Temporal Construal and Time-Dependent Changes in Preference

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Five studies tested the predictions of temporal construal theory and time-discounting theories regarding evaluation of near future and distant future options (outcomes, activities, products). The options had abstract or goal-relevant features (called high-level construal features) as well as more concrete or goal-irrelevant features (called low-level construal features). The studies varied the valence (positive vs. negative) and the type of valence (affective vs. cognitive) of the low-level and high-level construal features. The results show that the weight of high-level construal features, compared with the weight of low-level construal features, is greater in determining distant future preferences than near future preferences. The implications of the results for extant theories of time-dependent changes in preference are discussed.

How do we evaluate and make decisions regarding near versus distant future actions? For example, how likely are we to decide to start a diet, open a savings account, or volunteer for community service as we get closer in time to actual engagement in these activities? The question we address in this article is whether temporal distance from actual engagement in an activity can influence our decisions when the information about the activity remains the same. Can temporal distance in and of itself systematically change or even reverse our preferences? We propose that temporal distance systematically influences the way we construe future activities and that construal, in turn, may change our preferences. The present research tests this proposal against time-discounting theories wherein valence (positive vs. negative) or type of valence (affective vs. cognitive) determine time-dependent changes in preference.

Time-dependent changes in preference have been studied across different areas in the behavioral and social sciences, including behavioral decision making (e.g., Benzion, Rappoport & Yagil, 1989; Loewenstein, 1987; Read, Loewenstein, & Kalyanaraman, 1999; Thaler, 1992), learning theory (e.g., Ainslie, 1975; Ainslie & Haslam, 1992), delay of gratification (e.g., Mischel, 1974; Mischel, Gruenec, & Masters, 1969), and self-control (e.g., Baumeister & Heatherton, 1996; Rachlin, 1995). Two hypotheses regarding the moderators of discounting rates over temporal distance have been particularly influential in this literature. One hypothesis, which is based on conflict models theories (Lewin, 1951; Miller, 1944), assumes that the effect of temporal distance on preference depends on whether the valence of the outcomes is positive or negative. According to these theories, the value of outcomes is generally discounted (diminished) over time delay, but negative outcomes undergo steeper time discounting than do positive features. This valence-dependent time-discounting hypothesis therefore predicts that temporal distance will increase attractiveness of activities to the extent that they are associated with both positive and negative outcomes. For example, the discomfort and time sacrifices associated with having house guests should undergo steeper time discounting than the pleasures of spending time with the guests. Therefore, as temporal distance increases, the attractiveness of having house guests should increase.

The other time-discounting hypothesis states that the effect of temporal distance on preference depends on the type of value of outcomes. Researchers of delay of gratification and self-control distinguish between affect-based value and cognitive-based value (Loewenstein, 1996; Metcalfe & Mischel, 1999; Mischel, Shoda, & Rodriguez, 1989; Vallacher, 1993). The affect-dependent time-discounting hypothesis assumes that affect-based value undergoes steeper time discounting than does cognitive-based value. In this view, temporal distance increases the weight of cognitive value and decreases the weight of affective value in determining the attractiveness of an activity. For example, the influence of the taste of a rich chocolate cake should undergo steeper time discounting than the influence of the fact that the cake is unhealthy. As temporal distance increases, the decision to eat a cake should be more influenced by the fact that it is unhealthy than by the fact that it is tasty.

Temporal Construal

A different approach to time-dependent changes in preference, one that emphasizes the way people represent future situations, is suggested by research on the psychology of prediction. A considerable amount of research has shown that people's predictions depend on their mental representation of future situations. Thus, Sherman (1980) showed that people's predictions about their own
behavior are often wrong, because people tend to rely on an abstract, schematic representation of how they would ideally behave and fail to incorporate "non-schematic, mundane issues of availability of time and energy" (p. 218). Reliance on schematic mental construals has also been proposed as an explanation of people's overconfidence in predicting their own and others' behaviors (Dunning, Griffin, Milojkovic, & Ross, 1990; Griffin, Dunning, & Ross, 1990; Griffin & Ross, 1991; Vallone, Griffin, Lin, & Ross, 1990) and the planning fallacy, namely, the tendency to underestimate task completion times (Buhler, Griffin, & Ross, 1994; Kahnean & Lovallo, 1991; Kahnean & Tversky, 1979). Similarly, Kahnean and Snell (1990, 1992) suggested that people mispredict how much they would enjoy future consumption of goods (e.g., music, ice cream), because they tend to base their predictions on general lay theories of changes in hedonic utility. Recently, Gilbert, Pinel, Wilson, Blumberg, and Wheelley (1998; see also Gilbert & Wilson, 2000; Wilson, Gilbert, & Wheelley, 1998; Wilson, Wheelley, Meyers, Gilbert, & Axsom, 2000) proposed that people fail to predict the intensity and duration of their reactions to future events, because they focus on those consequences of the event that readily come to mind and underestimate the diluting effect of contextual factors.

These lines of research suggest, then, that errors of prediction, overconfidence, and underestimation of completion time result from people's failure to incorporate nonschematic aspects of reality into their construal of future situations. On the basis of this research, temporal construal theory (TCT) proposes that people use more abstract schemas or higher level construals to represent distant future situations than near future situations (see Liberman & Trope, 1998). High-level construals are relatively simple and coherent representations. They consist of general, superordinate, and essential features of objects or events, whereas low-level construals include more specific, subordinate, and incidental features of object or events (see e.g., Cantor & Mischel, 1979; Rosch, 1978; Sherman, Beike, & Ryalls, 1999). Thus, high-level construals may represent behavior in general terms such as "John acted aggressively" rather than in terms of more concrete exemplars such as "John pushed Shelly on the way to the cafeteria" (see e.g., Semin & Fiedler, 1988). According to Vallacher and Wegner (1987), "why" aspects of actions constitute a superordinate level of action identification, whereas "how" aspects of actions constitute a subordinate level of action identification. High-level construals are therefore likely to include action identifications at the superordinate, "why" level rather than the subordinate, "how" level. For example, a high-level construal may represent "reading a science fiction book" as "broadening my horizons" rather than as "flipping pages." In goal-directed actions, features of the actions that are related to the primary goals of the actions are more central to the meaning of the actions than are features that are unrelated to these goals (see Higgins & Trope, 1990; Kruglanski, 1975). High-level construals are therefore likely to represent actions in terms of features that are related to the primary goals of the actions rather than in terms of incidental features, those that are unrelated to these goals. For example, a high-level construal may represent "watching a movie on TV" in terms of the quality of the featured film rather than in terms of the quality of the commercials.

TCT proposes, then, that distant future options are represented at a higher level of construal than are near future options. Two studies by Liberman and Trope (1998) tested this proposal with regard to construal of everyday activities. In one study, participants were asked to imagine engaging in various activities either in the near or distant future and generate open-ended descriptions of these activities. Content analysis classified descriptions as superordinate or subordinate construals of the activities. The results showed that in the near future most construals of the activities were at the subordinate level, whereas in the distant future most construals of the same activities were at the superordinate level. For example, participants described "watching TV" more often as "being entertained" in the distant future and as "sitting on the sofa, flipping channels" in the near future. The other study used an adapted version of Vallacher and Wegner's (1989) Level of Personal Agency forced-choice questionnaire. The questionnaire presents 25 activities, each followed by two restatements, one corresponding to the high-level "why" aspects and the other corresponding to the low-level "how" aspects of the activity. For example, "locking a door" is followed by the alternative restatements (a) putting a key in the lock and (b) securing the house. As predicted by TCT, the results indicated that the number of high-level, "why" restatements was higher when participants imagined engaging in the activities in the distant future rather than in the near future.

**Temporal Construal and Time-Dependent Changes in Preference**

TCT assumes that to predict how preferences change with temporal distance, it is necessary to take into account the value that is associated with low and high levels of construal of an option. Given that people use higher level construals for distant future options than for near future options, the relative weight of the value associated with low-level construals should be diminished (discounted) with temporal distance, whereas the relative weight of the value associated with high-level construals should be enhanced (augmented) with temporal distance. Hence, when the value associated with high-level construals is more positive than that associated with low-level construals, the attractiveness of an option should increase with temporal distance. In contrast, when the value associated with low-level construals is more positive than that associated with high-level construals, the attractiveness of an option should decrease with temporal distance. Thus, as temporal distance increases, the attractiveness of options is more likely to reflect the value associated with high-level construals than that with low-level construals of the options.

Consider, for example, a psychology experiment consisting of two parts: a main task (e.g., reading persuasive messages) that is related to the purpose of the experiment and an unrelated filler task (e.g., watching video clips) to be performed during a break in the main task. Because the main task is relevant to the goal of the experiment, it is part of a high-level construal of the experiment, and because the filler task is irrelevant to the goal of the experiment, it is part of a low-level construal of the experiment. TCT would therefore predict that temporal distance would differentially affect the weight of the value of the main and filler tasks (e.g., whether they are interesting or boring) in determining participants' decisions to take part in the experiment. Specifically, temporal distance should increase the weight of the value of the main task relative to the weight of the value of the filler task. As a result, an experiment consisting of an interesting main task and a boring filler task should be more attractive in the distant than in the near future. In contrast, an experiment consisting of a boring main task...
and an interesting filler task should be more attractive in the near than in the distant future.

The valence-dependent time-discounting and the affect-dependent time-discounting hypotheses make different predictions. According to valence-dependent time discounting, negative value undergoes steeper time discounting than does positive value; that is, temporal distance decreases the weight of negative aspects and increases the weight of positive aspects of an activity, regardless of their construal level. Hence, temporal distance should always increase the attractiveness of activities that have both positive and negative aspects, regardless of whether these aspects comprise high-level or low-level construals. In our example, temporal distance should always increase the attractiveness of an experiment consisting of interesting and boring tasks. In contrast, as discussed above, TCT predicts that temporal distance will increase the attractiveness of an experiment consisting of an interesting main task and boring filler but decrease the attractiveness of an experiment consisting of a boring main task and interesting filler.

According to the affect-dependent time-discounting hypothesis, time discounting depends on whether value is affective or cognitive. Temporal distance presumably increases the weight of cognitive value relative to the weight of affective value in determining the attractiveness of an activity. According to TCT, temporal distance increases the weight of the value of high construals relative to the weight of the value of low construals, regardless of whether the value of these construals is affective or cognitive. Therefore, when affective value is associated with low-level construals and cognitive value with high-level construals, TCT (like affect-dependent time discounting) predicts that the weight of affective value relative to the weight of cognitive value will decrease with temporal distance. However, when affective value is associated with high-level construals and cognitive value with low-level construals, TCT (unlike affect-dependent time discounting) predicts that the weight of affective value relative to the weight of cognitive value will increase with temporal distance. To illustrate, suppose that in our example the main task has cognitive value (e.g., reading an informative message) and the filler task has affective value (e.g., watching funny film clips). In this case, both TCT and affect-dependent time discounting predict that temporal distance will decrease the weight of the affective filler task relative to that of the cognitive main task in determining the attractiveness of the activity. However, when the main task has affective value (watching funny film clips) and the filler task has cognitive value (reading an informative message), TCT predicts, contrary to affect-dependent time discounting, that temporal distance will increase the weight of the affective main task relative to that of the cognitive filler task in determining the attractiveness of the activity.

The Present Research

In five studies we investigated how temporal distance affects preferences among events, activities, and objects. Participants received the same information about either near or distant future options and were asked to indicate their preferences regarding these options. The options included abstract or goal-relevant (high-level construal) features and concrete or goal-irrelevant (low-level construal) features. The studies varied the valence (positive vs. negative) and type of valence (affective vs. cognitive) of the two types of construals. This enabled us to investigate the role of level of construal, valence, and type of valence in producing time-dependent changes in preference.

Study 1: Predicting Time-Dependent Changes in Value

In this study we tested the ability of TCT to predict which events would look more attractive when delayed than when immediate and which events would show the reverse pattern. The first, pretest stage of the study (Study 1a), was designed to determine the value associated with the high-level construals and the low-level construals of different events. Participants described either the general meaning and broad implications of an event (i.e., high-level construals of the event) or its concrete details and circumstances (i.e., low-level construals) and then indicated how positive or negative the event was. For the second stage of the study (Study 1b), we selected the events that had different valence at the high- and low-levels of construal. In this second stage, participants evaluated how positive or negative each of these events would be if it happened in the near future (tomorrow) or in the distant future (the next year). TCT predicts that the events that had a more positive high-level construal than low-level construal would seem more attractive in the distant future than in the near future (i.e., would be augmented over time delay), whereas events that had a less positive high-level construal than low-level construal would seem less attractive in the distant future than in the near future (i.e., would be discounted over time delay).

Study 1a: Establishing the Value of High- and Low-Level Construals of Events

Method

Participants

One hundred three undergraduate Columbia University students (54 men, 49 women) were paid participants in the study. There were no differences between male and female participants in any of the results reported below.

Materials

The following eight event descriptions were used:

*The missing book.* Imagine that you have to write a paper for an important course. Just before the deadline you go to the library to spend a few hours reading a book you need for your paper. When you get to the library you discover that the book you need is out due tomorrow. You cannot do anything without this book, and therefore there is nothing you can do to advance your paper today.

*My roommate cleaned the apartment.* Imagine that your apartment has been a real mess, and for the last few days your roommate has been urging you to clean the apartment together. Each day you kept telling him that you would do the cleaning together tomorrow. You have the feeling that finally the day has come. The cleaning will have to be done today. However, when you come home you realize that your roommate has cleaned the apartment himself. Probably he got really pissed off. At least now you don't have to do the cleaning.

*Eating a cake.* Imagine that after spending the break at your parents', you made a resolution not to eat fattening food any more, and especially to stay away from rich desserts. Imagine that it is lunch time, and you are at a nice coffee shop with a friend. You feel hungry.
and your friend takes a fresh, big muffin with his coffee. You look at him, and then decide to take a piece of cake, just this one time.

My mother’s party. Imagine that your mother has a party, which she has been planning for a long time. You, the whole family, and some friends are supposed to be there. Just before the party you realize that you have to prepare for an exam you have in a few days, and therefore you decide not to go to your mother’s party. Now, you call your mother to tell her that you won’t come.

Studying in the library. Imagine that you have to write a paper for an important course. Just before the deadline you go to the library. You will spend a few hours reading books you need and working on your paper.

Having house guests. Imagine that three of your friends are coming to spend their vacation in New York City. They are going to stay at your place for a week or so. You really like them, and you actually invited them to stay with you when they are in the city.

A letter to my parents. You know that your parents expect a letter from you. You’ve been promising to write them in detail about your life. Finally, you get to do that. Imagine yourself sitting at your desk, trying to get this letter written.

A day at the MET. Imagine yourself spending five hours in the Metropolitan Museum on Sunday.

Procedure

Each event was presented on a separate page and was followed by instructions asking for either a high-level or a low-level construal of the event. The high-level construal instructions pertained to the significance of the event, its importance and meaning, its implications for one’s overall goals and personality, and its broad consequences. The low-level construal instructions pertained to the concrete details of the event, the unfolding of the event, and its context (the places, objects and people involved, the sounds, smells and sights). These instructions were tailored for each event by referring to specific people and entities involved in each event. For example, the high-level instructions for “my roommate cleaned the apartment” were, “Please describe in a few sentences the broad implications of this event. What implications would it have for your relationships with your roommate? What would it tell about you?” The low-level instructions for the same scenario were, “Please describe in a few sentences the concrete consequences of this event. What would you see around you? Please try to be as concrete as you can in your description.”

Participants wrote the description of each event on a blank page. On the following page, participants answered the question, “How positive or negative is the event you have just described” on a 9-point scale ranging from -4 (very negative) to 4 (very positive) and the question, “Suppose that another person would read your description of the event. Would he or she conclude that you liked the event and felt good about it, or rather that you disliked it, and felt bad about it?” on a 9-point scale ranging from -4 (very bad) to 4 (very good). These two questions served to assess the valence of the construals of the events.

Each participant described four different events, two under high-level construal instructions and two under low-level construal. Half the participants first generated two high-level construals, then answered unrelated questionnaires for about 20 min, and then generated two low-level construals. For the other half of the participants, the order of high-level and low-level descriptions was reversed. The order of the events was counter-balanced across participants and did not have any significant effect on the judgments.

Results

The two valence questions were highly correlated (all rs were between .59 and .91, p < .0001) and were combined into a single index. Table 1 presents the values of the high-level and the low-level construals of each event. Two of the events, “My roommate cleaned the apartment” and “Eating a cake,” had a significantly more negative high-level construal than low-level construal, and another event, “My mother’s party” showed a trend in the same direction. Two events, “Having house guests” and “A letter to my parents,” had a significantly more positive high-level construal than low-level construal, and another event, “Studying in the library,” showed a trend in the same direction. These six events were selected for the second stage of the experiment. Two events, “The missing book” and “A day at the MET,” did not show any difference in valence between the two construal levels and were not included in the second stage of the study.

Study 1b: Time-Dependent Changes in Value of Events

The second stage of the study tested the main hypotheses of the study, namely, that (a) the events that have a more positive high-level than low-level construal would seem more positive when delayed than when immediate and (b) the events that have a less positive high-level than low-level construal would seem less positive when delayed than when immediate.

Method

Participants

Fifty-six undergraduate Columbia University students (34 men, 22 women) were paid participants in the study. There were no differences between male and female participants in any of the results reported below.

Procedure

Six events from the previous study were used. Participants indicated how much they would like to experience each of the events either a year from now (the distant future condition) or tomorrow (the near future condition) on a 9-point scale ranging from 1 (not at all) to 9 (very much). Each participant rated all six events. The events were presented in two random orders. At the end of the experiment, participants were thanked for their participation, paid, and debriefed.

Table 1

Value of High-Level and Low-Level Construals

<table>
<thead>
<tr>
<th>Pretest event</th>
<th>Value of construal</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low level</td>
<td></td>
<td></td>
<td>High level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>construal</td>
<td></td>
<td></td>
<td>construal</td>
<td></td>
</tr>
<tr>
<td>The missing book</td>
<td>-3.36</td>
<td>3.38</td>
<td>-3.20</td>
<td>2.84</td>
<td></td>
</tr>
<tr>
<td>My roommate cleaned the apartment</td>
<td>0.64</td>
<td>4.64</td>
<td>-3.57</td>
<td>3.44</td>
<td></td>
</tr>
<tr>
<td>Eating a cake</td>
<td>1.20</td>
<td>4.78</td>
<td>-2.36</td>
<td>3.38</td>
<td></td>
</tr>
<tr>
<td>My mother’s party</td>
<td>-1.52</td>
<td>3.23</td>
<td>-3.08</td>
<td>4.45</td>
<td></td>
</tr>
<tr>
<td>Studying in the library</td>
<td>-1.24</td>
<td>3.76</td>
<td>-0.36</td>
<td>4.15</td>
<td></td>
</tr>
<tr>
<td>Having house guests</td>
<td>3.17</td>
<td>3.47</td>
<td>5.04</td>
<td>2.95</td>
<td></td>
</tr>
<tr>
<td>A letter to my parents</td>
<td>0.15</td>
<td>3.58</td>
<td>2.42</td>
<td>3.92</td>
<td></td>
</tr>
<tr>
<td>A day at the MET</td>
<td>3.55</td>
<td>3.72</td>
<td>3.61</td>
<td>3.51</td>
<td></td>
</tr>
</tbody>
</table>

Note. Scores could range from -8 to 8. MET = The Metropolitan Museum of Art.
**Results and Discussion**

We first examined the three events that had a more positive low-level construal than high-level construal, namely, "My roommate cleaned the apartment," "Eating a cake," and "My mother’s party." An analysis of variance (ANOVA) on the desirability ratings of the events, with time as a between-participants factor and event as a within-participants factor, revealed an effect for event, $F(2, 53) = 120.14, p < .0001$, indicating that some events were rated as more positive than others. More important, and as predicted by TCT, a significant effect of time was obtained, $F(1, 54) = 7.01, p < .01$, indicating that these events were rated as less positive in the distant future than in the near future. The interaction between time and event was not significant ($F < 1$). As can be seen in Table 2, participants rated the experience of finding out that their roommate has cleaned their apartment as more positive when it pertained to the near future ($M = 8.00$) than when it pertained to the distant future ($M = 6.71$). Breaking a diet was also more attractive tomorrow ($M = 5.21$) than a year later ($M = 4.57$). Finally, participants seemed to think that not going to their mother’s birthday party tomorrow was less aversive ($M = 2.46$) than not going in a year ($M = 1.71$).

We then examined the three events that had a more positive high-level construal than low-level construal, namely, "Studying in the library," "Having house guests," and "A letter to my parents." An ANOVA on the desirability ratings of these events once again yielded an effect for event, $F(2, 53) = 3.80, p < .05$, indicating that some events were rated as more positive than others. More important, and as predicted by TCT, a significant effect of time was obtained, $F(1, 54) = 13.08, p < .001$, indicating that these events were rated as more positive in the distant future than in the near future. The interaction between time and event was not significant ($F < 1$). As can be seen in Table 2, participants thought that studying in the library would be more positive in the distant future ($M = 5.29$) than in the near future ($M = 4.18$). Having house guests also seemed more attractive when expected a year from now ($M = 6.71$) than when expected tomorrow ($M = 4.79$). Finally, writing a letter to one’s parents in the next year seemed like a more positive experience ($M = 5.39$) than writing it tomorrow ($M = 3.79$).

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**Table 2**

Near and Distant Future Attractiveness of Events With More Positive High-Level Construals or More Positive Low-Level Construals: Study Ib

<table>
<thead>
<tr>
<th>Event</th>
<th>Near future</th>
<th>Distant future</th>
</tr>
</thead>
<tbody>
<tr>
<td>More positive low-level construal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My roommate cleaned the apartment</td>
<td>8.00 1.85</td>
<td>6.71 2.29</td>
</tr>
<tr>
<td>Eating a cake</td>
<td>5.21 2.97</td>
<td>4.57 3.03</td>
</tr>
<tr>
<td>My mother’s party</td>
<td>2.46 2.08</td>
<td>1.71 1.05</td>
</tr>
<tr>
<td>More positive high-level construal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studying in the library</td>
<td>4.18 2.65</td>
<td>5.29 2.48</td>
</tr>
<tr>
<td>Having house guests</td>
<td>4.79 2.73</td>
<td>6.71 2.43</td>
</tr>
<tr>
<td>A letter to my parents</td>
<td>3.79 2.75</td>
<td>5.39 3.03</td>
</tr>
</tbody>
</table>

*Note.* Attractiveness was rated on a 9-point scale ranging from 1 (*not at all*) to 9 (*very much*).

Finally, we calculated for each participant the average attractiveness of the three events that had a relatively more positive high-level construal and the average attractiveness of the three events that had a relatively more positive low-level construal. A 2 (time) × 2 (type of event) ANOVA of these scores revealed the predicted Time × Type of Event interaction, $F(1, 55) = 16.32, p < .0001$. This interaction indicated that in the near future, events with relatively more positive low-level construals were more attractive than events with more positive high-level construals ($Ms = 5.18$ and 4.36, respectively), whereas in the distant future the reverse held true ($Ms = 4.33$ and 5.80).

These results demonstrate that as temporal distance increases, the weight of high-level construals becomes more important than the weight of low-level construals in determining preference. Thus, temporal distance enhances the desirability of events when high-level construals of the events are more positive than low-level construals of the events. Temporal distance diminishes the desirability of events when high-level construals of the events are less positive than low-level construals of the events. In other words, temporal distance shifts the value of an event closer to the value of its high-level construal.

A potential limitation of the present study is that it used qualitatively different events to vary value structure. The findings could therefore be due to content differences among the events rather than the postulated differences in the value structure of the events. In addition, the events did not allow a test of valence-dependent time discounting, because they didn’t always have both positive and negative aspects. To overcome these limitations, in the following studies we manipulated the value structure of the same basic option. Moreover, in these studies we used mixed options, namely, options that had either a positive high-level construal and a negative low-level construal or a negative high-level construal and a positive low-level construal. TCT predicts that the preference for options with a positive high-level construal over options with a negative high-level construal will be stronger in the distant future than in the near future. The attractiveness of the former option should increase with time delay, whereas the attractiveness of the latter should decrease with time delay. In contrast, valence-dependent time discounting predicts that both types of options will be more attractive in the distant future than in the near future, because time discounting of the negative aspects is steeper than that of the positive aspects.

**Study 2: Time-Dependent Changes in Job Preferences**

This study examined the effect of temporal distance on preferences for two work-study positions. One option offered an interesting job with an uninteresting training period, whereas the other option offered an uninteresting job with an interesting training period. We reasoned that the job is more central than the training and therefore constitutes a higher level of construal of the work-study option. On the basis of this assumption, we predicted that the preference for the interesting job option over the uninteresting job option would be greater in the distant future than in the near future, with attractiveness of the former option increasing and the attractiveness of the latter option decreasing over time delay. Valence-dependent time discounting, on the other hand, predicts that both options would seem more attractive in the distant future than in the near future.
Participants

One hundred thirteen undergraduate Columbia University students (58 men, 55 women) were paid participants in a battery study. There were no differences between male and female participants in any of the results reported below.

Materials

In a pretest, 34 students from the same population as the participants of the main study rated the attractiveness of six different jobs and six different preliminary training programs on 9-point scales ranging from 1 (very unattractive) to 9 (very attractive). On the basis of these ratings we selected an attractive and an unattractive job (Ms = 7.68 and 3.00, respectively) and an attractive and an unattractive training (Ms = 6.06 and 4.25, respectively). Two descriptions of work-study options were composed for the main study from these pretested jobs and training programs. The interesting job with uninteresting training was described as follows:

This work-study job is in a social psychology lab and requires participation in a study on humor and attitudes towards different types of jokes. The job will involve judging and measuring people's evaluations of the funniness of cartoons, movies, and jokes. It will also require predicting and testing other people's reactions and evaluations of the same materials. The job will require preliminary training that involves a few sessions of learning the basics of attitude measurement (e.g., what are the different methods available for measuring attitudes, how scales are constructed and validated, and when each type of measurement should be used).

The uninteresting job with interesting training was described as follows:

This work-study job is in a social psychology lab and requires participation in a study on attitude measurement. The study will measure peoples' attitudes regarding abstract figures, political issues, or actual products, using different scales. The job will involve mainly entering the data, and examining whether the attitudes elicited by the different types of measurement are similar or not. The job will require preliminary training that involves a few sessions of learning the basics of attitudes change through analyzing commercial ads in papers and TV (e.g., what techniques are used by commercial companies to influence people's attitudes? How do these vary according to the type of product being advertised and the type of audience?).

Procedure

The study was presented as a survey for the Psychology Department at Columbia University on students' preferences for the different work-study jobs that are being offered by the department. Participants in the near future condition were told that the jobs were immediately available, and participants in the distant future condition were told that the jobs would be available a year later. Participants then received either the description of the interesting job with uninteresting training or the description of the uninteresting job with interesting training. After reading the description, participants were asked to imagine that they were looking for a job a year later and to indicate how much they would like to start working the job in the next week (or a year later) on a 9-point scale ranging from 1 (not at all) to 9 (very much). Participants were then thanked and debriefed.

Results and Discussion

A 2 (time: near vs. distant future) × 2 (type of job) between-participants ANOVA on the preference ratings of the work-study options yielded a main effect for type of job, F(1, 109) = 10.44, p < .001, indicating an overall preference for the interesting job over the uninteresting job despite the boring training (see Table 3). This confirmed our assumption that the job was more central than the training for the job. However, a significant Time × Type of Job interaction, F(1, 109) = 6.30, p < .01, indicated that the preference for the interesting job over the uninteresting job was more pronounced in the distant future (Ms = 6.72 vs. 4.74) than in the near future (Ms = 6.44 vs. 6.13). Thus, as predicted by TCT, over temporal distance, job preferences became increasingly more in line with the quality of the jobs rather than the training for the jobs. The interesting job became more attractive and the boring job less attractive over time delay. This pattern of results is inconsistent with the valence-dependent time-discounting prediction of conflict models theories (Lewin, 1951; Miller, 1944). According to these theories, both interesting and boring jobs elicit an approach–avoidance conflict, because they have both positive and negative aspects and, therefore, both jobs should have seemed more attractive in the distant future than in the near future. The present results failed to show this main effect of time on job preferences. If anything, the main effect of time was in the opposite direction, F(1, 109) = 2.21, p = .14.

In a pretest we conducted on 68 Columbia University students from the same population as the participants of our study, 77% of the respondents indicated that they have considered taking a work-study position in the past, and 68% indicated that they are at least "moderately likely" to consider taking such position in the future. Thus, the present study has the advantage of presenting participants with a personally relevant and realistic decision situation. A potential limitation of the study, however, is that although it manipulated value structure of the same basic option (job offers), the specific nature of the option varied. That is, the interesting job was qualitatively different from the uninteresting one, and the interesting training was qualitatively different from the uninteresting training. It could be, then, that some differences in content, rather than differences in value per se, produced our results. To address this difficulty, the next study manipulated valence more directly by describing a product's features as either good or poor.

Another potential limitation of this study (as well as Study 1) is that it is open to a hyperbolic, time-discounting interpretation (see e.g., Ainslie & Haslam, 1992; Loewenstein & Prelec, 1992; Rachlin, 1995). According to this interpretation, the decline in the value of an outcome becomes less steep as temporal distance from an outcome increases. Therefore, when an activity has immediate and delayed outcomes, more weight should be given to the immediate

| Table 3 |

| Attractiveness of Work-Study Jobs in the Near Future and Distant Future: Study 2 |
|-----------------------------------------------|------------------|------------------|
| Work-study job                              | Near future  | Distant future  |
| Interesting job, uninteresting training       | 6.44          | 6.72            | 1.73     |
| Uninteresting job, interesting training       | 6.13          | 4.74            | 2.07     |

Note. Attractiveness was rated on a 9-point scale ranging from 1 (not at all) to 9 (very much).
outcomes than to delayed outcomes in near compared with distant future decisions. For example, temporal distance should increase preference for activities with relatively more valuable delayed outcomes and decrease preference for activities with relatively more valuable immediate outcomes. Recently, Read, Loewenstein, and Kalyanaraman (1999) have obtained empirical support for such changes in preference.

It might be argued that some of the activities in Studies 1 and 2 had immediate and delayed outcomes. In Study 2, the training (low-level construal value) was immediate whereas the job itself (high-level construal value) was delayed. Therefore, by hyperbolic discounting, the weight of the quality of the job, compared with the weight of the quality of training, should be greater in distant future than in near future decisions, so temporal distance should increase the preference for an interesting job with boring training over a boring job with interesting training, as Study 2 found. A similar interpretation might apply to some of the events used in Study 1. For example, eating a cake may have immediate positive value ("tasty") but delayed negative value ("fattening"), whereas studying in the library may have immediate negative value ("tiring") but delayed positive value ("getting high grades"). Hyperbolic time discounting would therefore more often decrease interest in the cake and increase interest in studying in distant future than in near future decisions, as Study 1 found. The following three studies were designed to rule out a hyperbolic time discounting. In Studies 3 and 4 we presented participants with options in which the value attached to the low-level construal and the value attached to the high-level construal were concurrent rather than immediate versus delayed. Study 5 manipulated construal level of value independently of its immediacy.

Study 3: Time-Dependent Changes in Product Preferences

In this study we examined the effect of temporal distance on the evaluations of products with multiple features. We reasoned that features that are relevant to the product’s intended goal are more central than goal-irrelevant features and therefore constitute a higher level of construal. Suppose, for example, that one wants to buy a radio to listen to music and news and has a choice between a radio that has good sound but a poor built-in clock and a radio that has poor sound but a good clock. Given one’s goal, sound quality should be more central than the quality of the clock in the construal of the radio. TCT therefore predicts that the preference for the radio that has good sound over the radio that has poor sound should be stronger in the distant than in the near future, with the attractiveness of the former radio increasing and the attractiveness of the latter radio decreasing with temporal distance. Once again, valence-dependent time discounting would predict that both products would be evaluated more positively in the distant future than in the near future, because both give rise to a conflict between positive and negative features.

Method

Participants

One hundred ninety undergraduate students (54 men, 136 women) from Tel-Aviv University and the Open University in Israel volunteered to participate in the study. There were no differences between male and female participants and no differences between participants from the two universities in any of the results reported below.

Procedure

Participants in the high-level positive, low-level negative condition read the following description:

Imagine that tomorrow you will buy a radio set. You need a simple set in the kitchen to listen to morning programs and music when you get up. When you arrive home, you discover that it fits just great in the place you wanted to put it, and the sound is really good. However, the clock that is built into the set turns out to be pretty useless. The digits are too small and can be hardly seen unless you stand right in front of it.

Participants in the high-level negative, low-level positive condition read the following description:

Imagine that tomorrow you would buy a radio set. You need a simple set in the kitchen to listen to morning programs and music when you get up. When you arrive home, you discover that if you put the set in the place you wanted, the reception is bad, and to get reasonable reception you have to put it in a rather inconvenient place. However, the clock that is built into the set turns out to be pretty useful. It has large clear digits which can be easily seen from anywhere in the kitchen.

In the distant future condition, “tomorrow” was replaced with “a year from now.” After reading the scenarios, participants indicated to what extent they would be satisfied with their purchase on a 9-point scale ranging from 1 (not at all satisfied) to 9 (very satisfied). Participants completed the task in groups of 10 to 25. At the end of the experiment they were thanked and debriefed.

Results and Discussion

A 2 (time) × 2 (type of product) ANOVA on the satisfaction ratings revealed a main effect of type of product, F(1, 186) = 21.69, p < .001, indicating that overall participants preferred the good radio with a bad clock over the bad radio with a good clock (see Table 4). This confirmed our assumption that the quality of the radio was generally more central than the quality of the built-in clock. However, a significant interaction of Time × Type of Product, F(1, 186) = 4.19, p < .05, indicated that this preference was stronger in the distant future (Ms = 5.48 vs. 3.46) than in the near future (Ms = 4.91 vs. 4.13). Thus, as predicted by TCT, temporal distance increased the tendency to evaluate products according to their primary function rather than their secondary function. Over time delay, the good radio became more attractive despite the poor clock, and the poor radio became less attractive despite the good clock. Similar to the results of the earlier experiments, the present results are inconsistent with conflict models theories. Both radios entail a conflict between a positive and a

<table>
<thead>
<tr>
<th>Radio</th>
<th>Near future</th>
<th>Distant future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good radio, poor clock</td>
<td>4.91</td>
<td>5.48</td>
</tr>
<tr>
<td>Poor radio, good clock</td>
<td>4.13</td>
<td>3.46</td>
</tr>
</tbody>
</table>

Note. Attractiveness was rated on a 10-point scale ranging from 1 (not at all) to 10 (very much).

Table 4
Attractiveness of Radios in the Near Future and Distant Future: Study 3
negative feature. Hence, according to conflict models theories, both should have seemed more attractive in the distant future than in the near future. The present results failed to show this main effect of time on evaluations ($F < 1$).

In the present study, the goal of the purchase was to listen to radio programs and, therefore, the radio was part of the high-level construal of the product and the clock that came along with it was part of the low-level construal of the product. Unlike the previous study, the present study manipulated the value of both the radio and the clock in the same way, by varying quality. However, it could be that some content difference between the two features (i.e., radio vs. clock) somehow produced our results. The next study addressed this difficulty by using the same content as part of a high-level construal in some conditions and as part of a low-level construal in others. In this way, any content differences between the high and low levels of construal are minimized. In addition, the next study presented participants with a realistic choice among different psychology experiments.

Study 4: Time-Dependent Changes in Task Preference

This study examined the effect of temporal distance on the evaluations of activities consisting of a main task and a filler task. One activity consisted of an interesting main task and an uninteresting filler task, whereas the other activity consisted of an uninteresting main task and an interesting filler task. We reasoned that the main task is more central than the filler task and therefore constitutes a higher level of construal of an activity. On the basis of this assumption, we predicted that the preference for the activity with the interesting main task over the activity with the uninteresting main task would be stronger in the distant future than in the near future, so the attractiveness of the former activity should increase and the attractiveness of the latter activity should decrease with temporal distance. Valence-dependent time discounting predicts that both options would seem more attractive in the distant future than in the near future, because both options are positive in one respect and negative in another.

Method

Participants

Sixty-four Columbia University undergraduate students (29 men, 35 women) were paid participants in the study. There were no differences between male and female participants in any of the results reported below.

Materials

On the basis of a pretest, we selected four interesting and four boring tasks. The interesting tasks were, "Judging humor: Evaluating cartoons for their funniness," "Guessing who is who: Matching photos to personality descriptions of people," "Listening to short pieces of music and indicating how they make you feel," and "Rating films: Watching short films and evaluating their interest and funniness." The boring tasks were, "Data checking: Comparing two lists of numbers to check for discrepancies," "Auditory memory for digits: Memorizing strings of 7 digits that are read aloud," "Attention and concentration: Copying 15-letter nonsense letter strings," and "Picture-string association: Memorizing pairs of simple pictures and nonsense syllables."

In the pretest, each of these tasks was presented separately, and participants rated how much they would like to perform it on a 10-point scale ranging from 1 (not at all) to 10 (very much). The mean ratings of the interesting tasks ranged from 7.62 to 8.67, and the mean ratings of the boring tasks ranged from 2.75 to 4.21.

Each of the interesting tasks was paired with each of the uninteresting tasks, creating 16 different combinations. In each combination, one of the tasks was described as the main task of the experiment and the other task was described as the filler task. Two versions of each combination were created by reversing the roles of the main task and the filler. A total of 32 different experiments were thus generated, with the content of the main tasks and the fillers fully counterbalanced.

Each experiment was described as consisting of three sessions of a main task, with the filler task performed between these sessions to provide rest and distraction from the main task. For example, an experiment entitled "Judging humor" was described as follows: "The main task is judging humor, and will ask you to evaluate the funniness of cartoons. The filler task in between the three sessions is checking data, and will ask you to compare two lists of numbers to check for discrepancies." In the other version of this experiment, the roles of the same tasks as main and filler were reversed. Thus, the experiment was entitled "Checking data," and was described as follows: "The main task is checking data, and will ask you to compare two lists of numbers to check for discrepancies. The filler task in between the three sessions is judging humor, and will ask you to evaluate the funniness of cartoons." Each participant responded to two experiments, one consisting of an interesting main task and a boring filler and the other consisting of a boring main task and an interesting filler. Each experiment consisted of different tasks (i.e., there was no overlap between the two experiments offered to each participant).

Procedure

Participants were invited to take part in two experimental sessions, one immediately and the other 4-6 weeks later. In the near future condition, participants were told,

In the present session, to start in a few minutes, you will take part in one of two experiments. Each of the experiments takes about 30 min, and includes three sessions of the main task and a filler task in between those sessions. The filler task is designed to provide a break in performing the main task, to ensure better performance and minimize confusion.

Participants received a description of two experiments and were asked to rate on 9-point scales ranging from 1 (not at all) to 9 (very much) the extent to which they were interested in each experiment. These ratings were said to determine in which of the two experiments participants would actually participate. In the distant future condition "the present session" was replaced with "the next session" and "in a few minutes" was replaced by "in 4-6 weeks." After completing the questionnaire, participants were fully debriefed and thanked.

The present experiment thus manipulated time (near future vs. distant future) between participants and type of experiment (interesting main task with a boring filler vs. boring main task with an interesting filler) within participants.

Results and Discussion

A 2 (time) × 2 (type of experiment) ANOVA on the desirability ratings of the experiments revealed a main effect for type of experiment, $F(1, 60) = 93.50, p < .0001$, indicating a preference for the interesting experiment with a boring filler over the boring experiment with an interesting filler (see Table 5). This confirmed that the main task was more central than the filler task in evaluating the experiments. However, a significant Type of Experiment × Time interaction, $F(1, 60) = 4.17, p < .05$, indicated that this preference for the experiment with an interesting main task over the experiment with a boring main task was more pronounced
in the distant future ($M_s = 8.53$ vs. $3.78$) than in the near future ($M_s = 7.78$ vs. $4.69$). Thus, as predicted by TCT, temporal distance enhanced the tendency to evaluate experiments in terms of their main task rather than their filler task, so over time delay the experiment with an interesting main task became more attractive and the experiment with a boring main task became less attractive.

This pattern of results is predicted by TCT but not by valence-dependent time discounting. The two experiments offered to participants had both positive (interesting) and negative (boring) features. Conflict models theory predicts that both experiments will seem more attractive in the distant future than in the near future, but this prediction was not confirmed ($F < 1$). Moreover, this study manipulated the value of the high-level construal and the low-level construal in the same way. This study therefore suggests that level of construal, rather than value or some content property, is the critical factor that determines time-dependent changes in preference.

In sum, Studies 2–4 examined the effect of temporal distance on the evaluation of options that give rise to an approach–avoidance conflict (i.e., alternatives with both positive and negative features). According to conflict models theory (Lewin, 1951; Miller, 1944), the negative aspects of the options would be discounted over time delay more steeply than the positive aspects and, therefore, these options should be more attractive in the distant future than in the near future. TCT assumes that temporal distance increases the weight of high-level construals relative to low-level construals, so only those mixed options that have a positive high-level construal would be more positive in the distant future than in the near future. The mixed options that have negative high-level construal would be less positive in the distant future than in the near future. The results of all three studies support the TCT prediction rather than that of conflict models theory. Note that the low-level and high-level construal values were expected to be experienced simultaneously. Hence, the present findings cannot be interpreted in terms of hyperbolic time discounting.

The next study addresses another account of variations in the effect of time on preference, one that has been proposed by self-regulation theories (Metcalfe & Mischel, 1999; Mischel et al., 1989). These theories assume that cognitive-based value (i.e., “cold” value) is discounted less steeply (and even augmented) with temporal distance than affect-based value (i.e., “hot” value). Study 5 tests these predictions against those of TCT.

Study 5: TCT Versus Affect-Dependent Time Discounting in Film Preferences

This study examined the effect of time on preferences for films varying in affective value (funniness) and cognitive value (informativeness; see Read et al., 1999, for a similar manipulation). The goal of watching the films was either affective (getting oneself into a good mood) or cognitive (learning about a topic). Depending on the goal, either affective features or cognitive features of the film were more central and thus constituted the high-level construal of the film, whereas the other type of features was rendered goal-irrelevant and thus part of the low-level construal of the film.

We predicted that the weight of the goal-relevant value of the films relative to the weight of their goal-irrelevant value will increase with temporal distance, regardless of whether the value is affective or cognitive. According to the affect-dependent time discounting, the weight of the affective value of the films relative to the weight of their cognitive value should decrease with temporal distance, regardless of whether the value is goal relevant or irrelevant.

### Method

#### Participants

Seventy-nine undergraduate students (18 men, 61 women) from Tel-Aviv University participated in the study as part of their introductory course requirement. There were no differences between male and female participants in any of the results reported below.

#### Procedure and Materials

Participants were invited to a two-session experimental study on social interaction. Participants in the cognitive goal condition were told that the study was on information exchange in informal interactions and that they would have to discuss “principles of comic films” after they learn about the subject by watching a short film. Participants in the affective goal condition were told that the study was on the effects of mood on social interaction and that they would watch a short film that was designed to induce a good mood before the interaction. Half the participants in each goal condition were told that they would watch the film in a few minutes (near future), and the other half of the participants were told that they would watch the film in the next session, a month later (distant future).

All of the participants were told that there were four films prepared by film students as a final project in their course on “principles of comic films.” The films were described as 15-min long and as explaining some comic principles and exemplifying comic scenes. Participants also received written evaluations of the films, ostensibly produced by “pretest students” who had watched the films earlier. Each of the four films was presented on a separate page, with the title of the film, the initials of its director, four or five short verbal evaluations, and two scores, an informativeness score and a funniness score, ostensibly obtained by averaging the pretest evaluations. The informativeness and the funniness scores were either high (8.60–9.25) or low (5.20–6.20). The verbal evaluations were compatible with the scores. For example, the evaluation of the informative-and-funny film stated, “It was a very helpful explanation and had great funny examples.” The evaluation of the funny-but-uninformative film stated, “It really enjoyed the jokes, but could not make sense of the guy’s explanations.” The evaluations of the informative-but-not-funny film stated, “It wasn’t really funny, probably because the explanations made it all so clear and transparent.” Finally, the evaluations of the uninformative-and-not-funny film stated, “The explanation was pretty boring and confusing, and they selected pretty dull examples, too.” The order of the film descriptions was counterbalanced across participants. Participants read the evaluations and then rated the films according to how much they would like to see them on 10-point scales ranging from 1 (not at all) to 10 (very much).

After indicating their preferences, participants received another questionnaire with two additional questions: “In deciding which film you would like to watch, how much weight did you give to how funny you expected

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Near future</th>
<th>Distant future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interesting task, boring filler</td>
<td>7.78</td>
<td>8.53</td>
</tr>
<tr>
<td>Boring task, interesting filler</td>
<td>4.69</td>
<td>3.78</td>
</tr>
</tbody>
</table>

Note. Attractiveness was rated on a 10-point scale ranging from 1 (not at all) to 10 (very much).
Results and Discussion

The film preference ratings were submitted to a 2 (time) × 2 (goal: affective vs. cognitive) × 2 (affective value: funny vs. not funny) × 2 (cognitive value: informative vs. uninformative) ANOVA with goal and time as between-participants factors and affective value and cognitive value as within-participants factors. The ANOVA revealed strong main effects for both cognitive value, \( F(1, 75) = 288, p < .0001 \), and affective value, \( F(1, 75) = 322, p < .0001 \), indicating that informative films were preferred to uninformative films and funny films were preferred to not-funny films. Both of these main effects were qualified by significant interactions with goal: cognitive value × Goald; \( F(1, 75) = 9.40, p < .0001 \), for Affective Value × Goal; and \( F(1, 75) = 24.28, p < .0001 \), for Cognitive Value × Goal. These interactions indicated that cognitive value had a stronger effect under affective goal and that affective value had a stronger effect under affective goal. Further examination revealed that both types of value had significant effects under both types of goals: Under cognitive goal, \( F(1, 38) = 212.31, p < .001 \), for cognitive value, and \( F(1, 38) = 112.38, p < .0001 \), for affective value; under affective goal, \( F(1, 37) = 84.65, p < .001 \), for affective value, and \( F(1, 37) = 216.26, p < .0001 \), for affective value (see Table 6). Thus, under both goals, goal-relevant value was not disregarded, but its effect was reduced relative to the primary, goal-related value. These results provide evidence for the effectiveness of the manipulation of cognitive value, affective value, and goals.

As an additional check on the effectiveness of the manipulations, we analyzed the weights participants reported assigning to funniness and informativeness in making their decisions (see Table 7). A 2 (time) × 2 (goal: affective vs. cognitive) × 2 (type of value: affective vs. cognitive) ANOVA revealed a main effect for type of value, \( F(1, 75) = 17.23, p < .0001 \), indicating that, overall, participants reported giving more weight to the affective value than to the cognitive value. However, this main effect was qualified by a Type of Value × Goal interaction, \( F(1, 75) = 38.54, p < .0001 \), indicating that participants assigned more weight to cognitive value than to affective value in the cognitive goal condition than in the affective goal condition. Together, the preference and subjective weight data clearly confirm the effectiveness of the experimental manipulations.

Time-Dependent Changes in Preference

We now turn to the results bearing on the effects of time on film preferences. TCT predicts that temporal distance will increase the effect of goal-relevant value relative to the effect of goal-irrelevant value on film preferences. The 2 (time) × 2 (goal) × 2 (affective value) × 2 (cognitive value) ANOVA on the preference ratings yielded the predicted Cognitive Value × Time × Goal interaction, \( F(1, 75) = 15.48, p < .0001 \). As can be seen in Table 6, this interaction indicates that the effect of cognitive value on film preferences increased with temporal distance in the cognitive goal condition, \( F(1, 38) = 8.97, p < .005 \), and decreased with temporal distance in the affective goal condition, \( F(1, 37) = 6.75, p < .02 \). In other words, the effect of the cognitive value on film preferences increased with temporal distance when it was goal relevant and thus part of the high-level construal of the choice situation, whereas it decreased with temporal distance when it was goal irrelevant and thus part of the low-level construal of the choice situation. Affect-dependent time discounting predicts that the effect of cognitive value on film preferences will increase with temporal distance, regardless of whether cognitive value is goal relevant or not. However, the Cognitive Value × Time interaction predicted by this hypothesis was insignificant (\( F < 1 \)).

No other effect was significant in this analysis, including the Affective Value × Time and the Affective Value × Goal × Time interactions. It seems, then, that the effect of the affective value on film preferences remained constant over time delay in both goal conditions. This result is not predicted by either TCT or affect-dependent time discounting. According to TCT, the effect of affective value should increase over time delay under affective goal and decrease over time delay under cognitive goal, and according to affect-dependent time discounting, the effect of the affective value should decrease over time delay in both goal conditions.

TCT predicts that over time delay, the effect of goal-relevant value would increase relative to the effect of goal-irrelevant value.

Table 6
Preference Scores for Films Varying in Affective and Informational Value Under Affective and Cognitive Goals in the Near and Distant Future: Study 5

<table>
<thead>
<tr>
<th>Film</th>
<th>Informativ</th>
<th>Uninformativ</th>
<th>Overall</th>
<th>Informativ</th>
<th>Uninformativ</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Affective goal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funny</td>
<td>9.50</td>
<td>1.36</td>
<td>6.60</td>
<td>1.46</td>
<td>8.05</td>
<td></td>
</tr>
<tr>
<td>Not funny</td>
<td>5.15</td>
<td>1.87</td>
<td>2.35</td>
<td>1.42</td>
<td>3.75</td>
<td>3.95</td>
</tr>
<tr>
<td>Overall</td>
<td>7.32</td>
<td>4.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive goal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funny</td>
<td>9.10</td>
<td>1.05</td>
<td>6.26</td>
<td>1.66</td>
<td>7.68</td>
<td>7.90</td>
</tr>
<tr>
<td>Not funny</td>
<td>6.26</td>
<td>1.73</td>
<td>2.74</td>
<td>1.66</td>
<td>4.50</td>
<td>6.75</td>
</tr>
<tr>
<td>Overall</td>
<td>7.68</td>
<td>4.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Preference was rated on a 10-point scale ranging from 1 (not at all) to 10 (very much).
Affective and Cognitive Goals in the Near and Distant Future: Study 5

Table 7
Subjective Weights of Funniness and Informativeness Under Affective and Cognitive Goals in the Near and Distant Future: Study 5

<table>
<thead>
<tr>
<th>Goal</th>
<th>Near future</th>
<th>Distant future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Affective dimension</td>
<td>Cognitive dimension</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Affective</td>
<td>6.15</td>
<td>1.27</td>
</tr>
<tr>
<td>Cognitive</td>
<td>5.33</td>
<td>1.41</td>
</tr>
</tbody>
</table>

Note. Subjective weight was rated on a 9-point scale ranging from 1 (no weight at all) to 9 (a lot of weight).

To test this prediction, we examined the preferences for the mixed options (the informative/not-funny film and uninformative/funny film). A Time × Goal × Option ANOVA yielded the predicted three-way interaction, F(1, 75) = 6.68, p < .01, indicating that preferences for the two options changed in opposite directions over time, depending on the goal condition (see Table 6). Specifically, in the cognitive goal condition, temporal distance increased the preference for the informative/not-funny film over the uninformative/funny film (Ms = 6.75 vs. 5.05 in the distant future, whereas both Ms = 6.26, in the near future). In contrast, in the affective goal condition, temporal distance increased the preference for the uninformative/funny film over the informative/not-funny film (Ms = 6.75 vs. 3.95, in the distant future, whereas Ms = 6.60 vs. 5.15, in the near future).

Overall, the preference for films that had positive goal-relevant value over films that had negative goal-relevant value was stronger in the distant future (Ms = 6.75 vs. 4.50) than in the near future (Ms = 6.43 vs. 5.69), F(1, 75) = 6.88, p < .01. This pattern of results is predicted by TCT but not by affect-dependent time discounting. The latter hypothesis predicts that regardless of the goal, the preference for the uninformative/funny film was stronger in the near future than in the distant future. However, the Time × Option interaction predicted by this hypothesis was insignificant (F < 1).

Time-Dependent Changes in Subjective Weights

After making their choices of films, participants reported how much weight they assigned to the funniness of the films and their informativeness. To examine the relation between these subjective weights and preferences, we calculated for each participant the effect of cognitive and affective value by subtracting the preference scores of the negative films from those of the positive films. We then correlated these scores with the subjective weights of the affective and cognitive values. This correlation was, r(76) = .54, p < .0001, for the cognitive dimension and, r(76) = .53, p < .0001, for the affective dimension, suggesting that the preferences and the subjective weights were positively correlated but not redundant.

A 2 (time) × 2 (goal) × 2 (type of value: affective vs. cognitive) ANOVA was performed on the subjective weights, with time and goal as between-participants factors and type of value as a within-participants factor. TCT predicts that temporal distance will increase the weight of goal-relevant value relative to that of goal-irrelevant value in choosing a film. Consistent with this prediction, the ANOVA yielded a Type of Value × Time × Goal interaction, F(1, 75) = 5.16, p < .05. In the cognitive goal condition, the weight of cognitive value, compared with the weight of affective value, was higher in the distant future (Ms = 5.95 vs. 4.95) than in the near future (Ms = 5.28 vs. 5.33). In contrast, in the affective goal condition, it was the weight of affective value, compared with the weight of cognitive value, that was higher in the distant future (Ms = 6.45 vs. 3.65) than in the near future (Ms = 6.15 vs. 4.35). Overall, the weight of the goal-relevant value, compared with that of the goal-irrelevant value, was greater in the distant future (Ms = 6.20 vs. 4.30) than in the near future (Ms = 5.73 vs. 4.81), F(1, 75) = 6.16, p < .05. These results are inconsistent with the affect-dependent time-discounting prediction that temporal distance will increase the weight of cognitive value relative to the weight of affective value, regardless of whether they are goal relevant. Indeed, the Type of Value × Time interaction predicted by this theory was insignificant (F < 1).

In sum, the results of this study supported TCT in that both participants' actual preferences and subjective weights revealed that low-level, goal-irrelevant aspects, compared with high-level, goal-relevant aspects, were more influential in near future than in distant future decisions. In other words, distant future decisions were less influenced by value of low-level construals, either affective or cognitive. These results are inconsistent with affect-dependent time discounting, which assumes that near future decisions are more influenced by affective value and less influenced by cognitive value than distant future decisions.

The present study also found that the effects and subjective weights of cognitive value changed over time delay more than the effects and subjective weights of affective value. Nevertheless, the relative importance of affective and cognitive value changed with temporal distance in a manner predicted by TCT and opposite to that predicted by the affect-dependent time-discounting approach. The reason for the unpredicted relative stability over time of affective value remains unclear and will have to be addressed in further research.

The present study used relatively mild affective outcomes (funniness). Future research should assess the generalizability of the present findings to more potent outcomes involving such sources of value as taste, sexual attraction, or physical pain. Would temporal distance increase the weight of more potent affective outcomes when the value of these outcomes is linked to high-level construals than when it is linked to low-level construals?

Finally, it should be noted that the present findings are also inconsistent with predictions of conflict models theories. Contrary to this prediction, the films that had both positive and negative features (funny but uninformative or informative but not funny) failed to reveal an increase in preference ratings over time delay, F(1, 77) = 1.71, ns. Instead, as predicted by TCT, some of the mixed options were discounted over time, and some were augmented, depending on whether the value of the high-level construal was less or more positive than the value of the low-level construal.

General Discussion

The present research presented participants with exactly the same information about near and distant future activities. Nevertheless, participants' preferences regarding these activities system-
atically varied as a function of temporal distance. According to TCT, such changes in preference occur because temporal distance from actual engagement in an activity changes the way the activity is represented. Distant future activities, compared with near future activities, are presumably represented schematically in terms of features that are abstract and central to the meaning of the activities (high-level construal) rather than in terms of more concrete and secondary features (low-level construal). Therefore, distant future decisions, compared with near future decisions, should be more influenced by value attached to high-level construals and less influenced by value attached to low-level construals of the same activity.

All of the present five studies demonstrated that the weight of high-level construal value, compared with the weight of low-level construal value, was greater in distant future than in near future decisions. The attractiveness of distant future activities, compared with near future activities, was therefore closer to their high-level construal value than to their low-level construal value. Thus, when high-level construals of mixed options (options with both positive and negative features) were positive, the options were more attractive in the distant future than in the near future. But when high-level construals of the mixed options were negative, they were more attractive in the near future than in the distant future.

This pattern of temporal changes in preference was obtained across different domains and manipulations of level of construal. Specifically, temporal distance increased the tendency to choose according to abstract value rather than concrete value of activities (Study 1), superordinate rather than subordinate aspects of job offers (Study 2), primary rather than secondary functions of products (Study 3), main rather than filler tasks (Study 4), and goal-relevant rather than goal-irrelevant aspects of films (Study 5). Together, these findings provide converging evidence for the TCT prediction that value is augmented or discounted with temporal distance depending on whether the value is associated with high-level construals or low-level construals of an activity.

The present findings are consistent with our research on time-dependent changes in the role of an outcome's feasibility and desirability in choice (Liberman & Trope, 1998). Desirability considerations reflect the value of an end state (a superordinate or high-level construal), whereas feasibility considerations reflect whether and how the end state can be achieved (a subordinate or low-level construal). This research found that for the distant future people prefer activities with highly desirable, but not very feasible outcomes, whereas for the near future they prefer activities with feasible, but not very desirable outcomes. For example, for the distant future, computer software was chosen according to its quality, whereas for the near future, computer software was chosen according to how easy it was to learn. Similar to the present research, these findings suggest that temporal distance increases the weight of high-level construals relative to low-level construals in choice. However, outcome feasibility, the low-level construal factor in our earlier research, is not in and of itself a valenced aspect of an activity. Its importance derives from the outcomes of the activity. For example, a high expectancy of attaining an outcome is valuable only to the extent that the outcome is valuable. To assess temporal changes in the weights of the value of different construals, the low-level and high-level construals in the present studies were unrelated to feasibility versus desirability and each level of construal was an independent source of valence. This enabled us to determine time-dependent changes in the influence of these two sources of valence and relate these changes to the predictions of TCT and time-discounting theories.

Valence-Dependent and Affect-Dependent Time Discounting

According to conflict models theories (Lewin, 1951; Miller, 1944), negative aspects of mixed options are discounted over time delay more steeply than positive aspects and, therefore, such options should be more attractive in the distant future than in the near future. The results of all of our studies show that this was true only for those options that had a positive high-level construal and a negative low-level construal. Options that had a negative high-level construal and a positive low-level construal showed the reverse pattern. These findings therefore support TCT predictions rather than those of conflict models theory and suggest that the level of construal with which valence is associated, rather than valence itself, determines the effect of temporal distance on preference.

The present research disentangles valence and level of construal. There are many situations, however, in which the two factors are correlated. For example, positive outcomes are often part of people's goals, whereas negative outcomes are often incidental and imposed by circumstances. In such situations, positive outcomes constitute a higher level of construal than negative outcomes, and, as a result, would be discounted over time delay less steeply than negative outcomes. Temporal construal may thus contribute to the prevalence and intuitive appeal of valence-dependent time discounting. However, our results show that if level of construal and valence are separated, then level of construal rather than valence predicts the effect of temporal distance on preference.

The present research also addresses the affect-dependent time-discounting hypothesis. This hypothesis assumes that affect-based value ("hot" value) is discounted more steeply than cognitive-based value ("cold" value) over time delay (Loewenstein, 1996; Metcalfe & Mischel, 1999; Mischel, Shoda, & Rodriguez, 1989; Read et al., 1999; Vallacher, 1993). Therefore, temporal distance should increase the weight of cognitive value and decrease the weight of affective value in determining preferences regarding future options. The results of Study 5 fail to support this hypothesis. The change in the relative weight of cognitive versus affective value over time delay depended on whether these two types of value were goal relevant (and therefore related to a high-level construal of the activity) or goal irrelevant (and therefore related to a low-level construal of the activity). Thus, as predicted by TCT, when the goal of watching a film was cognitive (learning), temporal distance increased the relative influence of cognitive value (informativeness) compared with affective value (funniness) in film preferences. This finding is consistent with affect-dependent time discounting. However, inconsistent with this hypothesis, when the goal was affective (having fun), temporal distance increased the relative influence of affective value compared with cognitive value.

Like valence, type of valence (affective vs. cognitive) may often be correlated with level of construal. Thus, it has been proposed that affective ("hot") value is represented at a highly concrete level, whereas cognitive ("cold") value is represented at a more abstract level (e.g., Metcalfe & Mischel, 1999). Moreover, affective value (e.g., funniness) can be consumed for its own sake, without considering higher level goals, whereas cognitive value
(e.g., informativeness) derives its positivity from higher level goals (e.g., doing well on an exam) and, therefore, has to be represented in terms of these goals in order to be appreciated. It is possible, then, that such differences in construal level contribute to the greater time discounting of affective value than of cognitive value.

It is important to note, however, that the particular types of options and situations used in the present research limit the generality of these conclusions. We used a wide variety of options, but they were all presented in laboratory settings and associated with relatively mild outcomes. It therefore remains for future research to test TCT against valence-dependent and affect-dependent time discounting in real-life, decision situations that involve more potent emotional sources of value. The question is whether, as TCT would predict, temporal distance increases the relative weight of emotionally charged outcomes when the value of these outcomes is attached to high-level rather than low-level construal of events.

Implications

The present findings have important implications for real-life, decision situations in which the available options entail a trade-off between one’s primary and secondary interests. One may need to choose, for example, between an interesting job with uninteresting training and an uninteresting job with interesting training (Study 2) or between products with both positive and negative features (Study 3). As predicted by TCT, the present research demonstrates that primary interests, compared with secondary interests, carry more weight in distant future than in near future decisions. For example, in the distant future the good job was clearly preferred to the bad job, but in the near future this preference vanished. It seems, then, that secondary advantages or disadvantages of distant future options do not prevent people from making unequivocal decisions according to their primary interests. However, as one gets closer in time to the available options, secondary considerations become increasingly influential and capable of inducing conflict and hesitation. Thus, despite the uncertainty that is inherent in evaluating the distant future, temporal construal may produce clearer preferences regarding the distant future than the near future. To use a visual analogy, as one gets further away from an object, the main features of the object become more prominent, whereas the details become less prominent.

An interesting implication of this analysis has to do with the relationship between attitudes and behavior. Attitudes toward an object are an abstract, high-level construal of a choice situation (see e.g., Aizen & Fishbein, 1980). TCT would therefore predict that the attitude toward an object may be the prime determinant of distant future intentions regarding that object, whereas specific features of the surrounding context may receive more weight in determining near future intentions regarding that object.

At a more general level, one may speculate that people’s ideologies, moral principles, and self-identities are more likely to be expressed in distant future choices than in near future choices. With respect to the distant future, people are therefore likely to exhibit a relatively coherent and stable pattern of preferences. In the near future, contextual concerns are likely to result in a more complex and unstable pattern of preferences.

Finally, the present findings have implications regarding people’s ability to make accurate predictions about themselves. If different considerations determine preferences at different points in time, as the present research shows, then people’s ability to make accurate predictions regarding their future preferences and experiences should be limited. The options that seem attractive in the distant future may seem unattractive when actually experienced and vice versa (see Gilbert & Wilson, 2000; Mitchell, Thompson, Peterson, & Cronc, 1997; Wilson et al., 2000). According to TCT, people will fail to predict their own distant future experiences whenever the valence of low-level and high-level construals of options is different. More specifically, when options have more positive high-level construals than low-level construals, distant future predictions will be overly optimistic; that is, these predictions will overestimate the actual attractiveness of the options. However, when options have less positive high-level construals than low-level construals, distant future predictions will be overly pessimistic; that is, these predictions will underestimate the actual attractiveness of the options. The present research shows that for the distant future people will (a) choose options that have positive high-level construals but negative low-level construals and (b) reject options that have negative high-level construals but positive low-level construals. The present research further suggests that people may regret both types of choices as they get closer to actually experiencing the chosen options. For example, people may regret and even try to reverse their decision to take an interesting job with boring training and their decision to reject a boring job with interesting training (see Study 2).

In sum, the present research shows that temporal construal underlies time-dependent changes in preferences. However, as the preceding discussion suggests, the present research also raises many interesting issues regarding the structure of near and distant future preferences, the relationship of near and distant future preferences to individuals’ general values and goals, and the extent to which near and distant future choices lead to subjectively satisfying outcomes. These issues suggest new directions for research that may help individuals and groups understand and improve the way in which they plan and make decisions about the future.

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