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**Effects of Social and Temporal Distance on Consumers' Responses to
Peer Recommendations**

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ABSTRACT

This paper examines the interplay of social and temporal distance on consumers' responses to others' recommendations. Drawing on research on psychological distance and the "fit" literature, the authors hypothesize that others' recommendation is more persuasive when the construal levels associated with both social distance and temporal distance are congruent. Specifically, the authors first demonstrate a time-contingent effect of recommendation, i.e., others' recommendations lead to a greater preference shift when people make decisions for distant-future consumption than for near-future consumption (Studies 1 and 2). Second, contrary to conventional wisdom, the authors find that close others do not always have greater impact than distant others. Instead, recommendations from close others are more influential in shifting near-future preferences than those from distant others, whereas recommendations from distant others are more influential than those from close others in shifting distant-future preferences (Study 3). As the underlying mechanism, the authors demonstrate that others' recommendation is perceived to be more relevant when there is a match between the social and temporal distance. Research and managerial implications are discussed.

Key words: preference over time, construal level, recommendation, WOM, consumer reviews

When consumers make decisions, they often have exposure to other people's opinions or recommendations. Recent advances in information technology and the rapid development of the Internet are creating increasing opportunities for consumers to access various kinds of recommendation provided by their peers such as online consumer reviews (Chen and Xie 2008, Chen, Wang, and Xie 2010). How will these recommendations influence consumers' decisions and preferences concerning a product? Different factors may affect consumers' responses to others' recommendations. In this paper, we focus on the congruency between the temporal and social distance, and examine how other people's recommendations will shift consumers' preferences differently in their decision for near-future and distant-future consumption. For example, imagine that a consumer plans to create a digital photo book the next day and tries to choose a software package. After examining information about several alternatives, she checks online recommendations by previous users, as a typical consumer would do nowadays. How will these recommendations impact her software choice? Now suppose that she is choosing a software package to create the photo book in three months rather than the next day, would her responses to these recommendations be any different? In addition, if this consumer receives recommendations from close others vs. distant others, how will the *source of recommendation* change her attitude toward the recommendation at different points in time? These are the central questions we seek to address in this paper. Answers to these questions will advance our understanding of consumer social interactions; in practice they will shape the design of effective recommendation strategies.

To investigate the questions listed above, we draw on research on psychological distance (Trope, Liberman, and Wakslak 2007), which identifies four dimensions of psychological distance that will influence consumers' construal of information and their subsequent decisions:

temporal, social, spatial and hypothetical distance. The central premise is that increased distance enhances the abstractness and level of mental construal of an event. For example, concerning temporal distance, a distant-future event is construed as more abstract and at a higher level than is a near-future event (Trope and Liberman 2003). Regarding social distance, other people's behavior or opinion (e.g., other people's recommendations about a product) is construed as more abstract and at a higher level than is one's own behavior (Trope et. al 2007).

In this paper, we integrate research on temporal and social distance and draw on the "fit" literature to predict that when consumers receive other people's recommendations, recommendations are effective in changing consumers' preferences when the construal levels associated with both dimensions are congruent (i.e., both at a high level or both at a low level). We design three studies to test our hypotheses. Study 1 tests and shows that other people's recommendations result in greater preference shift for distant future (vs. near future) where the construal level of other people's opinion matches that of the time frame (i.e., both are high), and this match increases the perceived relevance of other people's recommendation. Study 2 replicates the findings of Study 1 in the scenario even when the recommendation supports an option that consumers naturally would not prefer. Further, in Study 3, we manipulate the relative degree of social distance by introducing recommendations from close others vs. distant others, and demonstrate that the impact of recommendations on people's preference shift again depends on the congruency between temporal and social distance. Contrary to conventional wisdom, we find that close others do not always have greater impact than distant others. Specifically, recommendations made by close others are more influential in causing shift in near-future preferences than distant others, whereas distant others are more influential in shifting distant-future preferences than close others because the recommendation from each social source is

perceived as more relevant when its construal level is congruent with that of the time.

RECOMMENDATIONS

Previous research on recommendation, or word-of-mouth (WOM), has examined the effect of others' opinions or recommendations on one's decision from different perspectives. In general, the recommendation of others helps reduce the cognitive cost of thinking and increase the certainty surrounding a decision (Shugan 1980). Accordingly, the ease or difficulty of the decision should change the extent to which a recommendation is accepted or not. Studies have shown that, when a decision is easy, people tend not to take the advice others give. However, when the decision is difficult, they are more likely to follow the advice because they are in need of more information (Gino and Moore 2006). Other research has demonstrated how decision makers' level of knowledge affects their responses to recommendations (Yaniv 2003): When the decision makers are knowledgeable, they are less likely to accept others' recommendations; however, when they have little knowledge about a product or scenario, they are more likely to follow the recommendations of others because they need more external input. From a slightly different perspective, studies have investigated how agent characteristics (West and Broniarczyk 1998) or the decision task (i.e., whether consumers are seeking external recommendation and evaluation or choosing between two conflicting agents) impact consumers' choice of recommendation agents (Gershoff, Broniarczyk, and West 2001).

Although previous research has discussed various factors that potentially impact people's reaction to recommendations, it has scarcely examined how the passage of time interacts with others' recommendations and how different types of recommendation impact people's decisions at different times. Below we review research on psychological distance along temporal and

social dimensions and investigate how (in)congruency between temporal and social distance impacts the persuasiveness of other people's recommendations.

PSYCHOLOGICAL DISTANCE AND CONSTRUAL LEVELS

The effect of time on people's decisions and preferences has been investigated across different areas in the behavioral and social sciences (Mischel, Shoda, and Rodriguez 1989; Rachlin 1995; Thaler 1981). In particular, construal level theory (CLT, Liberman and Trope 1998; Trope and Liberman 2000, 2003) proposes that temporal distance changes people's mental representation of future events: Events in the distant future are more likely to be represented in terms of abstract and central features at a higher level. However, events in the near future are more likely to be represented in terms of concrete and peripheral features at a lower level. As evidence of these different mental representations for distant- or near-future events, for example, research studies have shown that when asked to choose a distant-future research assignment, students tend to choose a more interesting but more difficult assignment and thus sacrifice ease (low-level aspect of the assignment) for the sake of interest (high-level aspect of the assignment). However, when the assignment is due in the near future, students prefer an easier but less interesting assignment (Liberman and Trope 1998).

Construal level theory (CLT) originated with the temporal perspective and has recently been extended to other dimensions such as social distance. The distinctions between self and others, similar and dissimilar others, or in-group and out-group members are all instances of social distance (Trope et. al 2007). Prior research has consistently shown that distal social targets (e.g., others) are construed at a higher and more abstract level than a proximal social target (e.g., self) (Kim, Zhang, and Li 2008; Jones and Nisbett 1972; Trope et. al 2007). Relating these

findings to recommendations made by peers in product evaluation, we conclude that other people's recommendations are represented at a higher and more abstract level relative to one's own preference.

Given that there are multiple dimensions of psychological distance, how do they interact with each other? While the interaction among different dimensions of psychological distance and its effect on product evaluation is a relatively unexplored area, Kim and colleagues (2008) examined the differential influence of value associated with low-level vs. high-level construals when both temporal distance (e.g., choosing for tomorrow or one year from now) and social distance (e.g., choosing for self or others) are involved in a product evaluation scenario. Specifically, they showed that people's product evaluation is more based on considerations at low levels (i.e., viewing products high on feasibility-attributes as more attractive) if both the temporal and social dimensions are proximal, whereas their product evaluation is more based on considerations at high levels (i.e., viewing products high on desirability-attributes as more attractive) if either or both dimensions are distal. Our conceptual model is different from this prior work in that we are investigating the persuasiveness of other people who make subjective recommendations toward a product option after consumers first have a chance to review the product information. Specifically, we study to what extent consumers follow these particular recommendations as a result of the match of the construal levels associated with temporal distance (i.e., near vs. far future) and social distance (i.e., one's own preference vs. others' preferences). More discussion of how our work differs from and relates to this prior research (Kim et al. 2008) will be offered later in our study discussions and general discussion.

Below we review important research findings in the "fit" literature and propose hypotheses about the effect of recommendation on attitude change based on the match of temporal and social

distance.

CONGRUENCY OF CONSTRUAL LEVELS

The time-contingent effect of recommendation

A considerable amount of previous research has emphasized the value of “fit” and indicated that an external stimulus has the greatest impact when it fits the internal mindset of the consumer (Higgins 2000; Higgins et al. 2003). In the consumer literature, research has shown that a fit between the message frame and a consumer’s regulatory focus led to higher persuasiveness of the message (Lee and Aaker 2004). Studies have also found that a fit between the message type and a consumer’s mental representation enhances the ad effectiveness: comparative ads are more effective for analytical processing whereas non-comparative ads are more effective for imagery-based processing (Thompson and Hamilton 2006). In relation to temporal distance, recent studies have demonstrated that when people evaluate a product for the near future, where their natural construal level is low and process-oriented, process simulation, which focuses on the low-level process of using the product, leads to higher product evaluation; conversely, when they evaluate a product for the distant future, where their natural construal level is high and outcome-oriented, outcome simulation, which focuses on the benefits of the product, leads to enhanced product evaluation because of the congruency (Castano et al. 2008). Similarly, another study (Thomas, Chandran, and Trope 2007) shows that when product information at different construal levels is presented at different points of time, central information at a higher level (e.g., feature upgrade) is considered more important and has a stronger impact on consumers’ purchase intention for the distant future, whereas peripheral information at a lower level (e.g., discount coupon) is more relevant to and has a stronger impact

on purchase intention for the near future because of the fit between the additional product information and consumers' natural mindset. Furthermore, recent studies have found that in the political voting domain, the abstract "why"-laden appeals are more persuasive for distant-future voting whereas the concrete "how"-laden appeals are more persuasive for near-future voting (Kim, Rao, and Lee 2008). These findings lead to the conclusion that the external factor becomes more influential when its level of representation is congruent with the natural construal level of the decision-maker in a specific timeframe than when it is incongruent.

Applying this general conclusion to the dimensions of social and temporal distance, we hypothesize that recommendation becomes more effective in shifting consumers' product preference when there is a match between temporal and social distance. Specifically, since the opinions of others are construed at a higher level (compared with one's own opinion), which is congruent with people's high construal level for distant future, they will have a larger effect on distant-future decision making compared with near-future decision making (where there is a lack of congruency). Formally, we propose a *time-contingent effect* of recommendation:

H1: Others' recommendation has a greater impact on one's distant-future preference shift than on near-future preference shift.

Also, as described above, research on CLT has shown that people put more weight on the type of information that matches their natural construal level at a given time (Liberman and Trope 1998; Thomas, Chandran, and Trope 2007). Together with one of the key premises in the persuasion literature that people are more likely to consider information when it is consistent with their mental representation state (Petty and Wegener 1998), we hypothesize that:

H2: Perceived relevance of others' recommendation mediates the time-contingent effect of others' recommendation.

Degree of social distance

If we are correct that the congruency of social and temporal distance determines the impact of recommendation on consumers' preference shift, we should be able to strengthen or weaken such an impact by varying the degree of congruency across time. In other words, if the construal level of others' recommendations is changed from its natural high level to a lower level, the effect of recommendation at a different time might be moderated accordingly. Below, we discuss how the *source* of recommendation can be varied to manipulate the relative degree of social distance of the recommender.

As mentioned earlier, theory on social distance not only differentiates between the self and others, but also between close others (e.g., in-groups or similar others) and distant others (i.e., out-groups or dissimilar others) (Trope et. al 2007). Studies have found that out-group members, who are more distal, are described in relatively more abstract terms and at a higher level than are in-group members, who are more proximal and are construed in more concrete terms and at a lower level (Fiedler et al. 1995; Trope et. al 2007). How does the relative degree of social closeness change the effect of recommendation? Intuitively, one would expect that, when making a recommendation, close others would always be more effective than distant others. A related finding in a previous study (Duhan et al. 1997) supports this assumption: consumers are more likely to use recommendation sources that have close relationships to them than those that are more distant. However, this finding, based on social distance only, does not consider the possible effect of temporal distance. Based on our congruency framework, we predict that:

H3: Source of recommendation moderates the time-contingent effect of recommendation such that

- (a) For near future, recommendations from close others have greater impact on preference shift than those from distant others.
- (b) For distant future, recommendations from distant others have greater impact on preference shift than those from closer others.

Three studies were conducted to test our hypotheses.

STUDY 1

The purpose of Study 1 is to examine the general effect of congruency between temporal and social distance on the persuasiveness of others' recommendations, as well as to address the underlying process.

Method

Participants and design. A total of 184 students at a major North American university completed this computer-based study for course credits. The study was a 2 (time: near future, distant future) x 2 (recommendation: control, recommendation) between-subjects design.

Procedure. Participants were randomly assigned to the four conditions. In all conditions, we asked participants to assume that they were going to attend an important event either in two days or in two months and were looking for a digital camera to take pictures at this event. After browsing on the internet for a while, one digital camera caught their eyes. In order to create a product for which participants would have neutral preference for both the near and distant future, we provided participants with a table of such non-time-sensitive features as a total pixel of 5.3MP, weight of 280g and internal memory of 47 MB, among others (see Appendix A for details). Participants were further told that the price of the camera was within their budget.

After reviewing this information, participants in the control conditions proceeded to the questions. In the recommendation conditions, participants read an extra sentence on the same screen that before making their decision, they found an online discussion forum for digital cameras and most people would recommend this camera (see Appendix A for exact wording). All participants were then asked to indicate their preference toward this camera by answering how much they liked this camera based on a 1 (“Not at all”) to 10 (“Like it a lot”) point scale. For participants who received recommendations, in order to capture the perceived relevance of the recommendation, we further asked them to rate the extent to which they considered the online reviews and how relevant they thought these online reviews were for their decision. Both questions were based on 1 (“Not at all”) to 10 (“Very much”) point scales. Response time for all the questions above was recorded and no difference was found across conditions.

Results

Preference. We ran a 2 (near future vs. distant future) x 2 (control vs. recommendation) ANOVA to assess the effect of recommendation on people’s preference toward this camera. The results showed an expected significant interaction between these two factors ($F(1, 180) = 4.12, p < .05$; see Figure 1). Specifically, in the control conditions, participants indicated a similar preference toward the digital camera across time ($M_{\text{near/control}} = 5.75$ vs. $M_{\text{distant/control}} = 5.39$; $F(1, 90) = .85, p = .36$), confirming the non-time-sensitive product attributes. However, recommendation of this digital camera exerted different impacts on participants’ preference across time: It significantly increased participants’ liking when the decision was for distant future compared with the control ($M_{\text{distant/recommendation}} = 6.68$ vs. $M_{\text{distant/control}} = 5.39$; $F(1, 92) = 10.68, p < .005$), but did not change near-future liking ($M_{\text{near/recommendation}} = 5.86$ vs. $M_{\text{near/control}} =$

5.75; $F(1, 88) = .62, p = .84$). No main effect of time ($F(1, 180) = .62, p = .43$) and a significant main effect of recommendation ($F(1, 180) = 5.75, p < .05$) were obtained as a result of this interaction. In addition, a separate one-way ANOVA using preference shift from the respective control as DV in the two recommendation conditions also showed a significant effect of time ($M_{\text{near shift}} = .11$ vs. $M_{\text{distant shift}} = 1.29$; $F(1, 90) = 8.19, p < .005$), further confirming that recommendation has a greater impact on preference shift for distant future than for near future. These results provide support for H1.

 Insert Figure 1 about here

Perceived relevance of recommendation. We created a relevance-of-recommendation index by aggregating the two measures regarding participants' perception of the online reviews in the two recommendation conditions (i.e., *to what extent they have considered the online reviews and how relevant they thought these online reviews were for their decision*, $\alpha = .80$), and performed a set of analyses to test the potential mediating role of perceived relevance in the effect of recommendation on participants' preference toward the camera in the recommendation conditions (Baron and Kenny 1986). First, A one-way ANOVA showed a significant effect of time on perceived relevance of the recommendation ($M_{\text{distant}} = 7.69$ vs. $M_{\text{near}} = 6.61$; $F(1, 90) = 5.09, p < .05$), indicating that recommendation was perceived to be more relevant for distant-future decisions than for near-future decisions. Second, perceived relevance of recommendation significantly predicted preference ($F(17, 74) = 1.83, p < .05$). Third, time significantly predicted the effect of recommendation on preference ($M_{\text{near/recommendation}} = 5.86$ vs. $M_{\text{distant/recommendation}} = 6.68$; $F(1, 90) = 3.64, p = .05$). Fourth, after we added perceived relevance of recommendation as a covariate ($F(1, 89) = 6.37, p < .05$) in the model of the third step, the effect of time on participants' preference toward the camera became non-significant ($F(1, 89) = 1.66, p = .20$).

Similar mediation effect was observed when we used preference shift (due to recommendation relative to the respective control) as the DV. These analyses demonstrated that perceived relevance of other people's recommendation mediates the effect of time on people's responses to recommendations, thus providing support for H2.

Discussion

Study 1 demonstrated that other people's recommendations have a greater impact on preference shift for distant future than for near future because input from others was perceived to be more relevant for a distant-future time frame (where there was a match), whereas it was relatively disregarded when the decision was for the near future. These results supported H1 and H2 and confirmed our match-based account. Notice that, in Study 1, the product attributes did not involve a trade-off between feasibility at a low level and desirability at a high level. Hence, participants' preference changes toward this non-time-sensitive product across time after encountering the recommendation could not be explained by the changes in the values associated with low or high level of construals (Kim et al. 2008).

Concerning the underlying process, one might also wonder whether people were simply not interested in processing recommendations from others for the near future, and thus near-future recommendation had little impact on people's product attitude. To address this question, while conducting Study 1, we also included two conditions (N=63) where we asked participants to read the same product information for near future or distant future. Then we gave them the option to view recommendations from other people who used this camera before, suppose such information was available. If participants clicked on *Yes*, they would be shown the recommendation information. If participants clicked on *No*, no recommendation would be

shown. The results showed that 93% of the people in the near-future condition and 97% of the people in the distant-future condition clicked *Yes* and chose to view the recommendation ($\chi^2(1) = .54, p = .46$), indicating that people were equally likely to view others' recommendations across time. Further, no difference of participants' time spent in processing the recommendation information was observed across time. Similar time-contingent pattern of preference due to recommendation was obtained in those two conditions. These findings complemented our process measures and indicated that the time-contingent effect of recommendation was not associated with lower degree of interest that people have in processing input from others for near-future decisions, but with their perception that others' opinions are more relevant for distant-future decisions.

STUDY 2

Study 1 tested the time-contingent effect of recommendation in a domain where people initially had a neutral attitude toward a product. In the real world, marketers often have to work with consumers' initial negative attitudes toward a product, either because the product is a new product, which generally suffers from initial low preference (Hoeffler 2003), or because consumers evaluate a specific product with benefit-effort trade-offs in a specific temporal frame (Trope and Liberman 2003). In these scenarios where consumers initially do not prefer a certain product, the effectiveness of recommendation is even more critical. Thus, in Study 2, we examine scenarios where people receive recommendations in favor of a naturally less-preferred option. At the same time, we address the case when people receive recommendations in favor of an already-preferred option. Because consumers have very predictable preferences for near future and distant future when the products involve benefit-effort trade-offs, we used stimuli with

these characteristics in Study 2.

Method

Participants and design. A total of 159 students at a major North American university completed the study either for course credits or for monetary compensation. The study was a 2 (time: near future, distant future) x 3 (recommendation: control, recommendation in favor of a preferred option, recommendation in favor of a less-preferred option) between-subjects design.

Procedure. Participants were randomly assigned to six conditions. The basic scenario of the stimuli, adapted from prior research on temporal construal (Zhao, Hoeffler, and Zauberman 2007), asked participants to imagine that they were assigned an important project (to create a photo essay) that was due either in a day or in two months. The project required the use of a photo album software package. Participants could choose between two software packages, both of which had free trial versions that could be downloaded from the Web and were valid for 24 hours. Participants were asked to consider the following two options: Software Package A was of lower quality and had basic image-editing features, but it was easy to use; Software Package B was of higher quality and had complete image-editing features, but it was difficult to use (see Appendix B for details).

Participants in the control conditions reviewed the scenario above and were told that they needed to decide between these two software packages. Participants in the recommendation conditions read an extra line stating that before making their decision, they found an online forum where people share computer-related information. According to the online review by people who had used the software before, either Software Package A or B is the recommended option, depending on the condition (see Appendix B for exact wording). Based on the prediction

of construal level theory (Trope and Liberman 2003), people's natural preferences will be different for the near future (preferring the easier Software Package A) and the distant future (preferring the higher-quality Software Package B). Therefore, for the near future, the higher-quality Software Package B was recommended as a less-preferred option, whereas for the distant future, the easier Software Package A was recommended as a less-preferred option, and vice versa for recommendation in favor of preferred options. It is important to note that given people's different natural preferences across time, the specific options we compared as recommended options across time had to be different as well. However, the conceptual constructs we manipulated across time were the same (i.e., either *recommendation in favor of less-preferred options*, or *recommendation in favor of preferred options*).

After reviewing the scenario, all participants were asked to indicate their choice between Software Package A and Software Package B, and, subsequently, their relative preference between those two options on a scale anchored at 1 ("Strongly prefer Software A") and 11 ("Strongly prefer Software B"). Thus higher numbers represent greater preference toward the higher-quality software package.

Results

Note that a key feature of our design in Study 2 is that (1) unlike in Study 1, natural preferences in the control conditions are different over time in accordance with prior research and (2) recommendations are hypothesized to change preference (i.e., causing a deviation from the control condition) differently at different points in time. Accordingly, we will first report preference data in the control conditions to validate our recommendation manipulations. Then we will test the overall preference shift caused by different types of recommendation, followed

by a series of planned contrasts that match our hypotheses. Such an approach has been validated in prior research on inter-temporal preference (Zhao et al. 2007). Because participants' choice fully replicated their relative preferences, we only report the data of relative preferences.

Control conditions (confirming prior findings of CLT). First, in the control conditions, consistent with CLT (e.g., Liberman and Trope 1998), participants in the near-future condition preferred the easier/lower-quality software ($M_{\text{near/control}} = 4.73$) whereas those in the distant-future condition preferred the more difficult/higher-quality software ($M_{\text{distant/control}} = 7.33$); ($F(1, 51) = 12.40, p < .001$; see Figure 2). This confirmed our manipulation of recommendation, namely, recommending the more difficult/higher-quality software for the near future and the easier/lower-quality software for the distant future as the recommendation in favor of less-preferred options, and vice versa as the recommendation in favor of preferred options.

Effect of recommendation. To assess the overall effect of recommendation across time, we first created a measure of preference shift from control by taking each participant's preference score and subtracting the average of the natural preference (i.e., 4.73 for the near future and 7.33 for the distant future). We used these difference scores to compute a 2 (near future vs. distant future) x 2 (recommending naturally less-preferred option vs. recommending naturally preferred option) ANOVA. The results indicate no main effects of time ($F(1, 103) = .28, p = .60$) or recommendation ($F(1, 103) = 2.45, p = .12$). However, as anticipated, there was a significant interaction between time and recommendation ($F(1, 103) = 4.54, p < .05$). Specifically, when a naturally less-preferred option (i.e., the higher-quality option) is recommended for the near future, it did not shift people's preference ($M_{\text{near/recommendation}} = 4.39$ vs. $M_{\text{near/control}} = 4.73$; $F(1, 52) = .24, p = .62$). However, when a naturally less-preferred option (i.e., the easier option) is recommended for the distant future, it significantly shifted people's preference toward the target

option ($M_{\text{distant/recommendation}} = 5.69$ vs. $M_{\text{distant/control}} = 7.33$; $F(1, 54) = 4.66$, $p < .05$). These results further confirm the time-contingent effect of recommendation and support H1.

In the case when an already-preferred option is recommended, the recommendation neither changed people's preference for the near future (when the easier option is recommended) ($M_{\text{near/recommendation}} = 4.11$ vs. $M_{\text{near/control}} = 4.73$; $F(1, 50) = .79$, $p = .38$), nor shifted their preference for the distant future (when the higher-quality option is recommended) ($M_{\text{distant/recommendation}} = 7.50$ vs. $M_{\text{distant/control}} = 7.33$; $F(1, 49) = .05$, $p = .82$). We believe that this may be caused by a ceiling effect associated with people's rather strong initial preferences, which did not allow recommendation much room to further strengthen the preference. In such a case, recommendation proved redundant. However, demonstrating this equal null effect of recommendation in favor of preferred options across time in this study is important because it showed that the effect of recommendation in favor of the less-preferred option for the distant future (i.e., the easier software package) described in the previous paragraph was not simply the result of a stronger effect of the easier software package.

 Insert Figure 2 about here

Follow-up study. Although it is not our main focus to address how recommendation toward a naturally preferred option would impact consumers' preference, we decided that it was important to examine whether this type of recommending would have a differential effect on near- and distant-future preference (as our conceptual model would predict), if we allowed room for preference to further grow. Thus we conducted a follow-up study based on a scenario where participants' initial preferences were not as strong to replicate the time-contingent effect of recommendation when it is in favor of a preferred product (N=126). Specifically, participants were asked to consider two restaurants for a dinner with a friend who was coming either on the

next day or in three months: Restaurants A served good food (rated as three-star), and people usually get seated immediately after they arrive. Restaurant B served great food (rated as four-star), but it doesn't take reservation and a free table usually requires 45 minutes' waiting. Both restaurants are at similar price ranges. In the control conditions, participants received no further information. In the conditions where a naturally-preferred option is recommended, they were told that an online forum where people share information about local restaurants recommended restaurant A (i.e., more feasible option) for the near future and restaurant B (i.e., more desirable option) for the distant future. Participants were asked to indicate their preference between these two restaurants based on a 1 (Strongly prefer restaurant A) to 10 (Strongly prefer restaurant B) point scale. The results showed an anticipated interaction between time and recommendation ($F(1, 121) = 3.86, p < .05$). Specifically, when no recommendation was given, consistent with CLT, participants in the near future condition have a higher preference toward restaurant A and those in the distant future condition have a higher preference toward restaurant B ($M_{\text{near/control}} = 4.87$ vs. $M_{\text{distant/control}} = 6.09$; $F(1, 62) = 3.92, p = .05$). When recommendation was given toward the preferred option, it did not change preference for the near future ($M_{\text{near/recommendation}} = 4.30$ vs. $M_{\text{near/control}} = 4.87$; $F(1, 62) = .79, p = .36$), but it further strengthened people's preference for the distant future ($M_{\text{distant/recommendation}} = 7.25$ vs. $M_{\text{distant/control}} = 6.09$; $F(1, 59) = 3.47, p = .06$). These findings confirmed that our conceptual model (i.e., time-contingent effect of recommendation) still holds when a naturally preferred recommendation is offered, as long as there is room for preference to be further strengthened.

Discussion

Overall, Study 2 confirmed H1 in the scenario when the recommendation supported

naturally less-preferred options, and replicated the time-contingent effect of such an important type of recommendation. When the recommendation was in favor of naturally preferred options, results in Study 2 and the follow-up study showed that the time-contingent effect is replicated as long as there is room for preference to further grow, yet if the original preference is rather strong, additional recommendation does not add much (i.e., ceiling effect).

To compare our findings to those of Kim et al. (2008), when we conducted the main study (software study), we also included two conditions with the same software stimuli (without recommendation) where participants' software choice was made for another student they do not know, Rafealo. Participants were asked to predict Rafealo's choice and relative preference. Consistent with the findings in Kim et al. (2008), we found that when the choice was for the near future, choosing for others, as compared with choosing for self, indeed led to higher preference ($M_{\text{near/self}} = 4.73$ vs. $M_{\text{near/others}} = 6.04$; $F(1, 49) = 3.04$, $p = .08$) toward the higher-quality software package. However, when the decision was for the distant future, choosing for others didn't change people's preference ($M_{\text{distant/self}} = 7.33$ vs. $M_{\text{distant/others}} = 7.31$; $F(1, 51) = .01$, $p = .97$) toward the higher-quality software. Again, choice data replicated this pattern.

These results confirm the findings by Kim et al. (2008), i.e., when one makes a decision for self or other people across time, feasibility-attributes have more weight when both the social and temporal dimensions are proximal and desirability-attributes have more weight when either or both dimensions are distal. Their perspective deviates, however, from ours regarding the persuasiveness of other people's recommendations toward a particular product. Further, whereas combined construal levels based on subadditivity are the underlying mechanism in Kim et al. (2008), congruency of construal levels associated with temporal and social distance is our underlying mechanism. To further test this congruency as the underlying mechanism, we

conducted Study 3, where we manipulated the relative degree of social distance.

STUDY 3

Studies 1 and 2 showed the time-contingent effect of others' recommendations: The congruency of construal levels between distal others and distant time resulted in a stronger effect of others' recommendation on preference and choice shift for distant future than for near future where the construal levels between distal others and proximal time did not provide a match. While we use the general term of "other people" in Studies 1 and 2, in Study 3, we manipulate the relative degree of social distance of other people by using different recommendation sources, and test whether this moderates the effect of recommendation across time. To maximize the generalizability of our findings, we used the neutral stimuli as in Study 1 in this study. However, given marketer's challenge of dealing with initial negative preferences and thus the critical role of recommendation toward naturally less-preferred products, we also conducted a follow-up study based on recommendation toward a naturally less-preferred option to replicate the results.

Method

Participants and design. A total of 139 students at a major North American university completed the study as part of a longer study session in exchange of \$5. The study was a 2 (time: near future, distant future) x 3 (recommendation: control, recommendation from close others, recommendation from distant others) between-subjects design. According to the theory of psychological distance, in-groups vs. out-groups is an important dimension of social distance (Trope et. al 2007). Research findings have shown that out-groups are construed at a higher level than are in-groups (Jones, Wood, and Quattrone 1981; Linville, Fischer, and Yoon 1996; Trope,

Liberman, and Wakslak 2007; Quattrone and Jones 1980). Therefore, our manipulation of closer others and more distant others in Study 3 follows this dimension by comparing in-groups with out-groups (i.e., people from their own university vs. people from another university; Quattrone and Jones 1980).

Stimuli and procedure. The same neutral stimuli for a particular digital camera and the same study procedure used in Study 1 were used in Study 3, except for the recommendation manipulations in the experimental conditions. Participants were told that, before making their decision, they found an online forum for digital cameras organized by students from University X. And according to this forum, most people would recommend this camera. In the in-groups conditions, the university was the participants' own university, whereas in the out-groups conditions, it was another university (see Appendix A for exact wording).

After reviewing the scenario, participants answered the same preference question and the same two-item questions regarding perceived relevance of the recommendation as in Study 1.

Results

Preference: Consistent with the findings in Study 1, there was no difference between participants' natural preference for near future and distant future ($M_{\text{near/control}} = 5.26$ vs. $M_{\text{distant/control}} = 5.12$; $F(1, 46) = .048$, $p = .83$; see Figure 3). Again, we created a measure of preference shift by taking each participant's preference score and subtracting the average of the natural preference (i.e., 5.26 for the near future and 5.12 for the distant future) and ran the 2 (near future vs. distant future) \times 2 (recommendation from in-groups vs. out-groups) ANOVA. The results indicated no main effects of time ($F(1, 87) = .11$, $p = .74$) or recommendation source ($F(1, 87) = .44$, $p = .51$), but a significant interaction between time and recommendation ($F(1,$

87) = 3.81, $p = .05$), showing that recommendations from different sources have different effect on people's preference change in the near and distant future. Specifically, when the decision was for the near future, recommendations from in-groups significantly shifted participants' preference toward the camera ($M_{\text{near/in-groups}} = 7.12$ vs. $M_{\text{near/control}} = 5.26$; $F(1, 45) = 10.86$, $p < .005$), whereas the same recommendation from out-groups didn't change people's preferences ($M_{\text{near/out-groups}} = 5.74$ vs. $M_{\text{near/control}} = 5.26$; $F(1, 44) = .37$, $p = .55$). These results support H3a. When the decision was for the distant future, recommendations from in-groups did not change participants' preferences ($M_{\text{distant/in-groups}} = 5.77$ vs. $M_{\text{distant/control}} = 5.12$, $F(1, 45) = .79$, $p = .38$); in contrast, when the same recommendation was made by out-groups, participants' preferences significantly shifted ($M_{\text{distant/out-groups}} = 6.45$ vs. $M_{\text{distant/control}} = 5.12$, $F(1, 45) = 3.87$, $p = .05$), providing support for H3b.

 Insert Figure 3 about here

Perceived relevance of recommendation. We further performed a set of analyses to test the potential mediating role of perceived relevance of recommendation ($\alpha = .89$) in the pattern described above (Baron and Kenny 1986). First, A two-way ANOVA showed a significant interaction of time and recommendation source on perceived relevance of recommendation ($F(1, 87) = 4.23$, $p < .05$). Second, perceived relevance of recommendation significantly predicted preference ($F(18, 72) = 2.71$, $p = .001$). Third, time and recommendation source interactively predicted the effect of recommendation on preference ($F(1, 87) = 3.81$, $p = .05$). Fourth, after we added perceived relevance of recommendation as a covariate ($F(1, 86) = 34.87$, $p < .001$) in the model of the third step, the interaction of time and recommendation source on participants' preference toward the camera became non-significant ($F(1, 86) = .95$, $p = .32$). These analyses confirmed that recommendation source with different degree of social distance has a differential

effect on people's preference over time because their perceived relevance varied as a result of the match of time and social distance: Close others were perceived as more relevant for near future and distant others were perceived as more relevant for distant future, thus resulting in a larger effect in the respective time frame. These findings provide further support to H2.

Follow-up study. Given the critical role of the effectiveness of recommendation toward naturally less-preferred products, we conducted a follow-up study with the same time-sensitive stimuli and DVs we used in Study 2 (i.e., choice and preferences of the software package) to further test H3, using the same operationalization of recommendation from in-groups vs. out-groups we used in Study 3, except that in this follow-up study, recommendations were made in favor of the naturally less-preferred options.

As in Study 2, higher numbers of the preference ratings stood for greater preference toward the higher-quality software. First, consistent with Study 2, in the control conditions, participants in the near-future conditions preferred the easier/lower-quality software ($M_{\text{near/control}} = 4.50$), whereas those in the distant-future conditions preferred the more difficult/higher-quality software ($M_{\text{distant/control}} = 7.13$; $F(1, 44) = 14.86, p < .001$). After creating the preference shift measure by taking each participant's preference score and subtracting the average of the natural preference (i.e., 4.50 for the near future and 7.13 for the distant future), we ran the 2 (near future vs. distant future) x 2 (recommendation from in-groups vs. out-groups) ANOVA and found an expected interaction between time and recommendation ($F(1, 101) = 3.79, p = .05$). Similar to Study 3, when the decision was made for the near future, recommendations from in-groups significantly shifted participants' preference ($M_{\text{near/in-groups}} = 6.22$ vs. $M_{\text{near/control}} = 4.50$; $F(1, 43) = 4.73, p < .05$), whereas the same recommendation from out-groups didn't change people's preferences ($M_{\text{near/out-groups}} = 5.14$ vs. $M_{\text{near/control}} = 4.50$; $F(1, 48) = .75, p = .39$). On the contrary, when the

decision was for the distant future, recommendations from in-groups did not change participants' preference ($M_{\text{distant/in-groups}} = 6.33$ vs. $M_{\text{distant/control}} = 7.13$; $F(1, 46) = 1.30$, $p = .26$), but the same recommendation made by out-groups significantly shifted participants' preference toward the easier software ($M_{\text{distant/out-groups}} = 5.33$ vs. $M_{\text{distant/control}} = 7.13$, $F(1, 52) = 7.02$, $p < .05$). Participants' choice data fully replicated the pattern described above.

Discussion

Study 3 manipulated the degree of social distance of the recommender and further supported our theory that recommendation is more effective when the construal levels associated with social and temporal distance are congruent. Since close others and near-future decisions are both construed at a relatively lower level, and distant others and distant-future decisions are both construed at a relatively higher level (Trope et al. 2007), we predicted and found that recommendation from close others is more effective in changing near-future preference, whereas recommendation from distant others is more effective in shifting distant-future preference, because recommendations from different social resources were perceived as differentially relevant at different points in time. These results support H2 and H3 and demonstrate that source of recommendation is an important moderator of the time-contingent effect of recommendation due to the congruency of construal levels. Together, findings in Study 3 and the follow-up study demonstrated a more nuanced effect of relative degree of social distance and thus complimented the findings in Studies 1 and 2 (which did not specify the relative distance of other people) rather than contradicting them.

GENERAL DISCUSSION

In this research, we draw on the “fit” literature and research on psychological distance to examine how others’ recommendations will shift consumers’ preferences as a result of the (in)congruency between social and temporal distance. Taken together, our findings show that others’ recommendation is more persuasive when consumers make decisions for the distant future as compared to the near future, because the natural mental construal associated with other people’s opinions is congruent with that of the distant-future decision, both of which take place at a high level, and hence consumers perceive these recommendations to be more relevant in this circumstance. We also show that the time-contingent effect of recommendation on preference shift is attenuated when the recommendation is made toward a naturally strongly preferred product due to ceiling effect. However, if the initial preference is not very strong such that there is still room to further strengthen it, the same time-contingent (strengthening) effect holds for recommendation in favor of naturally preferred options. Further, we show that when the degree of social distance related with the recommendation source is manipulated, the time-contingent effect of recommendation is moderated accordingly: Since the behavior of close others is construed at a relatively lower level and that of distant others is construed at a higher level, recommendations from close others impact near-future preferences more than those from distant others, whereas recommendations from distant others are more effective in changing distant-future preferences than those from close others.

Contribution

Our work contributes to the research literature in several areas. First, our findings add to the recommendation and WOM literature. Research on recommendation has examined the role of different moderators in impacting the effect of recommendation or advice, such as task

difficulty (Gino and Moore 2006), decision-makers' knowledge level (Yaniv 2003), and product characteristics and other information attributes (Chen and Xie 2005). However, none of the previous studies have looked at the effect of time and its interaction with other social dimensions on decision-makers' responses to recommendations. Our results suggest that the effectiveness of recommendation is contingent on the time of a given situation.

Drawing on theories of temporal and social distance, our research also contributes to the psychological distance literature by proposing another instance of interrelations among different dimensions of psychological distance (e.g., Kim et al. 2008). Our research has extended the interrelations among different dimensions of psychological distance by showing how the congruency of construal levels between social distance and temporal distance leads to greater impact of others' recommendations on consumers' preferences, which is consistent with the "fit" literature (e.g. Higgins 2000; Kim, Rao, and Lee 2008).

In addition, our findings have important implications for the preference-over-time literature (Liberman and Trope 1998). Previous research has proposed using process- or outcome-focused simulation at different points in time to shift people's natural preferences in order to achieve preference consistency over time (Zhao et al. 2007). Our research suggests that providing appropriate recommendations can also be an effective tool to change people's natural preferences to achieve preference consistency over time when the construal level of the recommendation is congruent with the temporal frame.

Future Research

Many interesting issues are left unanswered. First, an interesting point concerns decision in public vs. private setting. A recent work has shown that when consuming in a group setting

(e.g., dining as a group), individuals forgo their own preferences and choose instead varied dishes for information-gathering and demonstration of uniqueness (Ariely and Levav 2000), which might imply that people would not choose options that other people have chosen/recommended. While our research does not intend to address decision-making in a group setting, how decisions in a private vs. group setting will moderate the time-contingent effect of others' recommendation is certainly a very interesting question for future research.

Second, our research considers social dimensions of the distance between the recommendation provider and receiver. Other social dimensions may also affect the impact of recommendations across time. For instance, would people's responses to others' recommendations depend on whether the underlying decision is motivated by one's own best interest or by social concerns? How might the findings of this research be moderated by individualistic vs. collectivistic cultural traditions? Furthermore, future research could explore if and how different types of recommendation providers (e.g., peers, experts, governments) may affect people's responses to recommendations across time differently.

Third, this paper illustrates that the compatibility of two psychological distances, temporal distance and social distance, impacts the effectiveness of others' recommendation in one's product evaluation. There are other possible dimensions that may moderate the persuasiveness of recommendations. For example, tight-knit groups (e.g., family members) do not necessarily have more similar preferences regarding a given product/service than loosely-connected groups (e.g., members of a professional association). An interesting question for future research is how these various dimensions interact in determining preferences. For example, when receiving recommendations, how do people integrate the possible match/mismatch in multiple dimensions to update their preference and product evaluation?

Similarly, related with the trade-off between one's own preference and other's opinion, in two of our studies, we demonstrated that recommendation impacts distant future preference because of the match of the construal levels, even if the recommendation is against one's own preference. How do the match of construal levels/mindset and the match of preference interplay with each other? Under what circumstances do individuals rely more on the match of one vs. the match of the other dimension? These questions are beyond the scope of the current research, but deserve future research attention.

Finally, the findings of Kim et al. (2008) and our paper together suggest that temporal and social distance may interact through different mechanisms and follow different rules depending on characteristics of the decision problem, information available, and the object evaluated. A more edifying understanding of the interplay between these two psychological distances awaits further research. Future studies could explore different mechanisms through which the two psychological distances jointly impact people's preferences/product evaluations, and identify the conditions under which one mechanism dominates others (e.g., the sequence of introducing temporal and social dimensions into the decision context).

Managerial Implications

Recommendations are widely used in advertising, in online consumer reviews, or by recommendation agents. Not only does the increasingly easy access to others' recommendations help consumers make more informed decisions, but it also creates increasing opportunities for companies to initiate and manage consumer social interactions effectively (Godes et al. 2005). Our research brings managers' attention to factors that may impact the effectiveness of consumer recommendations: timing of consumption and types of recommendation sources. These findings

can help firms manage consumer social interactions more effectively, especially given that advances in technology are making it increasingly possible for firms to offer customized communications based on sophisticated information systems.

Results in our study show that recommendations for the distant future are more likely to be followed than those for the near future, and that this process is moderated by the social closeness of the recommender/endorser. Therefore, marketers should accordingly design effective recommendation strategies for different or contrasting scenarios, such as advance selling (Xie and Shugan 2001; Shugan and Xie 2005) vs. on-site selling. For example, general recommendations or using endorsers who are more distant (e.g., of different age, social/ethnic background, or profession) from target consumers can be effective in advance selling; however, in on-site selling, marketers should use recommenders or endorsers who are close or similar to target customers (e.g., of similar age, profession, or ethnicity) in order to match consumers' natural construal levels and consequently more effectively influence their decisions.

Furthermore, advances in technology are offering more tools for sellers to facilitate social interactions among consumers themselves, such as allowing current buyers to post product evaluations on the seller's website or helping potential buyers to learn about their peers' choices by posting overall purchase statistics (e.g., popularity index). Our findings imply that, for sellers offering sales far in advance (e.g., advance purchase of vacation packages, professional development courses, tickets for concerts and sporting events), the availability of peer-provided information is likely to have a larger impact on consumers' decisions compared with on-site selling. By attending to the impact of consumer reviews, these firms or other online infomediaries (e.g., Amazon) can use marketing strategies to meet capacity allocation targets for advance vs. spot sales, for different customer segments, and products of different popularity.

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FIGURE 1: STUDY 1
– PREFERENCE TOWARD THE DIGITAL CAMERA

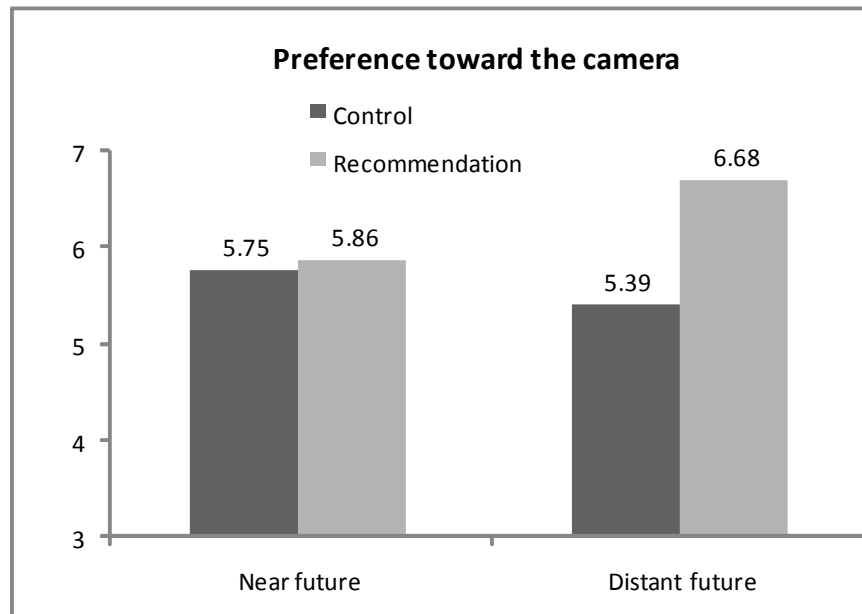
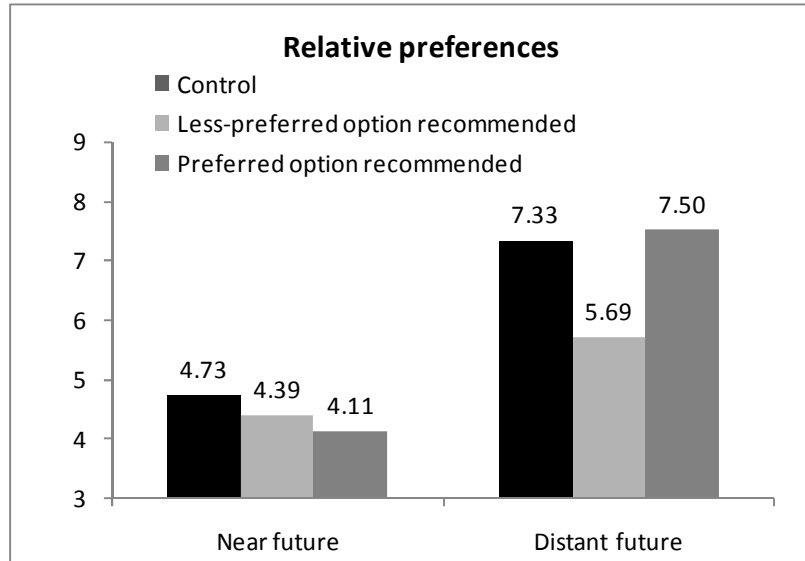
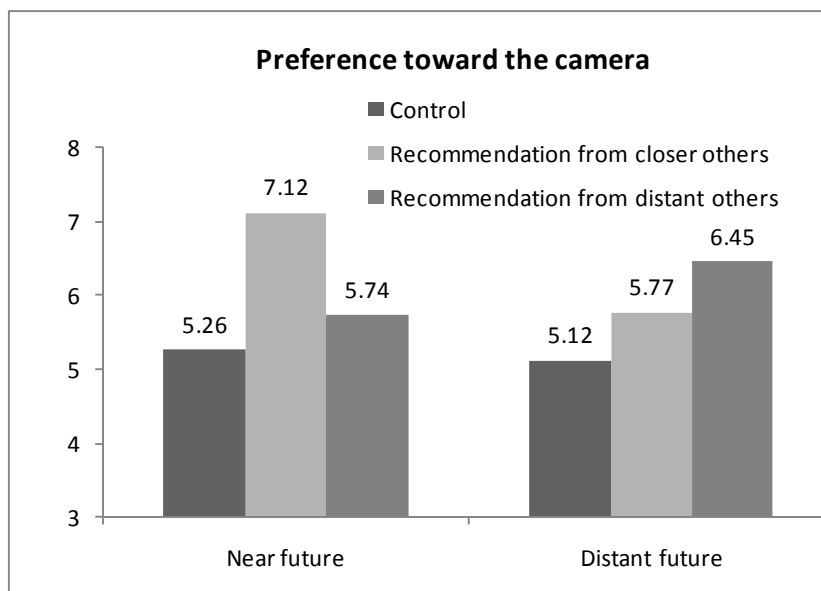


FIGURE 2: STUDY 2**-- RELATIVE PREFERENCES OF THE SOFTWARE PACKAGE**

Note: Lower scores represent greater preference for the easier/lower-quality software; higher scores represent greater preference for the more difficult/higher-quality software.

FIGURE 3: STUDY 3 RESULTS**-- PREFERENCE TOWARD THE DIGITAL CAMERA**

APPENDIX A

DESCRIPTION OF THE DIGITAL CAMERA IN STUDIES 1 AND 3

Features	Specifications
Total Pixel	5.3 MP
Lens Optical Zoom	4x
Weight	280 g
Shooting Modes	Natural Light; Sport; Sunset; Fireworks
Internal Memory	47 MB
Additional features	
Build-in Flash	Yes
Red-Eye Reduction	Yes
Water Proof	No

RECOMMENDATION INSTRUCTIONS IN STUDY 1:

Before making your decision, you find an online discussion forum for digital cameras. According to the online reviews from people who used this camera before, most people would recommend this camera.

RECOMMENDATION INSTRUCTIONS IN STUDY 3:

Before making your decision, you find an online discussion forum for digital cameras organized by students from your own [another] university - University of X -- where UX students share computer-related information. According to the online reviews from people who used this camera before, most people would recommend this camera.

APPENDIX B

PRODUCT OPTIONS IN STUDY 2 AND FOLLOW-UP STUDY OF STUDY 3

	Software Package A	Software Package B
PC Magazine Quality Rating	★★★☆☆	★★★★☆
Excerpt from Review	<i>"...some limitations of final layout and editing options, but simple to use, easy to learn, and gets the job done quickly..."</i>	<i>"...allows for the creation of fabulous photo essays, but difficult and time consuming to learn and use..."</i>
Initial set-up	Small file size Downloading, installation, and tutorial take less than 5 minutes.	Large file size Downloading, installation, and tutorial take about 45 minutes
Ease of procedure	Low difficulty level	Medium difficulty level
Advanced features	Basic image editing features (Satisfactory themes and layout tools)	Complete image editing features (numerous pre-designed themes and improved layout tools)

RECOMMENDATION INSTRUCTIONS IN STUDY 2:

Before making your decision, you find an online forum where people share computer-related information. According to the online reviews from people who used the software before, Software Package A [B] is the recommended option.