Research Report

The effects of affect, processing goals and temporal distance on information processing: Qualifications on temporal construal theory ☆

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Abstract

According to temporal construal theory (Trope & Liberman, 2003, 2010), people are likely to evaluate a product on the basis of global, high-level criteria (e.g., the intrinsic desirability of its features) if they consider it for future consumption but consider situation-specific (e.g., feasibility-related) criteria if they consider it for immediate use. However, this may be true only when people are unmotivated to assess the implications of all of the information they have available, and this motivation, in turn, is a function of both their mood and the goal they happen to be pursuing. When individuals' objective is to make a good decision, the theory's implications are more likely to be supported when they are happy (and believe they have enough information to make a good judgment) than when they are sad. When their goal is to enjoy themselves, however, the theory is more strongly supported when they are sad (and are unmotivated to engage in extensive processing) than when they are happy.
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Introduction

When people receive information about a stimulus object or event, they sometimes focus their attention on its high-level, intrinsic features that have implications for the stimulus as a whole. At other times, however, they focus on low-level features, the desirability of which is often context-dependent. Two theories— temporal construal theory (Trope & Liberman, 2003, 2010) and the impact of affect as information (Schwarz & Clore, 1996, 2007)— have been particularly influential in conceptualizing these effects.

The interdependence of the effects implied by these theories has rarely been examined, however. We find that although people are often more likely to base their judgments on high-level construals when the information has implications for a future action than when it has implications for an immediate one, this difference depends on not only the affect they happen to be experiencing but also the purpose for which they are processing this information.

Theoretical background

Effects of temporal focus on information processing

Temporal construal theory implies that when individuals contemplate a future course of action, they construe its consequences in terms of high-level constructs that have implications for its intrinsic desirability. When they consider acting immediately, however, they typically construe the action's consequences in low-level, context-specific terms that are peripheral to its intrinsic value. Thus, for example, people who consider a vacation to Hawaii next year may think about its

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natural beauty and warm temperatures. If they contemplate visiting next week, however, they may think about the three rejected papers they have to revise and a Rolling Stones concert they would miss. As a result, they are likely to evaluate the activity more favorably in the former case than in the latter (Förster, Friedman, & Liberman, 2004; Liberman & Trope, 1998; Trope & Liberman, 2003).

As Kim, Park, and Wyer (2009) suggest, however, individuals who have information available about both types of judgment criteria may not consider all of this information; they simply give higher *priority* to the features that they consider to be most relevant. To this extent, the differences predicted by temporal construal theory may only be pronounced when individuals are not motivated to consider all of the information available. Their motivation may depend in part on both (a) the goal they are pursuing and (b) the mood they happen to be in at the time. When they are motivated to consider all of the information available, the differential impact of high-level and low-level construals may be less apparent.

Affect and motivation

People often use the positive or negative affect they happen to be experiencing at the time they consider an object or event as a basis for inferring their feelings about it (Schwarz & Clore, 1983, 1996, 2007; Wyer, Clore, & Isbell, 1999). However, affect can also influence the level at which stimulus information is construed. Schwarz, Bless, and Bohner (1991), for example, assume that happy individuals process information in less detail than sad individuals and apply relatively more global concepts in construing its implications. Gasper & Clore (2002) (see also Clore, Gasper, & Garvin, 2001) find that happy persons are generally more inclined to process stimuli at a global level. These findings suggest a general tendency for happy individuals to give priority to abstract, high level criteria when evaluating stimuli.

A conceptualization by Martin, Ward, Achee, and Wyer (1993), however, suggests that the type and amount of information that individuals bring to bear on a judgment or decision depend on the goal they are pursuing at the time. They assume that when individuals engage in goal-relevant activity, they use the affect they are experiencing as information about their success in attaining the goal at hand. Thus, if persons' goal is to make a good judgment, they may implicitly ask themselves if they have done enough to attain this objective. Consequently, they consider relatively less goal-relevant information and think less extensively about its implications if they are happy (and answer the question affirmatively) than if they are not. If their goal is to enjoy themselves, however, people are likely to ask themselves if they are attaining this goal. In this case, happy persons are likely to infer that they are attaining this objective and consequently may spend *more* time thinking about the information than sad persons do. Thus, as Martin et al. (1993) found, happy persons consider less information than sad persons do if they have the goal of making a good judgment, but consider more information than sad individuals do if their goal is to enjoy themselves. In other words, happy individuals with an evaluation goal may tend to base their judgment on only the information they consider to be particularly

relevant to the attainment of this goal. Sad persons, however, are likely to consider low-priority information as well. When individuals' goal is to enjoy themselves, however, happy individuals may consider more information than sad individuals do.

These possibilities have obvious implications for the effects implied by temporal construal theory. Suppose an apartment has intrinsically desirable features but its peripheral features suggest that renting it may be unfeasible. Individuals who consider renting the apartment a year from now may give priority to the inherent, desirability-relevant characteristics of the apartment whereas those who think about renting it immediately may give more priority to context-specific, feasibility-relevant features. If their goal is to make a good decision, happy individuals are likely to consider relatively little information and to base their judgments on only features they consider to be of high priority. Consequently, they should evaluate the apartment more favorably if they contemplate renting it in the future than if they consider doing so immediately, as temporal construal theory implies. In contrast, unhappy persons are more likely to consider low priority information as well as high priority information. In this case, therefore, the difference implied by temporal construal theory should be less evident.

When individuals process the information for enjoyment, however, they should process *more* information if they feel happy than if they feel sad. In this case, therefore, the implications of temporal construal theory should be *less* strongly supported in the former case than in the latter. Two studies examined these possibilities.

Experiment 1

Participants received information about both an apartment and a clock radio set. The apartment's high-level features were favorable but its low-level, situation-specific features were unfavorable. The radio set's high-level and low-level features were unfavorable and favorable, respectively. Thus, pooled over the two products, the valence of the high-level and low-level attributes was controlled. In each case, the product was available for consumption either immediately or in the future. Based on the considerations raised earlier, we made two hypotheses:

H1. When individuals have the goal of making a good decision, the implications of temporal construal theory for the relative use of high-level (desirability-related) criteria and low-level (feasibility-related) criteria will be more strongly supported when individuals are happy (and are unmotivated to consider all the information available) than when they are sad.

H2. When individuals have the goal of enjoying themselves, the implications of temporal construal theory for the relative use of high-level (desirability-related) criteria and low-level (feasibility-related) criteria will be more strongly supported when individuals are sad (and are less motivated to process all of the information) than when they are happy.

One methodological feature of our experiment is worth noting. That is, all of the information was presented simultaneously in an ad, and individuals had to search actively for the particular information they considered to be relevant. Thus, the effects we

obtained were determined by the priority that participants gave to the type of information they considered to be most important and not by presentation order.

Method

One hundred fifty-five Hong Kong undergraduates participated for pay of HK$ 40. They were assigned randomly to cells of a 2 (mood: happy vs. sad) × 2 (processing goal: good-decision vs. enjoyment) × 2 (time of consumption: immediate vs. future) mixed design, with the type of product (radio vs. apartment) serving as a within-subject variable. Participants were run in groups of 4 to 6 and were assigned to private cubicles.

Construction of stimulus materials

We selected two target products, an apartment and a radio set that also contained a clock. For each product, we then selected three high-level, desirability-relevant attributes, three low-level, feasibility-relevant attributes and four evaluatively neutral attributes based on materials used by Kim et al. (2009) (see also Liberman & Trope, 1998). The implications for the product attributes were confirmed in a separate post-test (see Web Appendix A). The attributes pertaining to each product were presented in the form of an ad (see Web Appendix B).

Mood induction

Mood was induced using procedures similar to those employed in many other studies (Schwarz & Clore, 1983; see also Adaval, 2001, 2003; Yeung & Wyer, 2004). Participants were told that a psychology professor was interested in comparing the life experiences of college students and that to attain this objective, he was asking students in several countries to describe a recent life experience on a randomly selected topic. On this pretense, participants in *happy* mood conditions described a life experience that had made them feel very happy and continued to make them feel this way every time they thought about it. Participants in *sad* mood conditions were asked to describe a past experience that had made them feel very sad and continued to make them feel this way every time they thought about it.

Good-decision goal conditions

The instructions and stimulus materials were presented on a computer. Participants in *good-decision goal* conditions were told:

"People who read a magazine or surf the Internet differ in the amount of information they consider to be necessary for making a good evaluation of the product. In this study, we are interested in how much information college students typically need and whether it depends on the type of product …"

With this preamble, participants in *immediate consumption* conditions who received the radio set ad were instructed:

"Imagine that *tomorrow*, you are going to buy a radio set. You want a simple set in your bedroom to listen to morning programs and music when you get up. One option you come across in a magazine is indicated below. Please read and

think about the information until you feel that you have enough information to make a good decision. Then, click on the [designated] button to answer the questions that follow."

After answering the questions, participants received the apartment ad preceded by instructions that were identical except that the first two sentences were replaced by: "Imagine that you are considering moving to an apartment off campus *next week …*"

The scenarios presented in *future consumption* conditions were similar except that "tomorrow" in the radio scenario was replaced by "six months from now" and "next week" in the apartment scenario was replaced by "at the end of this school year."

Enjoyment-goal conditions

The initial instructions in *enjoyment-goal* conditions were:

"People who read a magazine or surf the Internet for enjoyment often differ in the amount of information they enjoy reading. We are interested in how much information college students typically find enjoyable and whether it depends on the type of product …"

Then, following instructions concerning the time that the product would be available, participants were told: "Please keep reading and thinking about the information as long as you are enjoying it …"

After reading the information about each product, all participants responded to three questions ("How much do you like this radio set/apartment?" "How favorable is your attitude toward this radio set/apartment?" and "What is your opinion of the advertised radio set/apartment?") along scales from 1 (*dislike/unfavorable/bad*) to 7 (*like/favorable/good*). Responses to these items (α = .93 for radio set and α = .95 for apartment) were averaged. Finally, all participants reported the extent to which they had felt happy and sad while writing about the life event along a scale from 0 (*not at all*) to 10 (*very much*).

Results

Manipulation check

Participants reported feeling happier after writing about a happy experience (M = 7.81) than after writing about a sad one (M = 1.45; $F(1, 147)$ = 557.50, $p < .001$) and felt less sad in the former condition than in the latter (1.03 vs. 6.33, respectively; $F(1, 147)$ = 275.16, $p < .001$).

Product evaluations

According to H1 and H2, the effects of temporal distance should be most consistent with implications of temporal construal theory when individuals were unlikely to process the information extensively—that is, only among happy participants who had a good-decision goal and sad participants who had an enjoyment goal. To evaluate this hypothesis, evaluations of the clock radio set were reverse scored so that higher ratings of both products indicated greater impact of high-level (desirability-relevant) features on evaluations and consequently less impact of low-level (feasibility-relevant) features. Preliminary analyses of evaluations of each product separately revealed a significant interaction of

mood, processing goal and consumption time on judgments of the radio set, $F(1, 147) = 4.32$, $p < .05$. The interactive effects of these variables on judgments of the apartment were similar in form but nonsignificant ($p > .10$); however, this interaction was significant in Experiment 2, as will be seen. Moreover, an overall analysis in which product type was treated as a repeated measure yielded a significant three-way interaction of mood, processing goal and consumption time, $F(1, 147) = 8.30$, $p < .01$, that was independent of product type ($p > .10$).

Data pertaining to this interaction are summarized in Table 1. When participants had a good-decision goal, the implications of construal-level theory were only confirmed when participants were happy, as implied by H1. The interaction of mood and consumption time was significant under good-decision goal conditions alone, $F(1, 147) = 8.02$, $p < .01$. Specifically, high-level features had greater impact on happy participants' evaluations when they considered the product for future consumption than when they considered it for immediate consumption ($M_{diff} = 0.42$; $F(1, 147) = 3.64$, $p = .06$) but this difference was reversed when individuals were sad ($M_{diff} = -0.46$; $F(1, 147) = 4.39$, $p < .05$).

When participants had an enjoyment goal, however, construal level theory was more strongly supported when participants were sad, as implied by H2. That is, high-level features had greater impact on sad participants' evaluations in future consumption conditions than in immediate consumption conditions ($M_{diff} = 0.34$; $F(1, 147) = 2.46$, $p > .10$) but the impact of these features on happy participants' evaluations did not differ at all ($M_{diff} = -0.05$; $F < 1$). The interaction of mood and consumption time under enjoyment conditions alone was not significant, $F(1, 147) = 1.53$, $p > .10$. However, a planned contrast indicated that the difference in judgments under future and immediate consumption conditions was significant in the two conditions in which participants were expected to process information less extensively ($M_{diff} = 0.38$, averaged over happy mood/good-decision goal and sad mood/enjoyment goal conditions; $F(1,147) = 5.95$, $p < .05$), whereas the difference in these judgments when participants were likely to consider both types of information was nonsignificantly in the opposite direction ($M_{diff} = -0.25$, pooled over sad mood/evaluation goal and happy mood/enjoyment goal conditions; $F(1, 147) = 2.60$, $p > .10$). The difference between the effect of consumption

Table 1
Product evaluations as a function of mood, processing goal, and time of consumption—Experiment 1.

	Good decision goal		Enjoyment goal	
	Happy	Sad	Happy	Sad
Future consumption	4.67 (0.84)	4.26 (0.70)	4.41 (0.69)	4.56 (0.61)
	$N = 19$	$N = 20$	$N = 19$	$N = 21$
Immediate consumption	4.25 (0.88)	4.72 (0.43)	4.46 (0.58)	4.22 (0.59)
	$N = 20$	$N = 18$	$N = 19$	$N = 19$
M_{diff}	.42 *	− .46 **	− .05	.34

Note. More positive ratings indicate a greater impact of high-level (desirability-relevant) features relative to low-level (feasibility-relevant) features. Standard deviations are given in parentheses.
 * $p < .10$.
** $p < .05$.

time in the first two conditions and its effect in the latter two conditions was quite significant, $F(1, 151) = 8.30$, $p < .01$.

The reverse effect of consumption time when sad participants had a good-decision goal suggests that these participants based their judgments primarily on high-level, desirability-related features when they considered the product for immediate consumption. These participants, like happy ones, presumably considered the feasibility-related information before desirability-related information but then considered the latter information as well. To this extent, the reversal could reflect a recency effect of the information they considered on judgments. Although this interpretation is speculative, a similar difference is evident in Experiment 2.

Experiment 2

Experiment 2 provided further support for H1 and H2. In addition, it confirmed our assumption that happy individuals considered less information than sad individuals when they had a good-decision goal but more information than sad persons when they had an enjoyment goal. Our assumptions concerning the relative importance attached to the different types of information were also evaluated.

Method

Design

This study followed a 2 (mood: happy vs. sad) × 2 (processing goal: good decision vs. enjoyment) × 2 (time of consumption: immediate vs. future) between-subjects design. Participants (n = 272) were recruited from an online survey panel (Amazon Mechanical Turk; mturk.com).

Procedure

Participants were first induced to feel happy or sad using the procedure employed in Experiment 1. After writing for 10 min, participants proceeded to an ostensibly unrelated study of product evaluation. Processing goals and consumption time were manipulated in the same way as in Experiment 1. However, only the apartment replication was used.

In addition, participants received product attribute information sequentially in the order they requested it. Specifically, They were given a list of the 10 attribute dimensions ("moving expense", "location", "living space", etc.) in a random order that was the same for all participants and were told to click on any dimension they wished to obtain information about the apartment along it ("moving expense is high", "located far from your current place of residence", "large living space", etc.). After reading each piece of information, they had the option of either returning to the main page and select another dimension to look at, or going on to the evaluation page (after returning to the main menu, the information presented disappeared). The number of attributes that each participant read was recorded.

After stopping, participants reported their attitude toward the target product along three 7-point scales from 1 (*bad/unfavorable/dislike*) to 7 (*good/favorable/like*). Responses to the three items ($\alpha = .97$) were averaged. In addition, participants after making

their judgments were given a list of all 10 attributes and indicated the importance they attached to each while making the product evaluation along a scale from 1 (*not important at all*) to 7 (*very important*). The mean difference in ratings of desirability-relevant attributes and their ratings of feasibility-relevant attributes was used as an index of the relative importance of the two types of attributes. Finally, participants reported their feelings of happiness and sadness while writing about the life event as in Experiment 1.

Results

Manipulation check

Participants reported feeling happier after writing about a happy experience than after writing about a sad one (8.90 vs. 1.24, respectively; $F(1, 264) = 1113.68$, $p < .001$) and felt sadder after writing about a sad experience than after writing about a happy one (0.99 vs. 7.85, respectively; $F(1, 264) = 662.80$, $p < .001$).

Product evaluations

Evaluations of the apartment, which are shown in Table 2 as a function of mood, processing goal, and consumption time, confirmed the conclusions drawn in Experiment 1. The three-way interaction of these variables was significant ($F(1, 264) = 18.41$, $p < .001$) and similar in form to that observed in Experiment 1. Planned comparisons indicated that happy participants with a good-decision goal and sad participants with an enjoyment goal evaluated the apartment more favorably for future consumption than for immediate consumption (averaged over conditions, 4.42 vs. 3.43, respectively; $F(1, 264) = 12.81$, $p < .01$). In contrast, sad participants with a good-decision goal and happy participants with an enjoyment goal evaluated it less

favorably for future consumption than for immediate consumption (averaged over conditions, 3.86 vs. 4.46, respectively; $F(1, 264) = 5.15$, $p < .05$).

Underlying processes

We assumed that happy participants stop processing sooner than sad participants if they have a good-decision goal but persevere longer than sad participants if they have an enjoyment goal. Moreover, this should be true regardless of the type of attribute they identify. The total number of attributes that participants identified in each condition, summarized in the second section of Table 2, confirms this assumption. The interaction of mood and processing objectives was significant, $F(1, 264) = 4.65$, $p < .05$, and independent of the time of consumption ($p > .10$). Happy participants identified nonsignificantly fewer attributes than sad participants did when they had a good-decision goal (4.15 vs. 4.43, respectively; $F < 1$) but identified more attributes than sad participants did when they had an enjoyment goal (4.52 vs. 3.67, respectively; $F(1, 264) = 5.12$, $p < .05$).

These differences did not depend on the type of attributes that participants identified. Analyses in which attribute type (desirability vs. feasibility) was included as a within-subjects variable yielded no significant effects involving mood and processing goal ($p > .10$). Thus, the priority they gave to the two types of attributes when making judgments was not reflected in the frequency with which they identified them (See Web Appendix C for a complete set of means).

Participants' ratings of the relative importance they gave to the attributes varied as expected, however, indicating that this difference was more pronounced when participants processed

Table 2
Product evaluations, number of attributes searched, and relative importance of desirability-relevant vs. feasibility-relevant information as a function of mood, processing goal, and time of Consumption—Experiment 2.

	Good decision goal		Enjoyment goal	
	Happy	Sad	Happy	Sad
Product evaluations				
Future consumption	5.00 (1.02)	4.07 (1.44)	3.65 (1.58)	3.83 (1.74)
	$N = 35$	$N = 34$	$N = 35$	$N = 29$
Immediate consumption	3.92 (1.60)	4.85 (1.16)	4.06 (1.81)	2.95 (1.54)
	$N = 44$	$N = 33$	$N = 31$	$N = 31$
M_{diff}	1.08 **	−0.78 **	−0.41	0.88 **
Number of attributes searched				
Future consumption	4.29 (2.26)	4.53 (1.80)	4.49 (2.16)	3.97 (2.23)
	$N = 35$	$N = 34$	$N = 35$	$N = 29$
Immediate consumption	4.05 (1.95)	4.33 (2.04)	4.55 (2.34)	3.39 (2.06)
	$N = 44$	$N = 33$	$N = 31$	$N = 31$
Mean	4.15	4.43	4.52	3.67
Relative importance of desirability-relevant vs. feasibility-relevant information				
Future consumption	0.69 (1.53)	0.18 (2.19)	0.09 (2.16)	0.65 (1.98)
	$N = 35$	$N = 34$	$N = 35$	$N = 29$
Immediate consumption	0.02 (1.84)	−0.11 (2.48)	0.88 (2.24)	0.19 (1.47)
	$N = 44$	$N = 33$	$N = 31$	$N = 31$
M_{diff}	0.67	0.29	−0.79	0.46

Note. Standard deviations are given in parentheses.
 * $p < .10$.
** $p < .05$.

the information less extensively. Data summarized in the third section of Table 2 are consistent with this assumption. Although the three-way interaction of mood, processing goal and consumption time was not significant, $F(1, 264) = 2.72$, $p > .10$, happy participants with a good-decision goal and sad participants with an enjoyment goal both attached more importance to desirability-relevant attributes when they considered the apartment for future consumption than when they considered it for immediate consumption (averaged over conditions, 0.67 vs. 0.10, respectively; $M_{diff} = 0.57$, $t(264) = 1.70$, $p < .05$, one-tailed). In contrast, sad participants with a good-decision goal and happy participants with an enjoyment goal attached nonsignificantly less importance to desirability-relevant attributes in the former case than in the latter (0.13 vs. 0.38, respectively; $M_{diff} = -0.25$, $p > .10$). A planned comparison of the effect of consumption time in the first two conditions and its effect in the second two conditions was reliable, $t(264) = 1.64$, $p = .05$, one-tailed.

General discussion

Although many implications of temporal construal theory have been confirmed (Förster et al., 2004; Trope & Liberman, 2003, 2010), there are constraints on their generality (Chang & Pham, forthcoming; Kim et al., 2009). The present research identified further contingencies. In most previous tests of temporal construal theory (Trope & Liberman, 2003), participants were given only one piece of desirability-related information and one piece of feasibility-related information. When individuals have an opportunity to acquire several pieces of information of each type, the theory's applicability depends on not only the goal they have in mind but also the mood they happen to be in. The effects of temporal distance on judgments under these conditions reflect the relative importance that individuals give to the criteria they consider to be most relevant at different points in time. Thus, the implications of temporal construal theory are only likely to be evident when individuals are unmotivated to think extensively about the information they receive. When people are disposed to think more extensively about the object they are judging, they are likely to consider both desirability-relevant and feasibility-relevant information and so the differences implied by temporal construal theory do not occur. In fact, results suggest that the relative impact of the two types of information may actually be reversed in these conditions. Although the reversal was unexpected, it could indicate that when participants reviewed all of the information, the information they considered most recently (i.e., the information they gave relatively less priority) was most salient and had the greatest impact.

Our findings have more general implications. Research is often conducted under conditions in which individuals have an explicit achievement goal (e.g., to make a judgment, or to perform well on an experimental task). In these situations, participants may spend less time processing the information they receive, and may think about it *more* superficially, when they are happy than when they are not. Thus, for example, they may be more inclined to use heuristics (e.g., stereotypes) as a basis for judgment (Bodenhausen, 1993; Bodenhausen, Kramer, & Süsser,

1994), and may give less attention to the quality of arguments in a persuasive message (Bless, Bohner, Schwarz, & Strack, 1990; Schwarz et al., 1991). However, different results might occur if individuals process information for enjoyment (Wegener, Petty, & Smith, 1995).

Our findings also have implications for consumer behavior outside the laboratory. Department store shoppers who are looking for a specific product (and thus have a good-decision objective) may spend less time shopping and consider fewer options if they are happy than if they are sad, whereas consumers who shop for enjoyment with no particular goal in mind may spend more time and consider more options when they are happy than when they are not. The effects of mood on Internet shopping could be analogous. These possibilities may be worth examining empirically.

Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jcps.2014.09.004.

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