasing Consumers' Willingness to Wait

Consumers often face intertemporal choice situations, which involve timing of receipt of goods or services and changes in value over time. Some may involve a trade-off between taking an immediate smaller gain and taking a delayed larger gain. For example, in some cases, consumers can get a small amount of money back through an instant rebate or a larger amount of money back through a mail-in rebate. Other intertemporal choice situations involve the tendency for items to lose subjective value if they are delayed (termed "present bias"). The basic principles underlying the effects we study here apply to many kinds of self-control phenomena, but in this article, we focus primarily on self-control in intertemporal choices: increase in willingness to wait and reduction of present bias.

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Understanding consumers' preferences for timing of receipt of products and ways to reduce impulsivity and increase self-control have been of great interest to many researchers. According to prior research, the way people think about an action or an object can increase or decrease self-control. For example, when people think about an action at a higher level—that is, in terms of its consequences and implications—their self-control is enhanced (Fujita et al. 2006; Vallacher and Wegner 1989). In addition, research has shown that focusing on nonconsummatory aspects of tempting stimuli (vs. thinking about tempting, "hot" aspects) can increase delay-of-gratification behavior in children (e.g., Mischel and Baker 1975; Mischel, Shoda, and Rodriguez 1989). This stream of research suggests that self-control can be enhanced through cognitive processes that involve ways of thinking about the situation and options.

Recent research on affect has suggested that mild, everyday positive affect can also enhance self-control. For example, researchers have found that people in a positive state

are more likely to forgo otherwise preferred secondary interests to accomplish a goal (e.g., Gervy, Igou, and Trope 2005; Isen and Reeve 2005; for discussion, see Isen 2007). Research using a depletion paradigm (Tice et al. 2007) has shown that positive affect enhances self-regulation by fostering adoption of an appropriate standard (e.g., Wan and Sternthal 2008). In addition, research has shown that, when a goal is relevant to a person, positive affect decreases goal neglect, the tendency to lose focus on one's primary goal (e.g., Kazen and Kuhl 2005). Together, these lines of work suggest that positive affect can enhance self-control by increasing people's ability to monitor and maintain focus on their chosen goals and standards.

In the consumer domain, research on emotion and self-control has primarily focused on the role of visceral ("hot") factors in impulsive decision making. This literature stream suggests that viscerally stimulating factors lead people to be more shortsighted, present oriented, and impatient (e.g., Li 2008; Loewenstein 1996). However, the role of mild positive affect—which, as noted previously, enhances self-control—warrants further investigation in the consumer domain.

In the current research, we investigate the influence of mild positive affect on self-control in intertemporal choice situations using delay-of-gratification and temporal discounting paradigms that assess change in value with time delay. In addition, we examine some possible cognitive processes that may play a role in such situations. Specifically, we propose that because people in positive affect are cognitively more flexible, and thus better able to take a more comprehensive view of the intertemporal choice situation (i.e., to consider both short- and long-term gains rather than only immediate gains), they are more willing to wait for a better reward.

In the following sections, we introduce the concept of present bias, which bears on the issue of lack of self-control in intertemporal choice and briefly review the literature pertinent to the role of cognitive processes and positive affect in such self-control problems. Next, we present six studies testing our hypotheses.

### THEORETICAL FRAMEWORK

#### *Present Bias: Loss of Self-Control in Intertemporal Choice*

Psychologists and behavioral economists interpret a person's loss of self-control or impulsive behavior as being related to a tendency to value immediate rewards over delayed future rewards (e.g., O'Donoghue and Rabin 1999). This is known as "present-biased preference" and is also reflected in hyperbolic discounting (e.g., Frederick, Loewenstein, and O'Donoghue 2002). For example, present-biased preference is evidenced when people do not care for a product that will be delivered later as much as for the same product delivered immediately, or when people are willing to pay extra to speed up the delivery of a purchased product. "Hyperbolic discounting" refers to the rate of decline in value, or in the amount needed to compensate for a longer delay compared with a shorter delay, wherein the rate of discounting of the value of the delayed reward is greater for shorter time horizons (i.e., temporally near) than for longer time horizons. For example, in one study, people requested \$15 in compensation for a delay of three months in receipt of a supposedly instant prize but \$45 for a delay of one year

(Thaler 1981). That is, their requested monthly compensation for a short delay was disproportionately greater (\$5) than for a long delay (\$3.75). Thus, although the amount of premium requested increased with a longer proposed delay, the rate of compensation (the amount for each month of delay) decreased as the length of the delay time increased. In short, people tend to discount the value of rewards set to take place in the future and thus show bias toward the immediate.

#### *The Role of Cognitive Processes in Self-Control*

Prior research has suggested that this present-biased preferences, and, more broadly, self-control problems, are closely related to the ways people think about the self-control-requiring situation. In other words, people behave impulsively when they are narrowly focused on only an immediate gain, neglecting the implications that their impulsive action has for the future. For example, according to action identification theory (Vallacher and Wegner 1989) and construal-level theory (Fujita et al. 2006), a person thinking about his or her actions, along with their larger meanings, motives, and implications (high-level thinking), leads to engaging in planned behavior, whereas low-level thinking (not thinking in perspective) leads to responding thoughtlessly only to salient cues in the situation and thus to relatively greater impulsiveness. Consequently, when people are confronted with a situation in which delay of gratification is desirable, thinking of the situation at a high level can be helpful.

Moreover, specifically with regard to intertemporal choices, recent studies have shown that a person's mind-set or level of construal influences these present-biased preferences. For example, research has suggested that conceptualizing a situation at a high level leads to long-term thinking and greater self-control, and thus to decreased preference for immediate over delayed outcomes (Fujita et al. 2006). Furthermore, Malkoc, Zauberger, and Bettman (2007) suggest that a consumer's mind-set influences subsequent decision making, such that people in abstract mind-sets show a decreased level of present bias in consumption timing decisions.

In another relevant line of research, Mischel, Shoda, and Rodriguez (1989) show that the cognitive representation of tempting rewards underlies self-control processes in preschool children. In their experiments, the children who were led to think about tempting stimuli in nonconsummatory ways (e.g., thinking about a marshmallow as a puffy cloud, a white moon) delayed gratification significantly longer than those who were led to focus on consummatory aspects of the stimulus (e.g., sweet taste). That is, thinking of a reward in various ways beyond its tempting aspects can promote delay of gratification in children. In short, research suggests that the ability to construe a stimulus or situation flexibly, in multiple ways, plays an important role in self-control.

#### *The Influence of Positive Affect on Cognitive Processes and Self-Control*

It is noteworthy that the affect literature suggests that positive affect has an influence on cognitive processes that is compatible with what we described in the previous section as being conducive to improved self-control—increased cognitive flexibility, resulting in multiple ways of thinking

about stimuli and situations (Fredrickson and Branigan 2005; Isen 2007; Isen, Daubman, and Nowicki 1987; Isen et al. 1985; Staw and Barsade 1993). For example, a series of studies shows that people in positive affect were more likely than those in neutral affect to categorize nontypical exemplars as members of target categories while not losing sight of the typical ways of categorizing the material (Isen and Daubman 1984). This is because positive affect fosters the ability to conceptualize stimuli in multiple ways, and thus those in positive affect are able to perceive relationships among seemingly unrelated exemplars. Furthermore, research has shown that positive affect improves problem solving (e.g., Erez and Isen 2002; Estrada, Isen, and Young 1997) through this flexible and integrative thinking. This also would follow from the dopamine hypothesis, which suggests that positive affect is associated with release of dopamine into frontal regions of the brain that foster the ability to consider multiple ideas and perspectives between them (Ashby, Isen, and Turken 1999).

Regarding self-control, positive affect has been shown to influence the way people understand immediate and future rewards. For example, positive affect enables people to perceive more connection between their effort and outcomes, which increases expectancy motivation and causes more persistence (Erez and Isen 2002). Similarly, positive affect helps people recognize a functional relationship between future outcomes and present situations through flexible thinking (Aspinwall 1998; Isen 2007; Taylor et al. 1998), and thus, people in positive affect are able to see how present situations are linked to possible future outcomes and their own effort. Thus, when there is a trade-off between short-term, immediate rewards and long-term gains, people in positive affect consider the long term in addition to the present and are willing to forgo present enjoyment if appropriate. For example, in Isen and Reeve's (2005) studies, participants in positive affect showed greater intrinsic motivation in working on an enjoyable puzzle, but when there was work to be done, they voluntarily reduced their time on the puzzle to complete the boring work task. In addition, Gervy, Igou, and Trope (2005) show that participants in positive affect were more likely to seek negative feedback than were those in a neutral state, if that feedback was useful for their goal (e.g., self-improvement). In summary, positive affect enhances a person's self-control by facilitating thinking of an action or a situation in perspective, along with the context, his or her goals, and implications for the future.

#### OVERVIEW OF CURRENT STUDIES

On the basis of research showing that positive affect increases self-control through cognitive flexibility, it is reasonable to expect that positive affect will promote self-control in the domain of intertemporal choices as well. In the current research, we propose that, because positive affect enables consumers to think flexibly about more aspects of a situation, including future needs and preferences in addition to present needs, people in positive affect will be more willing to wait for more desirable later outcomes and will show decreased present bias.

First, in Studies 1 and 2, we examine the influence of positive affect on cognitive processes that have been shown to influence self-control in prior research. Specifically, we test the possibility that positive affect can foster forward-

looking, high-level thinking, using the Behavior Identification Form (BIF; Vallacher and Wegner 1989) and the Future Time Perspective scale (Carstensen and Lang 1996). In Study 3, we directly test this forward-looking, high-level thinking using the intertemporal choice paradigm and examining participants' choices between an instant rebate returning a smaller reward and a mail-in rebate returning a larger reward. In Study 4, we further investigate the nature of this high-level thinking promoted by positive affect—specifically, whether it is a heuristic process (e.g., ignoring details and responding only to the amount of money) or an attentive process involving consideration of both immediate and delayed rewards and the practicality and desirability of those rewards. We demonstrate that participants in positive affect are more likely to prefer, and to generate positive thoughts on, the larger delayed reward, but this tendency is also contingent on the larger reward's relative attractiveness compared with the smaller, immediate reward. This effect reflects mindful high-level thinking, not heuristic thinking among people in positive affect. Studies 5 and 6 show the intertemporal preference effects in another way, namely, by examining participants' valuation of products with time delay.

#### STUDY 1: BEHAVIOR IDENTIFICATION

In Study 1, we assessed level of thinking using the BIF (Vallacher and Wegner 1989), which was developed in the context of action identification theory but is also used for measuring the level of construal (e.g., Liberman and Trope 1998). According to action identification theory, any action can be identified at either a low level (in terms of how the action is performed) or a high level (in terms of why the action is being performed, along with a primary goal), and the level of identification is relative and sensitive to contextual or situational cues. The theory suggests that people who think at a high level are less impulsive and more persistent when faced with competing goals than low-level thinkers (Vallacher and Wegner 1987, 1989). Similarly, construal-level theory (Trope and Liberman 2003) suggests that high-level construal leads to greater self-control and a decreased present bias (e.g., Fujita et al. 2006). On the basis of the literature suggesting that positive affect increases cognitive flexibility (e.g., Isen 2007) and extends the scope of thinking (e.g., Fredrickson and Branigan 2005), we predict that positive affect promotes integration of detail and thus fosters the ability to conceptualize a situation at a higher level.

#### Method

Forty-one students (21 in the positive-affect condition) at a large university participated in the experiment in exchange for extra credit toward their course grade. Participants were randomly assigned to either a positive- or a neutral-affect condition. They were told that they would pretest a set of pictures for future experiments and were then presented with 14 either mildly positive (e.g., flowers, puppies, trees) or neutral (e.g., chairs, windows) slides, which, as a set, had been pretested to be different in affect but equivalent in arousal. The slides were displayed on a computer, and each image advanced automatically after exposure of six seconds. After viewing the whole set, participants indicated, on eight seven-point rating scales that asked about different feelings, how the slides had made them feel. Three of the eight items

were intended to assess positive affect (“positive–negative,” “pleasant–unpleasant,” and “happy–sad”;  $\alpha = .96$ ), and we subsequently combined them to create an index of positive affect.

After finishing the affect-manipulation task, participants completed Vallacher and Wegner's (1989) BIF. It consists of 26 items, each presenting a behavior paired with two alternatives: a low-level and a high-level identification. For example, “making a list” can be identified as either “getting organized” (high level) or “writing things down” (low level). Participants were asked to choose only one of the two alternatives as the meaning of each behavior. The number of high-level identifications constituted a participant's BIF score.

### Results

Compared with participants in the neutral-affect condition, those in the positive-affect condition reported that the pictures made them feel more positive ( $M_{\text{pos}} = 1.43$ ,  $M_{\text{neu}} = 3.05$ ;  $t(39) = 7.15$ ,  $p < .01$ ). A *t*-test showed that the participants in the positive-affect condition more often identified behaviors at a high level ( $M = 16.19$ ,  $SD = 5.02$ ) than did participants in the neutral-affect condition ( $M = 12.85$ ,  $SD = 4.02$ ;  $t(39) = 2.35$ ,  $p < .05$ ).

### STUDY 2: TIME PERSPECTIVE

Study 2 investigates level of thinking in terms of temporal perspective. This approach was based on two streams of research, construal-level theory and socioemotional selectivity theory (e.g., Carstensen 2006). The former suggests that levels of construal are related to temporal perspective, such that thinking of the distant future leads to high-level construal, whereas thinking of the present or near future leads to low-level construal. The latter, socioemotional selectivity theory, indicates that perception of future time plays an important role in motivation, influencing whether people pursue long- or short-term goals. It suggests that people with an expanded (vs. limited) time perspective are more likely to consider the long-term consequences of their choices rather than only the immediate consequences. We propose that because positive affect enables people to consider multiple factors—future as well as present matters—they are more likely to be future oriented than those in neutral affect. To converge experimentally on the construct of high-level thinking, in Study 2, we used the future time perspective scale (Carstensen and Lang 1996) to examine the possibility that people in positive affect are more likely to take a future-oriented time perspective.

### Method

Fifty students (26 in the positive-affect condition) participated in the experiment in exchange for extra credit toward their course grade. We manipulated and confirmed affect the same way as in Study 1. Following the affect manipulation task and check, participants completed the future time perspective questionnaire. The questionnaire consists of ten items (e.g., “I expect that I will set many new goals in the future” [reverse coded], “As I get older I begin to experience time as limited”), anchored on 1 (“strongly agree”) and 7 (“strongly disagree”). We obtained a future time perspective score by averaging participants' ratings on these items.

### Results

As in Study 1, people in the positive-affect condition reported that the slide set made them feel happier ( $M_{\text{pos}} = 1.41$ ,  $M_{\text{neu}} = 3.40$ ;  $t(68) = 8.61$ ,  $p < .01$ ). As we predicted, people in positive affect reported a more future-oriented time perspective ( $M_{\text{pos}} = 5.85$ ,  $SD = .66$ ;  $M_{\text{neu}} = 5.33$ ,  $SD = .73$ ;  $t(68) = 2.68$ ,  $p = .01$ ). This further suggests that people in positive affect are more likely to take future outcomes into consideration.

### STUDY 3: INSTANT VERSUS MAIL-IN REBATE 1

Studies 1 and 2 indicate that positive affect, which has been shown to increase cognitive flexibility, can foster forward-looking, high-level thinking, which itself has been shown to influence self-control. In the following studies, which examine participants' choices and evaluations, we directly test the hypothesis that positive affect increases consumers' willingness to wait for larger rewards and decreases present bias. In Study 3, participants chose between an instant rebate and a mail-in rebate, the latter of which provided a larger amount of money later. We predicted that participants in positive affect would be more likely to choose the mail-in rebate than those in neutral affect when the difference in amount to be gained was at least moderate and up to the point at which the difference in amounts was so great that almost everyone would opt for the larger amount.

### Method

Ninety-five students (42 men and 4 unidentified) participated in the experiment in exchange for extra credit toward their course grade. In this study, we manipulated affect using words. Participants were told that they would complete a set of unrelated short studies. They were then randomly assigned to either a positive- or a neutral-affect condition and began with a word task designed to carry out the affect manipulation. Each participant was given a booklet containing a set of ten positive (e.g., “music,” “fun”) or neutral (e.g., “shelf,” “verb”) words that had been pretested to induce affect and did not differ in other ways. Participants were asked to read each one and write down the first word that came to mind.

After completing the word task, participants received the seemingly unrelated second study titled “Consumer Survey,” which involved a hypothetical purchase. They were told that their favorite model DVD player was now available for the same price at two online stores, but with different promotions, one with an instant rebate and the other with a mail-in rebate. The mail-in rebate, the participants were told, provided a greater amount of money than the instant rebate but would take four to six weeks to be received. Each participant made a choice between the two rebates for five hypothetical choice sets. First, the participant chose between a \$25 instant rebate and a \$35 mail-in rebate. After making the first choice, participants completed the remaining four choice sets, which were on the next page. In each, the amount of instant rebate stayed the same (\$25), but the mail-in rebate was set to be \$30, \$40, \$45, or \$50. This design enabled us to observe the pattern of rebate choice over different sizes of rebate differentials.

### Results

**Manipulation checks.** Two judges who were unaware of the hypothesis and the participants' experimental conditions scored the positivity and unusualness of each word associate provided by participants (yes or no). Prior research has shown that people in positive affect are more likely to produce more positive and more unusual word associations than those in a neutral state (e.g., Isen et al. 1985), and researchers have used such implicit measures previously as manipulation checks (for a discussion, see Isen and Erez 2007). As we expected, participants in the positive-affect condition obtained significantly higher positivity scores ( $M_{\text{pos}} = 2.15$ ,  $M_{\text{neu}} = .05$ ;  $t(46.72) = 15.31$ ,  $p < .001$ ) and unusualness scores ( $M_{\text{pos}} = .49$ ,  $M_{\text{neu}} = .30$ ;  $t(93) = 2.62$ ,  $p = .01$ ) than controls.

**Choice of mail-in rebate.** We performed a chi-square analysis for each of the five choice sets. When the mail-in rebate was worth \$35, the case in which we thought the rebate difference (\$10) would be moderate, there was a marginally significant difference between the affect conditions: In the positive-affect condition, 54.3% of the participants chose the mail-in rebate, and in the neutral-affect condition, 34.7% did ( $\chi^2(1) = 3.72$ ,  $p < .06$ ).

When the mail-in rebate was worth \$40 (a \$15 difference), there was a significant difference between the affect conditions. Specifically, those in the positive condition showed a stronger preference (82.2%) for the mail-in rebate than those in the neutral condition (60.4%;  $\chi^2(1) = 5.36$ ,  $p < .05$ ).

In contrast, when the mail-in rebate was worth \$30 (i.e., when there was only a \$5 rebate difference), a majority of participants, including those in the positive-affect condition, preferred the \$25 instant rebate (80.9%) to the \$30 mail-in

rebate (19.1%). In the positive-affect condition, 26.1% of participants preferred the mail-in rebate, a marginally significantly greater percentage than in the control group (12.5%;  $\chi^2(1) = 2.80$ ,  $p < .10$ ); nonetheless, it is clear that when the difference in rebate amounts was only \$5, the majority (73.9%) of the positive-affect participants preferred the instant rebate, just as control participants did. Only when the mail-in rebate amount was large enough did the positive-affect group prefer the mail-in rebate.

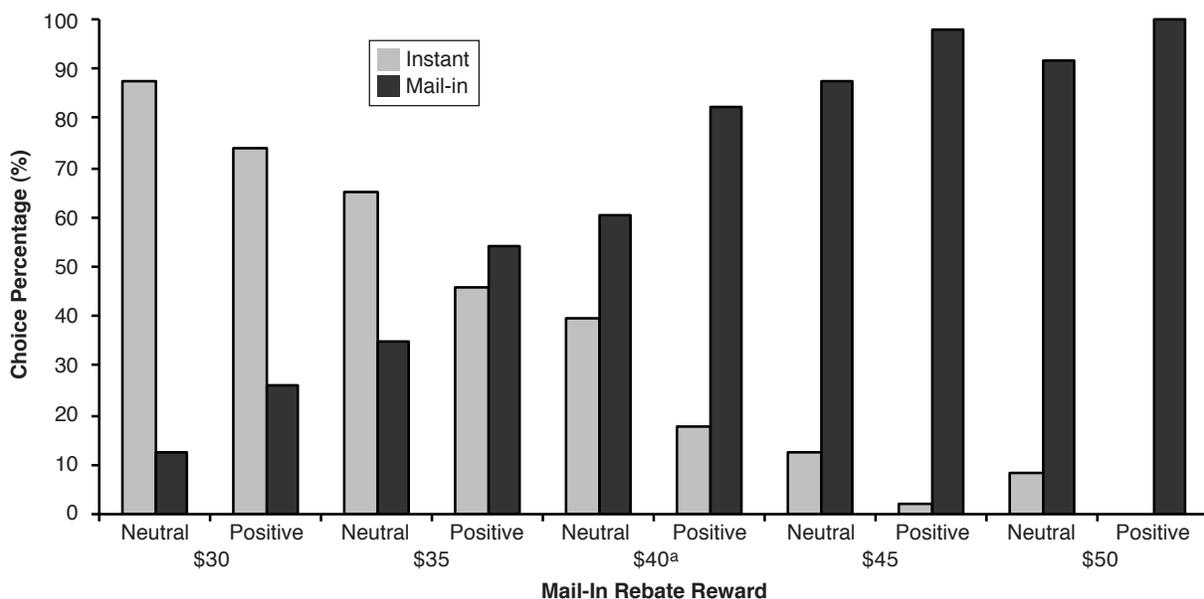
As further demonstration of this point, a repeated-measures logistic regression analysis that compared people's choices for the different choice sets within the positive-affect condition, showed a significant difference between the \$5- and the \$15-differential sets (Wald  $\chi^2(1) = 28.23$ ,  $p < .001$ ). Thus, although overall positive affect increased the tendency to defer gratification in favor of a larger payoff, people in positive affect were significantly less likely to opt for the mail-in rebate when the difference between mail-in and instant rebates was only \$5 than when it was \$15 or more. This difference shows that people in positive affect were paying attention to the details of the situation, not choosing thoughtlessly.

When the mail-in rebate was worth \$45 and \$50, most participants chose it over the instant rebate. Within the affect conditions, 97.8% and 100% of those in the positive-affect condition and 87.5% and 91.8% of those in the neutral-affect condition chose the mail-in rebate (for the \$45 and \$50 mail-in rebates, respectively), and the differences between affect conditions were not statistically significant. Not surprisingly, overall, as the amount of the mail-in rebate increased, preference for it (vs. the instant rebate) also increased (see Figure 1).

When the mail-in rebate was worth \$40, but not for other values, the results also showed a significant gender differ-

Figure 1

STUDY 3: PERCENTAGE OF INSTANT AND MAIL-IN REBATE CHOICES IN POSITIVE- AND NEUTRAL-AFFECT CONDITIONS, OVER INCREASING AMOUNT OF MAIL-IN REBATE



<sup>a</sup>Comparison between positive affect and neutral affect,  $\chi^2(1) = 5.36$ ,  $p < .05$ .

ence: Overall, female participants preferred the mail-in rebate (85.1%) more than male participants did (57.1%) ( $\chi^2(1) = 8.59, p < .01$ ). In general, the genders were evenly balanced between the affect conditions (22 women and 21 men in the positive-affect condition and 25 women and 21 men in the neutral-affect condition; we excluded six cases from this analysis because four people did not report gender, and two people did not make a choice in the \$40 choice set). A logistic regression analysis on the rebate choice, which we conducted to investigate the influence of affect independent of that of gender, revealed that gender was a significant predictor of the mail-in rebate choice (Wald = 8.62,  $p < .01$ ) but that affect, by itself, was still a significant predictor of the rebate choice (Wald = 4.33,  $p < .05$ ): Positive affect still increased the odds of choosing the mail-in rebate (vs. the instant rebate) by a factor of 3.02.

#### STUDY 4: INSTANT VERSUS MAIL-IN REBATE II

The preceding studies demonstrate that positive affect can foster high-level thinking and increase willingness to wait for better, delayed rewards. Study 3 specifically suggests that this choice pattern is not the result of a heuristic process, such as simply following the larger amount. In Study 4, we explore this aspect of the cognitive processes underlying our findings in more detail—that is, whether positive-affect participants' increase in willingness to wait is attributable to heuristic thinking or to flexible, systematic thinking based on consideration of the costs and benefits of waiting and what other processes may be involved.

In this study, we manipulated the amount of the mail-in rebate between subjects, whereas we had manipulated it within subjects in the previous study. Here, we focused on two choice sets: one with a \$30 mail-in rebate (vs. a \$25 instant rebate), for which Study 3 indicated no difference in rebate choice between the affect conditions, and the other with a \$40 mail-in rebate, for which Study 3 indicated a significant difference between the affect conditions. Thus, in Study 4, participants make a choice between a \$25 instant and a \$30 mail-in rebate in one condition, and a \$25 instant and a \$40 mail-in rebate in the other condition. If people in positive affect always choose the larger amount, regardless of the differential between the instant and the mail-in rebates (i.e., use a heuristic process), they will choose the mail-in rebate in both the \$30 and the \$40 conditions. However, we predict that because positive affect facilitates consideration of both the costs and benefits of waiting, they will choose the mail-in rebate more than controls only when the difference is substantial (\$40 condition) and not when it is small (\$30 condition).

We also added a thought-listing questionnaire to observe whether participants' choices are mediated by their thoughts. If people in positive affect adopt a superficial, heuristic process, they will generate fewer thoughts than controls (because they are simply following a cue such as money, and thus their choice does not involve much thought), or they will generate more positive thoughts about the mail-in rebate regardless of the differential between mail-in and instant rebates. We predict that in positive affect, people's choice will be guided by their thinking about the trade-offs between the two options, and thus they will have more positive thoughts than controls about the mail-in rebate when it

is moderately larger than the instant rebate but not when the difference is minimal.

Alternatively, it can be argued that this willingness to wait occurs because positive affect leads people to be more optimistic, and thus to expect that the mail-in rebate will take less time to arrive. In other words, people in positive affect might underestimate the length of the waiting time and thus be more willing to wait. To rule out this possibility, we also asked participants how many weeks they thought it would take to receive the mail-in rebate.

Last, we obtained a measure of the concreteness (vs. abstractness) of the mental representation of the rebates, because previous research has shown that concrete representation of stimuli leads to less self-control (e.g., Malkoc and Zauberman 2006; Trope and Liberman 2003). We did this to determine whether positive affect changes the concreteness of the way options are perceived and whether this change influences the ability to wait.

#### Method

One hundred seventeen college students took part in the experiment. We manipulated and checked affect using words the same way as in Study 3. After the affect-manipulation task, participants were randomly assigned to either a \$30 or a \$40 mail-in rebate condition, and each participant indicated his or her choice between an instant rebate (\$25) and a mail-in rebate (\$30 or \$40, depending on condition) on a choice-preference scale ranging from 1 ("certainly instant") to 9 ("certainly mail-in") and also by a choice measure.

The rebate questionnaire was almost identical to that of Study 3, except for the following: First, the question stated that the mail-in rebate would take "a few weeks" to be processed, whereas in Study 3 the waiting time had been specified as "4 to 6 weeks." Second, after participants made their choices, we asked them what thoughts they had while making the choice. The questionnaire was divided into three sections—instant rebate, mail-in rebate, and other—and participants listed their thoughts under the corresponding category. After the thought-listing task, participants indicated how concrete (vs. abstract) the instant rebate seemed to them and how the mail-in rebate was mentally represented on scales ranging from 1 ("very abstract") to 9 ("very concrete"). They then estimated the number of weeks they thought it would take to receive the rebate.

#### Results

*Manipulation check.* Our manipulation check results were as expected. Participants in the positive-affect condition generated more positive ( $M_{\text{pos}} = 3.04, M_{\text{neu}} = .17$ ;  $t(69.77) = 23.04, p < .001$ ) and unusual ( $M_{\text{pos}} = .27, M_{\text{neu}} = .12$ ;  $t(102.58) = 2.28, p < .05$ ) word associations than those in the neutral-affect condition.

*Choice of mail-in rebate.* As in Study 3, we performed a chi-square analysis for each choice set. When the mail-in rebate amount was \$30 (i.e., only a \$5 rebate difference), the difference between the positive and neutral conditions (25.8% vs. 40.7%) was not significant ( $\chi^2(1) = 1.46, n.s.$ ). However, when the mail-in rebate was worth \$40 (a \$15 difference), the difference between the affect conditions was significant. Specifically, participants in positive affect were more likely to choose the mail-in rebate (78.6%) than those in neutral affect (48.4%;  $\chi^2(1) = 5.73, p < .05$ ). Comparing

the mail-in rebate choice within each affect condition, we find that for positive affect, but not for neutral, the percentage of people who chose the mail-in rebate was significantly greater for the \$40 condition than for the \$30 condition (see Figure 2).

We also conducted a 2 (affect: positive vs. neutral)  $\times$  2 (mail-in rebate amount: \$30 vs. \$40) between-subjects analysis of variance (ANOVA) on the choice preference rating (1 = "certainly instant rebate," and 9 = "certainly mail-in rebate"). As in the chi-square analysis, the results showed a significant interaction between affect and the mail-in rebate amount ( $F(3, 113) = 5.78, p < .05$ ): Positive-affect people showed a stronger preference for the mail-in rebate than controls in the \$40 condition ( $M_{\text{pos}} = 6.57, SD = 2.66$  vs.  $M_{\text{neu}} = 4.87, SD = 2.81; F(1, 113) = 5.19, p < .05$ ) but not in the \$30 condition ( $M_{\text{pos}} = 3.23, SD = 2.85$  vs.  $M_{\text{neu}} = 4.07, SD = 3.13; F(1, 113) = 1.27, n.s.$ ). In other words, as the benefit to waiting increased, the preference for the mail-in rebate significantly increased in the positive-affect condition ( $M_{\$30} = 3.23, M_{\$40} = 6.57; F(1, 113) = 20.10, p < .001$ ) but not in the neutral-affect condition ( $M_{\$30} = 4.07, M_{\$40} = 4.87; F(1, 113) = 1.12, n.s.$ ). A 2 (affect)  $\times$  2 (mail-in rebate amount)  $\times$  2 (gender) ANOVA showed no significant effect of gender or interaction that involved gender.

*Thought listing about intertemporal options.* A 2 (affect: positive vs. neutral)  $\times$  2 (mail-in rebate amount: \$30 vs. \$40) ANOVA showed that there was no significant difference between the four conditions in the number of total thoughts ( $M_{\text{pos-}\$30} = 6.16, M_{\text{pos-}\$40} = 6.54, M_{\text{neu-}\$30} = 5.89, M_{\text{neu-}\$40} = 5.81; n.s.$ ), or in the number of thoughts about each type of rebate ( $M_{\text{instant}} = 2.56, M_{\text{mail-in}} = 3.19, M_{\text{other}} = .37$ ). We further coded thought listings for valence to determine whether affect condition and reward size interacted in producing favorable thoughts about the mail-in rebate. We conducted two 2 (affect: positive vs. neutral)  $\times$  2 (mail-in rebate amount: \$30 vs. \$40)  $\times$  3 (valence of thoughts: positive vs. negative vs. neutral) mixed ANOVAs on the number of thoughts about the instant and mail-in rebates separately, treating affect and rebate amount as between-subject

factors and thought valence as a within-subject factor. First, regarding the instant rebate, there was only a main effect of valence, such that people had more positive thoughts (e.g., "fast," "easy") than negative (e.g., "less money") or neutral thoughts (e.g., "Do I need money right now?") ( $M_{\text{positive}} = 1.92, M_{\text{negative}} = .29, M_{\text{neutral}} = .34; F(2, 112) = 90.59, p < .001$ ). No other effects were significant.

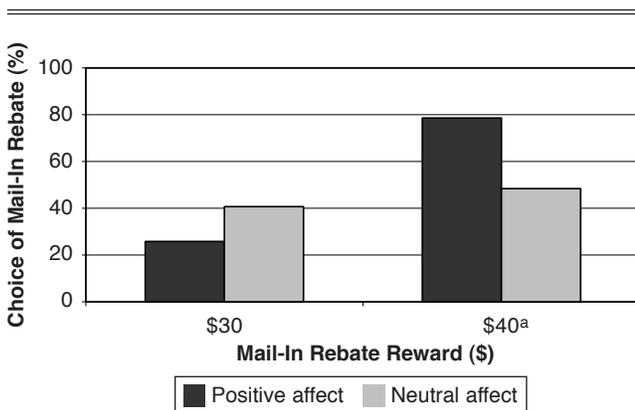
However, for the mail-in rebate, there was a significant three-way interaction of affect, rebate amount, and valence of thoughts ( $F(2, 112) = 3.49, p < .05$ ). Specifically, when the mail-in rebate was \$30, people had more negative thoughts ( $M = 2.02$ ; e.g., "waiting," "takes longer") than positive ( $M = .60$ ; e.g., "more money") or neutral ( $M = .48$ ; e.g., "how many weeks?") thoughts about it, and there were no significant differences between the affect conditions. In contrast, when the mail-in rebate was \$40, the two affect conditions diverged: People in positive affect listed as many positive ( $M = 1.21, SD = .96$ ) as negative thoughts about the mail-in rebate ( $M = 1.50, SD = 1.14; n.s.$ ) but more positive thoughts than the neutral-affect people did ( $M = .45, SD = .57; F(1, 113) = 14.17, p < .001$ ). In contrast, participants in neutral affect listed more negative ( $M = 1.87$ ) than positive ( $M = .45$ ) thoughts about the mail-in rebate ( $F(2, 112) = 10.79, p < .001$ ), as was true in the \$30 condition. In other words, for only those in positive affect, the number of positive thoughts about the mail-in rebate was greater when the value of the mail-in rebate was \$40 than when it was \$30 ( $M_{\$30} = .61, M_{\$40} = 1.21; F(1, 113) = 8.81, p < .01$ ). This did not occur for participants in neutral affect ( $M_{\$30} = .59, M_{\$40} = .45, n.s.$ ; see Figure 3). The number of negative thoughts did not differ between the two affect conditions.

The preceding analyses indicate that the number of positive thoughts on the delayed option may play a key role in the effect of affect on intertemporal choice. Therefore, we conducted a mediation analysis to determine whether positive thoughts about the mail-in rebate mediated the influence of positive affect on the choice preference in the \$40 condition. We regressed participants' choice preference ratings on affect and the number of positive thoughts about the mail-in rebate (POSMail). We found that affect ( $\beta = 1.70, R^2 = .09, p < .05$ ) and POSMail ( $\beta = 1.87, R^2 = .32, p < .001$ ) separately were significant predictors of participants' choice preferences. Positive affect also significantly predicted the number of positive thoughts about the mail-in rebate ( $\beta = .76, R^2 = .20, p = .001$ ). However, when we entered affect and POSMail together as predictor variables in the analysis, affect was no longer significant ( $\beta = .34, p = .63$ ), whereas POSMail was still a significant factor ( $\beta = 1.79, p < .001$ ; Sobel test = 3.04,  $Z = 2.82, p < .01$ ). This finding indicates that the number of positive thoughts about the mail-in rebates mediates the effects of positive affect on preference for the delayed option.

*Concreteness of representation of intertemporal options.* We conducted two 2 (affect: positive vs. neutral)  $\times$  2 (mail-in rebate amount: \$30 vs. \$40) ANOVAs separately: one on the concreteness (vividness, temptingness) of the representation of the instant rebate and one for that of the mail-in rebate. The analysis for the instant rebate revealed a significant main effect of mail-in rebate amount, such that the instant rebate was perceived as more concrete when it was paired with a \$30 mail-in rebate ( $M = 6.91, SD = 1.67$ ) than when with a \$40 mail-in rebate ( $M = 5.88, SD = 2.19; F(1,$

Figure 2

STUDY 4: PERCENTAGE OF MAIL-IN REBATE CHOICE IN POSITIVE- AND NEUTRAL-AFFECT CONDITIONS, FOR \$30- AND \$40-MAIL-IN REBATE CONDITIONS (BETWEEN-SUBJECTS DESIGN)



<sup>a</sup> $\chi^2(1) = 5.73, p < .05$ .

111) = 7.99,  $p < .01$ ). In addition, there was a marginally significant interaction between affect and mail-in rebate amount ( $F(1, 111) = 3.16, p < .08$ ). Specifically, positive-affect people perceived the instant rebate as less concrete when it was contrasted with a \$30 mail-in rebate than a \$40 rebate ( $M_{\$30} = 7.34, M_{\$40} = 5.68; p < .01$ ), whereas we observed no such difference among the neutral-affect participants ( $M_{\$30} = 6.44, M_{\$40} = 6.06; n.s.$ ). In contrast, for the mail-in rebate, the concreteness of the representation did not differ by condition. Furthermore, a mediation analysis did not suggest that concreteness of the instant rebate mediated the effect of positive affect on willingness to wait.

*Estimated length of waiting time.* A 2 (affect: positive vs. neutral)  $\times$  2 (rebate amount: \$30 vs. \$40) ANOVA revealed that there was only a main effect of the rebate amount. Although we did not anticipate this finding, the results showed that people expected to receive the mail-in rebate sooner when it was worth \$40 ( $M = 4.00$  weeks,  $SD = 1.02$ ) than when it was worth \$30 ( $M = 4.44$  weeks,  $SD = 1.21$ ;  $F(1, 113) = 4.22, p < .05$ ). However, there was no significant difference between the positive- and neutral-affect conditions ( $M_{pos} = 4.28$  weeks,  $SD = 1.27$ ;  $M_{neu} = 4.15$  weeks,  $SD = .99$ ;  $F(1, 113) = .29, n.s.$ ), nor was the interaction significant. Thus, there is no evidence that people in positive affect underestimated the length of the waiting time compared with controls.

### Discussion

Studies 3 and 4, one using a within-subject design and one using a between-subjects design, show that positive affect, compared with controls, can foster delay of gratification and increase willingness to wait for a better reward, but only when the difference in rewards is substantial. We found that the choices of neutral-affect participants differed in the \$30 and the \$40 conditions of Study 3 (repeated measure) but not in Study 4, in which participants made only one choice (between-subjects design). That is, unless faced with sequential choices, controls are relatively insensitive to the

desirability (amount) of the delayed option. In contrast, people in the positive-affect condition distinguished between the \$30 and \$40 rebate amounts in both studies.

Furthermore, Study 4 investigates the processes underlying the influence of positive affect on ability to wait. The thought-listing measure shows that positive affect increases the number of positive thoughts about the future option when it is perceived to be sufficiently valuable. In addition, the mediation analysis reveals that these thoughts mediate the effect of positive affect on preference for the delayed option. Figure 3 further demonstrates that, in the \$40 condition, people in positive affect had a more balanced view about the delayed options: They were aware of negative (e.g., waiting time) as well as positive (e.g., money) aspects of waiting.

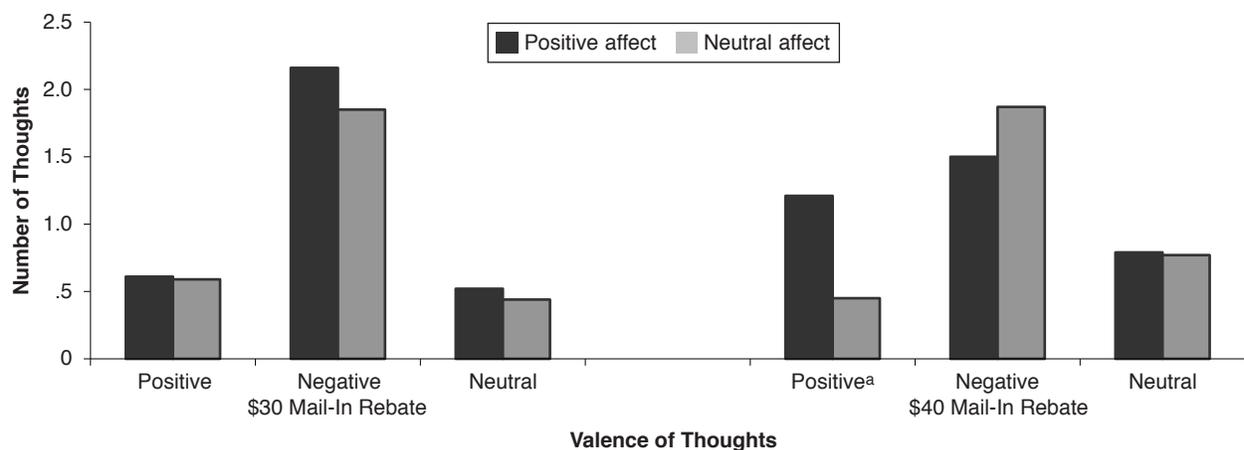
Because positive thoughts increased as the desirability of the delayed option increased and participants in positive affect were more likely to choose to wait only in the \$40 condition, we suggest that the way positive-affect people engage in forward-looking, high-level thinking is flexible and mindful rather than superficial or heuristic (i.e., relying on a simple cue, such as choosing the larger rebate every time). If the latter were the case, the positive-affect people would have chosen the mail-in rebate in every choice set, regardless of the size of the difference between the mail-in and instant rebates.

In addition, Study 4 provides no evidence that the reason positive-affect people are more willing to wait is that they underestimate the amount of time it will take to receive the mail-in rebate. There was no difference between positive and neutral affect in estimated waiting time. However, overall, people expected the waiting time to be shorter for the larger mail-in rebate (\$40). Thus, the desirability of a future option seems to influence people's estimated waiting time. This can be investigated in further research.

The analysis of the perceived concreteness of the instant rebate demonstrates that under conditions of positive affect, the concreteness (temptingness) of the instant option is mal-

Figure 3

STUDY 4: THE NUMBER OF POSITIVE, NEGATIVE, AND NEUTRAL THOUGHTS ABOUT THE \$30 AND THE \$40 MAIL-IN REBATE, BY AFFECT CONDITION



<sup>a</sup>Comparison of the number of positive thoughts about the \$40 mail-in rebate in each affect condition ( $F(1, 113) = 14.17, p < .001$ ).

Notes: A three-way interaction:  $F(2, 112) = 3.49, p < .05$ .

leable and depends on the comparable delayed option: People in positive affect, but not controls, perceived a \$25 instant rebate as more concrete (tempting) when compared with a \$30 mail-in rebate than when compared with a \$40 rebate. However, this cognitive representation of concreteness did not mediate the effect of positive affect on willingness to wait: It was the positivity of the thoughts about the future reward that changed positive-affect people's choices. Thus, willingness to wait is determined not by the attractiveness of the immediate or delayed option in an absolute sense but rather by the relative difference between the immediate and delayed options and, importantly, the positive thoughts about the sufficiently valuable delayed option rather than the temptingness of the immediate.

#### STUDY 5: WILLINGNESS TO PAY FOR IMMEDIATE VERSUS DELAYED OUTCOMES

As we noted previously, in general, a person's preference for a positive outcome decreases if that outcome is to occur in the distant future. Studies 5 and 6 examine these kinds of present bias in a consumer context. In Study 5, we measured participants' preference for a delayed or an immediate product by examining their willingness to pay, given receipt of the product with different delay times. We expected that, overall, participants would show a stronger preference for an immediate product over a delayed one, as the previous research has shown, but that because people in positive affect consider the future situation as well as the present, their willingness to pay for the product would not decrease as much with time delay.

#### Method

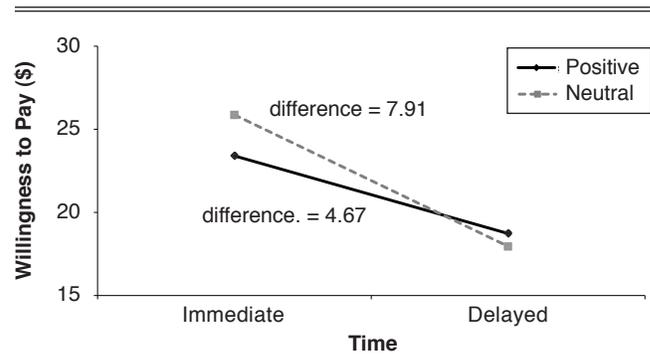
Forty-four students (21 in the positive-affect condition) participated in the experiment in exchange for extra credit toward their course grade. We manipulated and confirmed positive or neutral affect using pictures as we did in Study 1. Participants then read a product description (movie passes; Fujita et al. 2006). They were asked to imagine purchasing four movie passes (that would not expire) to a local theater and to indicate how much they would pay for the product if they were to receive it immediately and, following that, if they were to receive it one month later.

#### Results

Participants in the positive-affect condition reported that the pictures made them feel happier ( $M_{\text{pos}} = 1.38$ ,  $M_{\text{neu}} = 3.54$ ;  $t(36.72) = 10.18$ ,  $p < .01$ ). We conducted a 2 (affect: positive vs. neutral)  $\times$  2 (time: immediate vs. delayed) mixed ANOVA on willingness to pay, treating time as a repeated factor. The analysis revealed a significant main effect of time, such that people were willing to pay more for the product when it was to be delivered immediately ( $M = 24.69$ ,  $SD = 9.78$ ) than after a delay ( $M = 18.33$ ,  $SD = 8.96$ ;  $F(1, 42) = 63.42$ ,  $p < .001$ ). More importantly, there was also a significant interaction of time and affect. The difference in willingness to pay for the immediate versus the delayed products was smaller in the positive-affect condition ( $M_{\text{immed}} = 23.40$ ,  $SD = 10.72$ ;  $M_{\text{delay}} = 18.73$ ,  $SD = 10.86$ ; difference = 4.67) than in the neutral condition ( $M_{\text{immed}} = 25.87$ ,  $SD = 8.91$ ;  $M_{\text{delay}} = 17.96$ ,  $SD = 7.01$ ; difference = 7.91;  $F(1, 42) = 4.22$ ,  $p < .05$ ; see Figure 4). Thus, as we predicted, positive affect led to a decreased level of

Figure 4

STUDY 5: WILLINGNESS TO PAY FOR THE IMMEDIATE AND FOR THE DELAYED PRODUCT, BY AFFECT CONDITION



Notes: Interaction:  $F(1, 42) = 4.22$ ,  $p < .05$ . Contrasts in immediate and delayed conditions were not significant.

discounting over time, less of a decline in the perceived value of a nonperishable product. Contrast tests comparing positive and neutral affect within the immediate and the delayed conditions were not significant, suggesting no effect of positive affect on valuation (willingness to pay) of the product in general.

#### STUDY 6: EXPEDITING SHORT VERSUS LONG DELAYS

Like Study 5, Study 6 tests the hypothesis that positive affect reduces present-biased preferences but uses a different, convergent, method. In this study, we measured present-biased preference as Malkoc and Zauberman (2006) did: by examining the amount people would be willing to pay to expedite the product delivery by three (short delay) and ten (long delay) days. We predicted that, as the literature has shown, overall, participants would be willing to pay a higher daily premium to expedite a short delay than a long delay (hyperbolic discounting) but that positive affect would decrease this discounting (the discounting slope would be less steep).

#### Method

**Participants.** Fifty students participated in the experiment in exchange for extra credit. Four people in each of the affect conditions did not follow instructions (they declined to expedite delivery), and one participant was acquainted with the experimenter. We dropped the data for those nine people from the analysis.

**Procedure.** We manipulated and checked affect the same way as in Study 1. Participants were presented with a scenario asking them to imagine buying a digital camera. They were told that the delivery of their product was scheduled for a future date and were asked how much more they would pay to expedite the delivery by three, and then by ten, days.

#### Results

Participants in the positive-affect condition reported that the pictures made them feel happier than did controls ( $M_{\text{pos}} = 1.50$ ,  $M_{\text{neu}} = 3.44$ ;  $t(34.48) = 8.99$ ,  $p < .001$ ). We calculated daily premiums for expediting delivery by dividing the total willingness to pay by the number of days of expediting

(three or ten). A 2 (affect: positive vs. neutral) × 2 (time horizon: three days vs. ten days) mixed ANOVA on daily premiums, treating time horizon as a repeated factor, revealed a main effect of time horizon, indicating that participants placed a higher daily premium on expediting the three-day delay ( $M = 2.60$ ,  $SD = 1.88$ ) than the ten-day delay ( $M = 1.40$ ,  $SD = 0.84$ ;  $F(1, 39) = 18.28$ ,  $p < .001$ ). In addition, there was a marginally significant main effect of affect ( $F(1, 39) = 2.96$ ,  $p = .09$ ) and, more importantly, as we predicted, a significant interaction between affect and time horizon ( $F(1, 39) = 4.45$ ,  $p < .05$ ). Specifically, in the positive-affect condition, decline of daily willingness-to-pay premiums over the time horizon was less sharp ( $M_{3days} = 2.00$ ,  $SD = 1.36$ ;  $M_{10days} = 1.40$ ,  $SD = .86$ ;  $F(1, 39) = 2.29$ ,  $p = .14$ , n.s.) than among controls ( $M_{3days} = 3.17$ ,  $SD = 2.15$ ;  $M_{10days} = 1.40$ ,  $SD = .83$ ;  $F(1, 39) = 20.90$ ,  $p < .001$ ; see Figure 5). Contrasts showed that participants in neutral affect were willing to pay significantly more per day to expedite the short delay (three days) than were those in positive affect ( $M_{neu} = 3.17$ ,  $M_{pos} = 2.00$ ;  $F(1, 39) = 4.32$ ,  $p < .05$ ). There was no significant difference for expediting the long delay (ten days) ( $M_{neu} = 1.40$  and  $M_{pos} = 1.40$ ). Thus, as we predicted, present bias was less in the positive-affect condition.

A scatterplot of daily premiums (see Figure 6) further demonstrates the relationship between present-biased discounting and affect. In the positive-affect condition, but not in the control condition, there was a positive relationship between participants' daily premium for the three-day delay and their daily premium for the ten-day delay. In other words, those in the positive-affect condition tended to estimate daily premiums for ten days proportionally according to their daily premiums for three days, whereas those in the neutral-affect condition disproportionately estimated daily premiums for ten days, without regard to the daily premium for three days.

Discussion

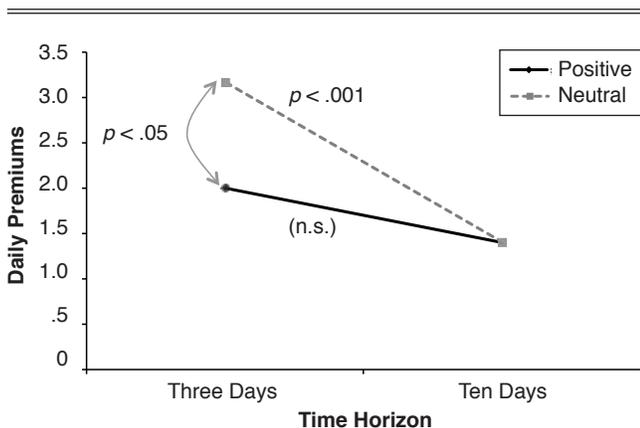
Studies 5 and 6 investigate people's intertemporal preferences by examining their present-biased discounting of a

desired product over time. In Study 5, in the positive-affect condition, participants' willingness to pay for a product was not decreased as much by having to wait for the product as it was in the neutral condition. The product (movie passes) was not perishable and retained its full actual value over time. It is possible that for some types of products, particularly those that lose value with time, people in positive affect might instead show a reduction in value. This remains to be investigated.

Using another measure, Study 6 shows that people in positive affect were willing to wait for a valued product, in that they allocated less than controls to expedite its delivery. They also continued to value the product equally regardless of whether the delay was three or ten days, because they showed the same level of daily premiums from the shorter to the longer time horizon. That is, they maintained interest in obtaining the product regardless of whether a long or short delay was involved. In contrast, people in the neutral-affect condition emphasized the short-term delay and lost interest in the product if a long delay was involved.

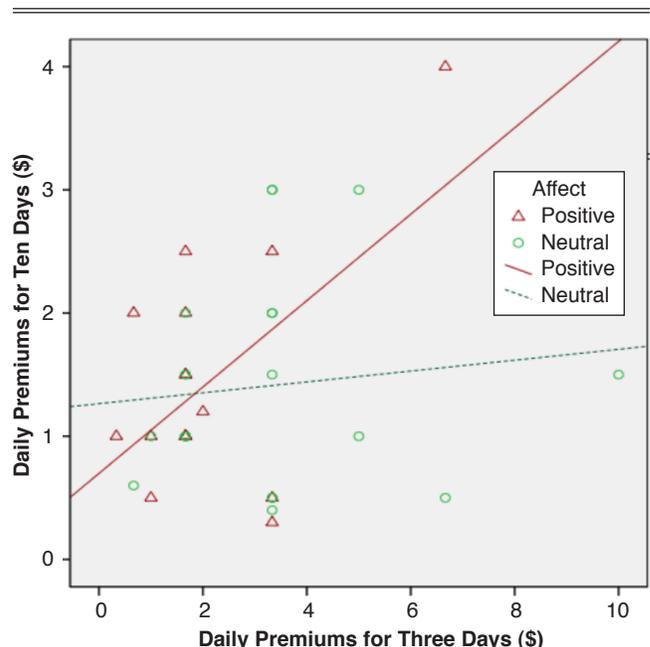
As Figure 6 shows, the affect conditions differ in perceived relationship between present and future outcomes. People in positive affect consider the long-term option in the context of the short-term option, suggesting that they perceive present and future options as interrelated, whereas those in neutral affect view intertemporal options as relatively distinct. This finding is compatible with those of previous research, suggesting that positive affect helps people see how present situations are functionally linked to future

Figure 5  
STUDY 6: DAILY PREMIUMS FOR THREE-DAY AND TEN-DAY EXPEDITING OF PRODUCT DELIVERY, BY AFFECT CONDITION



Notes: Interaction:  $F(1, 39) = 4.45$ ,  $p < .05$ . n.s. = not significant.

Figure 6  
STUDY 6: SCATTERPLOT OF DAILY PREMIUMS FOR EXPEDITING PRODUCT DELIVERY BY TEN DAYS AGAINST THREE DAYS, FOR POSITIVE- AND NEUTRAL-AFFECT CONDITIONS



Positive:  $R^2$  Linear = .305; Neutral:  $R^2$  Linear = .013

outcomes (e.g., Aspinwall 2005; Erez and Isen 2002; Taylor et al. 1998).

The results of Studies 5 and 6 together show that our findings are attributable to present-biased preferences and willingness to wait, not to lessened willingness to pay or concern with money in general. This is because in the two studies, the measures that showed greater willingness to wait among people in positive affect involved both greater willingness to pay in one instance (Study 5: valuation of the delayed object) and less willingness to pay in the other (Study 6: expediting delivery).

### GENERAL DISCUSSION

The current research examines the influence of positive affect on flexible, forward-looking, high-level thinking in the context of intertemporal choice phenomena. Specifically, the studies examined the influence of positive affect on consumers' willingness to wait for a better option that is available and on their level of overvaluing the present (present bias), as indicated by valuation and discounting rates for a desired product. Furthermore, this work examines the cognitive processes underlying this kind of self-control and valuation of material benefits.

Studies 1 and 2 show that positive affect can increase the level of thinking, which we measured with both the BIF and the time perspective scale. Studies 3 and 4 demonstrate that people in positive affect are more likely than comparable controls to wait to get a larger rebate when the difference between the immediate and delayed rebate is moderately large. (When the difference is small, people in positive affect do not differ from controls in willingness to wait.) In addition, the studies reveal that this occurs because positive affect enables people to consider more positive aspects of the delayed option, whereas in neutral affect, people tend to focus on the instant option without regard for the desirability of the delayed option. Studies 5 and 6 examine the influence of positive affect on intertemporal preferences, using additional measures. The results show that people in positive affect, compared with controls, reported less devaluation of a product that would be delayed (Study 5) and also less willingness to pay to receive the product immediately (Study 6). Thus, as indicated by converging measures, for people in mild positive affect, the immediate reward seems relatively less tempting when there is a better option in the future, and when they have more positive thoughts about that future option, they are more patient and able to wait.

Furthermore, these studies demonstrate the influence of positive affect on the cognitive representation of intertemporal outcomes. For example, the scatterplot of daily premium by affect and time horizon (Figure 6) suggests that people in positive affect are more likely to perceive outcomes that will occur at different points in time as interrelated rather than as independent. That is, they are more likely to see and value future outcomes in the context of present outcomes.

These findings are compatible with the previous research suggesting that positive affect leads to more mindful thinking and deployment of attention, which enable people to consider and integrate more factors and aspects of situations (e.g., Erez and Isen 2002; Fredrickson and Branigan 2005; Isen 2007; Johnson and Fredrickson 2005). People in positive affect may see more aspects of both present and future

outcomes, ultimately enabling them to understand the continuity between them and consider the trade-offs. Thus, this flexibility may enable people to wait for larger rewards and to exert self-control in other ways as well.

Note that although the current work demonstrates that positive affect can foster high-level thinking in the domain of self-control, the concept of high-level thinking does not imply superficial thinking or inability to focus on details of the context. Rather, the evidence suggests that the forward-looking, high-level thinking promoted by positive affect is characterized by comprehensive integration of both situational factors and the person's goals or concerns: People in positive affect take the specifics of the task or situation into account in construing an object or a behavior and deciding about it.

For example, consider that in Studies 3 and 4, the size of the rebate difference influenced the effect of positive affect on willingness to wait, such that positive-affect people chose to wait only when the difference between the instant and mail-in rebates was moderately large. This shows that they considered both time and money and made trade-offs rather than just choosing the larger rebate. Likewise, in Studies 5 and 6, if people in positive affect were deciding superficially, there should have been only main effects of affect rather than interactions between affect and time horizon. These findings have important implications for understanding the effects of positive affect more generally because they add to the literature showing that positive affect does not impair systematic, careful processing but rather facilitates it (e.g., Erez and Isen 2002; Nadler, Rabi, and Minda 2010; Staw and Barsade 1993).

Mischel, Shoda, and Rodriguez (1989) convincingly demonstrate that the ability to delay gratification is associated with success in many spheres of life, even years after the initial observation of delay behavior, and they also show that this ability can be influenced by cognitive and situational interventions. The current work, then, contributes to the growing body of research indicating that positive affect also facilitates the ability to delay gratification and wait for better rewards, contributing an important source of strength and benefit in peoples' lives.

The current research has significant implications for managers and consumer researchers as well. For example, according to this work, it seems that inducing positive affect may lead consumers to be more likely to join consumer reward programs (e.g., stamp cards, mileage programs) because such programs depend on people's understanding that rewards increase over time and that the future soon becomes the present. Those who join consumer reward programs may develop a strong relationship with the firm, which will increase their customer lifetime value to the firm. Because, as we demonstrate, mild positive affect leads people to appreciate the promise of larger benefits later and to be more willing to wait for those benefits, marketers may want to combine positive-affect inductions with consumer reward programs. It is important to note that the positive-affect inductions used in this stream of research typically include small gifts or free samples, coupons, and the like, in addition to factors such as environmental influences, pleasant pictures and décor, and so on. These are small, everyday interventions that are easily under companies' and marketers' control.

In addition, the findings of the current studies suggest interesting possibilities regarding financial instruments and products, and factors that may help consumers of those products put their investments into perspective. Not only might marketers of high-quality investment or credit options be better able to present their products to consumers who are in a mildly positive state, but the affective state may also help the consumer understand the benefits to be had in investments that will pay well in the future. Thus, the current research suggests important directions for further research in both theoretical and applied domains.

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