

What If I Find It Cheaper Someplace Else?: Role of Prefactual Thinking and Anticipated Regret in Consumer Behavior

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ABSTRACT

Previous research has focused primarily on affect generated from counterfactual thinking after decisions have been made. The current study, in contrast, examined how predecision mental simulations (prefactuals) and feelings of anticipated regret are affected by different marketing strategies. A preliminary investigation found that consumers frequently produce upward prefactuals (e.g., if I buy it today and find it for less next week, I'll regret my purchase) when considering a major purchase. It was hypothesized that providing price guarantees would reduce upward prefactual generation and reduce anticipated regret. The primary investigation supported these predictions. When price guarantees were available, prefactuals were more downward in direction and negative affect was reduced. Also, price guarantees increased long-term satisfaction and happiness even when they were not exercised. Implications for mental simulation, marketing, and judgment and decision making are discussed. ©2000 John Wiley & Sons, Inc.

When attempting to influence behavior, one of the most straightforward approaches is to place positive behavior-relevant thoughts in the target

Psychology & Marketing
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Vol. 17(4):281-298 (April 2000)

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person's mind. For instance, an advertisement that presents the image of envious strangers eyeing one's new sports car might make buying such an automobile more appealing. Also, providing details about the car's horsepower and stylish good looks might increase the likelihood of a consumer purchasing it. Thus, a marketing campaign might be assessed by how well it plants imagery and facts in consumers' minds. However, it is also interesting to consider how marketing might succeed based on how well it *prevents* certain thoughts from coming to mind. Rather than imparting a particular reality to a potential consumer, persuasive appeals might also succeed by inoculating against thoughts that make people feel apprehensive about purchasing. The current research investigates this idea, examining how prefactual thinking and feelings of anticipated regret may account for the success of certain persuasive appeals.

Before engaging in any behavior, people will attempt to maximize the expected utility of their action (von Neumann & Morgenstern, 1947). When considering a purchase, for instance, consumers must imagine the costs and benefits of one world in which the product is purchased and the costs and benefits of another world in which the product is not purchased. The consideration of such possible worlds is known as counterfactual thinking (for a review, see Roese, 1997). When people engage in counterfactual thinking, they compare and contrast different potential worlds by mentally simulating how mutating (i.e., changing) a particular event feature results in different subsequent outcomes (Kahneman & Tversky, 1982). In consumer decisions, an individual can evaluate the relative utility of a purchase by mutating the purchasing decision and simulating how different outcomes result.

One way that mental simulation influences decision making is through its effect on affect. Indeed, a great deal of research has shown that mental simulation and affect are intimately related. Most of this work has focused on how counterfactual thinking produces affect (e.g., Davis, Lehman, Wortman, Silver, & Thompson, 1995; Medvec & Savitsky, 1997; Zeelenberg, van Dijk, van der Pligt, Manstead, van Empelen, & Reinderman 1998) and serves a functional role in affect regulation and preparation for the future (e.g., Markman, Gavanski, Sherman, & McMullen, 1993, 1995; Roese, 1994; Roese & Olson, 1995). For instance, one can generate a counterfactual that simulates a better outcome in comparison to the actual outcome (termed an upward counterfactual) or simulates a worse outcome in comparison to the actual outcome (termed a downward counterfactual). Following a decision, people typically feel bad when their counterfactuals are upward in direction, but they feel good when their counterfactuals are downward in nature. However, little is known about the role of mental simulation and resulting affect that occurs *prior to judgment*.

Although there has been speculation about the potential for prefactuals (i.e., mental simulation about possible *future* events) to affect judg-

ment and decision making (e.g., Miller & Taylor, 1995; Sherman & McConnell, 1995), experiments examining prefactuals are rare. In one experiment that explored prefactuals, Boninger, Gleicher, Hetsis, Armor, and Moore (1994, cited in Gleicher, Boninger, Strathman, Armor, Hetsis, & Ahn, 1995) found that focusing people on what might happen to them if they do not buy insurance increased the likelihood of their purchasing insurance. Participants in their experiment played a game in which they had to navigate a delivery truck to its destination as quickly as possible in order to receive the greatest financial reward. Along the trip, unpredictable mishaps could befall the truck (e.g., detours, avalanches) that would delay the truck and reduce the amount of reward money.

Before beginning the trip, participants had the opportunity to purchase insurance that would minimize financial losses should a mishap occur. Prior to deciding whether to buy insurance, participants were given instructions that made insurance look more attractive (if you do not buy it and have a mishap, you will wish that you had bought insurance), that made insurance look less attractive (if you buy it and do not use it, you will wish that you had not bought insurance), or that did not focus participants on forming prefactuals. Boninger et al. found that those who considered a prefactual world that made insurance appear attractive were the most likely to purchase it and those who considered a prefactual world that made insurance appear unattractive were the least likely to purchase it. Thus, a consideration of prefactuals was shown to affect purchasing decisions.

The role of prefactuals and anticipated regret was explored by Miller and Taylor (1995), who found that anticipating regret reduced the likelihood of selling an object. In their experiment, participants were asked to consider men who had the opportunity to sell a lottery ticket prior to the drawing. Someone approached the men and offered to buy their ticket either two weeks before the drawing (Mr. K) or one hour before the drawing (Mr. T). Participants reported that Mr. T would be more reluctant to sell his ticket than Mr. K, and that Mr. T would anticipate feeling more regret than Mr. K if the sold ticket won the lottery. Because selling one's ticket one hour before a drawing is more mutable than selling one's ticket two weeks before the drawing, the relative ease of simulating "if only Mr. T hadn't just sold his ticket, he would have won the lottery" amplified feelings of regret. Presumably, this anticipated regret drove Mr. T's reluctance in selling his ticket. However, participants in this study did not report on mental simulations, thus the relationship between regret and prefactual production remains unknown.

The idea that regret should result from prefactual thinking is intriguing. Anecdotally, it is easy to think of times when people anticipate how making a particular decision (e.g., whether to buy a new computer) can lead to anticipated regret based on the construction of prefactuals (e.g., "if I find the same model for less someplace else, I'll be upset"). The

role of mental simulation in the experience of regret (both anticipated and retrospective) has been suggested by many (e.g., Plous, 1993; Sherman and McConnell, 1995). The clearest example of this linkage may have been provided by Sugden (1985), who defined regret as "the painful sensation of recognising that 'what is' compares unfavourably with 'what might have been'" (p. 77).

Theoretically, the importance of regret in judgment and decision making was recognized independently by several researchers, who proposed that expected utility theory needed to account for regret (e.g., Bell, 1982, 1985; Fishburn, 1983; Loomes, 1988; Loomes & Sugden, 1982). Regret theory has shown that people consider the psychological impact of comparing the outcome of their behavioral choice with outcomes that would have resulted from their rejected choices. For example, people prefer a sure \$100 win over taking a chance on a coin flip where getting heads yields \$201 and getting tails yields nothing. That is, people will anticipate the regret they would feel in the latter situation if the coin flip yielded a tails. As a result, anticipated regret can lead people to avoid behaviors that objectively provide greater expected value.

Anticipated regret can only exist in situations where outcomes are unknown. For instance, Zeelenberg, Beattie, van der Pligt, and de Vries (1996) found that people given a choice between risky and safe behaviors will actually select the riskier option (violating typical risk-aversion findings) in situations where they will learn the consequence of the riskier decision regardless of their choice but will learn the consequence of the safer decision only if they choose the safer action. In other words, people will perform risky behaviors to avoid learning the consequences of safer behaviors that have the possibility of producing feelings of regret. Similarly, Simonson (1992) found that consumers given the chance to buy items (e.g., stereo equipment) on sale this month knowing that they will receive a flyer revealing different sale prices for next month prefer to buy the product now rather than wait until next month to avoid the potential regret of discovering that they should have bought it this month while it was on sale. These findings, along with others (e.g., Ritov, 1996; Ritov & Baron, 1995), show that imagined future outcomes affect judgments, and that regret is likely to result in situations where the future is uncertain.

Thus, prefactual thinking under conditions of uncertainty can be aversive because it can produce anticipated regret. It follows that as regret and discomfort increase with respect to a product, the likelihood of consumers purchasing it decreases. Because of this predicament, it would behoove advertisers to find ways to reduce anxiety-provoking prefactuals by reducing future uncertainty. By constructing situations that minimize uncertainty, negative prefactual thinking and resulting anticipated regret can be reduced, increasing the likelihood of purchasing a product.

The current study tests this reasoning. Specifically, we examined

whether price guarantees (policies that refund money to consumers who find the same product elsewhere at a lower price) reduce worrisome prefactual thinking and thus serve to reduce anticipated regret. We hypothesized that price guarantees would reduce consumer anxiety by either reducing the generation of upward prefactuals (e.g., "if I buy this today and find it cheaper next week, I'll regret purchasing it now") or by increasing the generation of downward prefactuals (e.g., "if I buy this today and find it cheaper next week, I can get the difference in price refunded to me"). In addition to these primary hypotheses, we also examined how having a price guarantee would affect satisfaction after a purchase, especially for consumers who become aware of a lower price later. As an empirical question, we explored whether increased purchase satisfaction held by consumers with a price guarantee (relative to those without a price guarantee) would persist even if they did not exercise their right to a refund.

Although our personal experiences suggested that people spontaneously engage in mental simulations before making an important purchase, we conducted a preliminary investigation to obtain empirical evidence. We asked people to imagine what thoughts would come to mind when considering a major consumer purchase such as a personal computer. Some people were asked to report what thoughts they would have before making such a purchase, whereas others were asked to report what thoughts they would have after making such a purchase. We were interested in how frequently these thoughts would be prefactuals and counterfactuals, respectively. The content of their alternative worlds was coded for direction (upward vs downward) and for how much anxiety and regret they revealed. Following the preliminary investigation, we report on the primary experiment, which examined how the availability of a price guarantee affects prefactual generation, reports of anxiety, and consumer satisfaction.

PRELIMINARY INVESTIGATION

Although prefactuals are generally upward in direction (Roese & Olson, 1997), we wanted a clear demonstration that this was the case specifically in purchasing situations. Furthermore, we wished to explore the relations among purchase deliberations, spontaneous mental simulation, and regret exhibited in these mental simulations. We expected that although weighing the known available options, consumers would also generate hypothetical options in order to imagine the potential outcomes of a purchase. Consideration and simulation of worse alternative outcomes could increase anticipated and retrospective regret.

To explore whether people spontaneously generate mental simulations when facing purchasing decisions, we designed two purchasing scenarios and asked participants to report what they thought about

in that situation. We expected that mental simulation would be a common response to making a purchasing decision, that many of the prefactuals and counterfactuals would be in an upward direction, and that the extent to which these simulations were upward in nature would be associated with greater levels of anxiety and regret conveyed in their thinking.

METHOD

Participants

Thirty-six undergraduates enrolled in an introductory psychology class at Michigan State University participated in partial fulfillment of a course requirement.

Materials and Procedure

Students completed a packet that contained one of two purchasing scenarios (they were randomly assigned to conditions, with 18 participants per condition). Both conditions asked participants to imagine that they were "making a large purchase, such as a computer." In response to the scenario, they were asked to list their thoughts in the order they came to mind. The prepurchase condition asked participants to list the thoughts that would "run through your mind while deliberating about whether you should make the purchase." The postpurchase condition told participants to list the thoughts that would "run through your mind immediately after you made the purchase."

Counterfactual Classification

Two trained judges independently rated the first statement listed by each participant as to whether it was a mental simulation (i.e., prefactual or counterfactual). Following past research (e.g., Markman et al., 1993, 1995), we examined only the first statement listed because it should represent the most available thought in the minds of participants. For example, a mental simulation (defined as a thought that suggested an alternative state of the world) consisted of a statement such as, "What if I find it cheaper somewhere else?" Statements that were not mental simulations consisted of responses such as, "I'd think about looking in the newspaper for deals." Interjudge agreement was 78%. In cases of disagreement, a third judge settled the disagreement.

When a statement was classified as a mental simulation, it was rated on a 5-point scale along three additional dimensions: direction (1 = "very downward," 5 = "very upward"), level of anxiety revealed (1 = "no anxiety," 5 = "very high anxiety"), and whether it would induce feelings

of regret (1 = "very much inhibits regret," 5 = "high regret"). For each of the three measures, mean scores were computed based on the two primary judges' ratings.

RESULTS

Across the two conditions, 50% of the initial thoughts listed were classified as mental simulations. Every simulation was rated as upward in direction (all mean ratings were greater than 3.0). More statements were judged as mental simulations in the postpurchase condition (72%) than in the prepurchase condition (28%), $\chi^2(1, N = 36) = 7.11, p < .01$. The perceived anxiety conveyed in the mental simulations was rated high on the scale ($M = 4.11$), as was perceived regret ($M = 4.08$). That is, both perceived anxiety, $t(17) = 10.00, p < .001$, and perceived regret, $t(17) = 10.72, p < .001$, exceeded the scale midpoint. There were no differences between conditions on the anxiety or regret measures, $F_s < 1.1$.

Correlational analyses were conducted between the rating of counterfactual direction and perceived anxiety and regret conveyed in participants' mental simulations. There was a strong association wherein more upward mental simulations were related to higher anxiety, $r = .82, p < .001$. Additionally, stronger upward mental simulations were associated with greater regret, $r = .67, p < .01$. These findings indicate that mental simulations to purchasing situations tend to be upward in direction, and the extent to which they were strongly upward was associated with greater regret and greater anxiety conveyed in the alternative worlds.

PRIMARY EXPERIMENT

The preliminary investigation revealed that consumers frequently produce prefactuals and counterfactuals in their purchasing decisions, and that the direction of these simulations is typically upward. It is plausible that these upward simulations increase anxiety during and after a purchase. Thus, it would be sensible for retailers to reduce thinking about the potential negative consequences involved in making a purchase. One way that this may be accomplished is through the use of price guarantees. Simply knowing about a price guarantee may decrease the likelihood of generating upward prefactuals, resulting in reduced feelings of regret and anxiety. The primary investigation was conducted to test the hypothesis that price guarantees reduce the generation of anxiety-provoking prefactuals and reduce feelings of anticipated regret before purchasing.

In addition, we were curious about how consumers would feel after

making a purchase if they learned that the same item was available elsewhere for less money. Although learning such information, relative to not learning that the same item was cheaper elsewhere, should make people less satisfied with their purchase, we suspected that consumers with a price guarantee who fail to exercise it would still feel more satisfied than those without the price guarantee. In such cases, feelings of satisfaction about the initial purchase might persist even if the refund is not sought. Thus, price guarantees might provide a "can't lose" device for marketers by reducing anticipated regret at the time of purchase and increasing satisfaction later even if the guarantee is not used when lower prices are found.

METHOD

Participants

A sample of 83 undergraduates in an introductory psychology class at Michigan State University participated in partial fulfillment of a course requirement.

Design and Procedure

All participants read a scenario in which two college students, Craig and Dale, were each planning to buy a computer (see Appendix). On separate days on the same weekend, both Craig and Dale purchased the same model of computer for the same price at the same store. The store had a price guarantee that stated that if a customer finds the same product advertised for less money within 30 days of a purchase, the store would refund the difference if the customer brings in the advertisement. Neither Craig nor Dale was aware of the price guarantee when they entered the store. However, Dale learned about the price guarantee before purchasing the computer, whereas Craig did not.

Pre-Price-Awareness Measures. After reading the scenario, participants were asked to list what thoughts would go through Craig's mind and Dale's mind just before purchasing the computer. The first thought listed for both Craig and Dale was later assessed by trained judges for the presence of prefactual thinking. Participants then rated both Craig and Dale on 9-point scales ranging from 1 ("not at all") to 9 ("extremely") for how anxious they were before buying the computer, how pleased they were with buying the computer, and how regretful they felt about the purchase. Next, participants chose whether Craig or Dale was less worried about the purchase and chose whether Craig or Dale had more potential to feel regret about his purchase.

Post-Price-Awareness Measures. After completing these measures, a lower-price-awareness manipulation was introduced. Half of the participants read that during the next 30 days, both Craig and Dale saw an advertisement offering the same computer for \$100 less at another store. Additionally these participants read that Dale did not return to the store to get his \$100 refund, despite being aware of the price guarantee. The remaining participants read that after 30 days had passed, neither Craig nor Dale had checked to see if the computer was cheaper at any other store.

Participants then chose whether Craig or Dale was more satisfied with his purchase after 30 days. This measure was analyzed using a 2 (aware of lower price vs not aware of lower price) \times 2 (Craig more satisfied vs Dale more satisfied) log-linear model.

Next, participants rated both Craig and Dale on 9-point scales ranging from 1 ("not at all") to 9 ("extremely") for how happy they were based on their situation 30 days after the purchase. This continuous measure taken after the price-awareness manipulation was analyzed in a 2 (aware of lower price vs not aware) \times 2 (Craig's satisfaction vs Dale's satisfaction) mixed-design analysis of variance (ANOVA), with the last factor being a repeated measure.

Prefactual Classification

As in the preliminary investigation, two trained judges independently rated the first statement generated by each participant for both Craig and Dale as to whether it was a prefactual thought. Statements were considered prefactuals if they explicitly acknowledged an alternative reality of how things might be. For example, a statement such as, "Maybe if I look around later, I'll find it cheaper somewhere else and I can get the difference back later" was scored as a prefactual. Statements such as, "I'll just get it" were not considered to be prefactual. Interjudge agreement was 70%, and all disagreements were settled by a third judge. Each prefactual statement was rated on a 5-point scale from 1 ("very downward") to 5 ("very upward"). Mean scores on this direction of prefactual measure were computed from the primary judges' assessments.

RESULTS

Pre-Price-Awareness Measures

Judgments of Shopper Affect. First, we were interested in whether participants expected Dale, the shopper who was aware of the price guarantee, to feel better than Craig, the shopper who was not aware of

Table 1. Judgments, Ratings of Affect, and Prefactuals for Dale (Who Has the Price Guarantee) and Craig (Who Does Not Have the Price Guarantee)

	Target Shopper	
	Dale	Craig
Dichotomous judgments		
Who can feel more regret?	12%	88%
Who is less worried about the purchase?	70%	30%
Ratings of affect		
Regret	3.45	4.49
Anxiety	5.78	6.40
Satisfaction	7.04	5.83
Direction of prefactuals (trichotomized)		
Strong downward	94%	4%
Neutral or mixed	6%	87%
Strong upward	0%	9%

Note: Larger values on affect ratings indicate greater feelings of regret, anxiety, and satisfaction (i.e., feeling pleased about the purchase).

the price guarantee. As Table 1 reports, chi-square analyses of the dichotomous judgment questions revealed that participants reported that Dale had less potential to feel regret than Craig, $\chi^2(1, N = 83) = 47.80, p < .001$, and that Dale would be less worried about his purchase than Craig, $\chi^2(1, N = 83) = 13.12, p < .001$.

Parallel analyses were conducted on the scale ratings of shopper affect and similar results were borne out. To determine whether Dale and Craig showed differences in affect, paired t-tests were conducted. The data are presented in Table 1. Dale, relative to Craig, was reported to feel less anticipated regret, $t(82) = 3.63, p < .001$, to feel less anxious, $t(82) = 2.08, p < .05$, and to feel more pleased about his purchase, $t(82) = -4.75, p < .001$. Thus, the availability of the price guarantee resulted in judgments of reduced anticipated regret, reduced anxiety, and greater satisfaction about the impending purchase than not having a price guarantee available.

Prefactual Analyses. Analyses of the statements judged to be prefactuals for Craig ($n = 23$) and Dale ($n = 17$) were examined to assess their direction and whether their direction was related to affect judgments about the target. Although our primary interest was in examining the relation between prefactual thoughts for Dale (the target who was aware of the price guarantee) and judgments of anticipated regret for Dale, we conducted parallel analyses for Craig as well.

Means for the direction of prefactual thought revealed that prefactuals produced for Dale were downward (i.e., suggesting greater satisfaction with his current reality) in direction ($M = 2.04$), compared to the

direction of prefactuals produced for Craig ($M = 3.09$).¹ As Table 1 shows, participants' prefactuals for Dale (who had the price guarantee) were most likely to be downward, $\chi^2(1, N = 17) = 13.24, p < .001$, whereas participants' prefactuals for Craig (who did not have the price guarantee) were most likely to be neutral, $\chi^2(1, N = 23) = 12.57, p < .001$. Thus, as expected, the availability of the price guarantee for Dale provided more positive alternative worlds.

To assess whether direction of prefactual thinking predicted feelings of anticipated regret, the mean direction score for prefactuals generated about Dale was correlated to ratings of his anticipated regret. As expected, there was a significant relation, $r = .50, p < .05$, indicating that anticipated regret was reduced as the direction of Dale's prefactuals was more strongly downward. The direction of prefactual thought was uncorrelated to the other affect judgments about Dale (r 's $< .20$). Parallel analyses were conducted for the direction of Craig's prefactuals and ratings of Craig's affect. Only a marginal relation was found with anxiety, $r = .39, p < .07$, suggesting that stronger upward prefactuals for Craig related to reports of Craig feeling more anxiety. To summarize, the consumer with the price guarantee revealed relatively more downward prefactuals, and the extent to which those prefactuals were downward was strongly related to reduced feelings of anticipated regret.

Post-Price Awareness Measures

Although the primary goal of the study was to examine prefactual thinking and prediction affect, we were interested in seeing how potentially learning about lower prices after a purchase might differentially affect consumers as a function of their possessing a price guarantee even if they did not utilize it.

A 2×2 log-linear model revealed a significant interaction parameter between who was chosen as having more satisfaction after 30 days and the lower-price-awareness manipulation, $z = 2.41, p < .05$. As Table 2 shows, chi-square partitioning of the interaction effect revealed that participants chose Dale, the character who was aware of the price guarantee, as being more satisfied more often than Craig, the character who was not aware of the price guarantee, when the consumers were aware of the lower price at the competing store in the month following the purchase, $\chi^2(1, N = 83) = 6.08, p < .05$. However, there was no differ-

¹Given the findings of the preliminary experiment, one might have expected more upward prefactuals for Craig. However, we provided many concrete details about the situation in the primary experiment. These additional details (e.g., the information about the computer, the students' needs, the fact that two different people found it worth buying) seem likely to have made the purchase decision relatively attractive, reducing the number of upward prefactuals. The critical comparison for understanding the underlying psychological process is the between-target difference between Dale (whose prefactuals were predominantly downward, reflecting the price guarantee) and Craig (whose prefactuals were more upward than Dale's prefactuals).

Table 2. Postawareness Judgments of Satisfaction and Happiness for Dale (Who Has the Price Guarantee) and Craig (Who Does Not Have the Price Guarantee) as a Function of Lower-Price-Awareness Condition

Who is more satisfied?	Target Shopper	
	Dale	Craig
Aware of the lower price	70%	30%
Not aware of the lower price	43%	57%
Ratings of target happiness		
Aware of the lower price	6.08	4.72
Not aware of the lower price	6.37	6.83

ence in picking Dale over Craig as being more satisfied when the characters were unaware of the lower price, $\chi^2(1, N = 83) = 0.86, ns$.

To further examine the effect of the awareness of the lower price manipulation, ratings of happiness felt by Craig and Dale were examined in a 2 (awareness: aware of lower price vs. not aware) \times 2 (target: Craig vs. Dale, a repeated factor) mixed-design ANOVA. First, there was a main effect of awareness, revealing that the targets were perceived as happier when they did not know about the lower price ($M = 6.45$) than when they did know about the lower price ($M = 5.40$), $F(1, 80) = 16.22, p < .001$. A main effect for target was also found, indicating that Dale was perceived as happier than Craig ($M = 6.23$ vs $M = 5.63$, respectively), $F(1, 80) = 6.08, p < .05$. However, these two main effects were qualified by their interaction, $F(1, 80) = 9.85, p < .01$. As Table 2 displays, Dale's perceived happiness remained high in both awareness conditions, but Craig's perceived happiness was lower when he knew about the price difference than when he did not know about the price difference. Thus, Dale remained highly satisfied with his purchase even if later he did not exercise his prerogative to claim the cash refund promised by the price guarantee.

DISCUSSION

This study explored how "what if" thinking relates to affect in making a purchasing decision. The preliminary investigation revealed that many people, when considering a major purchase, spontaneously engage in upward mental simulations about how the outcome might be undesirable if they purchase the item. Further, the extent to which their simulations reflected upward thinking was related to the anxiety and regret revealed in their thoughts. Although participants were more likely to produce upward counterfactuals following the purchase, it was found that people often generate regret-laden prefactuals as well.

The primary study examined whether price guarantees might circum-

vent these upward simulations. By providing a price guarantee, the individual "if I find this product for less money later, I'll regret buying it now" upward prefactual was inoculated. Indeed, the consumer provided with the price guarantee (Dale) generated mostly downward prefactuals (e.g., "if I find the product for less later, I'll get the difference back") whereas the consumer without the price guarantee (Craig) did not. More important, it was found that as Dale's prefactuals became more downward in nature, his feelings of anticipated regret were reduced as well. Thus, the availability of price guarantees reduces the experience of anticipated regret and transforms the nature of one's prefactuals into less threatening simulations. As a result, purchasing the product will be more attractive to the consumer. These findings are consistent with our major hypotheses.

In addition, we were interested in exploring how satisfaction might persist after a purchase when consumers learn that a product would have cost less elsewhere. Although prefactuals may play an important role in whether one purchases an item, ultimate product satisfaction will be influenced by what thoughts come to mind after the purchase as well. As expected, learning about a lower price elsewhere following a purchase led to reduced happiness. But interestingly, the person with the price guarantee was unaffected by this revelation.

The observed interaction suggests that holding a price guarantee, even if not exercised, leaves consumers more satisfied and happier than not having the price guarantee. In our study, both shoppers "are out" \$100 in the lower-price-awareness condition, but the guarantee seems to inoculate consumers from feeling bad about it. Although we do not have data that directly speak to why this is the case, one sensible explanation is that different counterfactuals come to mind for the consumers upon learning about the lower price. For the consumer without a price guarantee, many features can be mutated (e.g., if only I had waited longer, if only I had shopped around), increasing the intensity of affective reactions (Kahneman & Miller, 1986). But for the person with the price guarantee, one particular and less threatening counterfactual can be constructed (i.e., if I didn't have the price guarantee, I'd still be out \$100). Thus, the lower-price discovery may not seem as poignant because holding a price guarantee will lead one to generate a relatively nonthreatening counterfactual about not having the price guarantee in the first place. This explanation is speculative, but it is consistent with the current data and the basic tenets of norm theory (Kahneman & Miller, 1986).

This study provides the first evidence of a direct relation between the direction of one's mental simulations and the experience of both anticipated and retrospective regret. Although evidence consistent with this link has been provided by others (e.g., Miller & Taylor, 1995), this is the first study to relate the direction of *spontaneously* generated prefactuals to feelings of anticipated regret. Although we cannot make

strong causal claims about this link, previous work is consistent with such a conclusion. For example, Boninger et al. (1994, cited in Gleicher et al., 1995) manipulated whether people produced an upward or a downward prefactual regarding buying insurance and found that it influenced purchasing decisions. In their study, though, they did not assess anticipated regret (unlike the current work), nor did they examine situations where people spontaneously generated counterfactuals (also unlike the current work). Thus, the current study adds to our growing understanding of the relations among prefactuals, anticipated regret, and subsequent behavior.

In addition to examining the link between mental simulation and affect, the current work speaks to broader judgment and decision-making issues. This study suggests that the availability of price guarantees reduces uncertainty in consumer decision making. As past research has shown, feelings of anticipated regret can only operate when uncertainty of outcomes exists (e.g., Ritov, 1996; Simonson, 1992; Zeelenberg et al., 1996). Thus, the downward prefactual comparisons induced by the price guarantee served the function of reducing uncertainty and negative affect. Further, the current study is consistent with the argument that mental simulations play a mediational role in judgment and the experience of affect (e.g., Sherman & McConnell, 1996; cf., Spellman, 1997). Although it will take further research to explore the causal and mediational relations between mental simulations, affect, and judgment, the data presented here are consistent with the notion that mental simulations are more than mere epiphenomenal products. However, it will take additional work to definitively document the causal relations among these variables and to specify when such relations will exist.

Although this study found support for the role of price guarantees as affecting prefactual and counterfactual generation, influencing the experience of regret (both anticipated and retrospective), and linking "if only" thinking and anticipated regret, other research questions await answers. The current work focused primarily on how feelings of regret play a role in decision making. And indeed, regret theory has focused on regret as an important component that was missing from classic expected-utility theory.

However, other varieties of affect may relate to counterfactual thinking too. For instance, regret theory has discussed *rejoicing* as another important factor that influences judgment and decision making (e.g., Loomes & Sugden, 1982). Although *rejoicing* will probably, all things being equal, be less emotionally impactful than regret (Kahneman & Tversky, 1979), it should result from situations where downward mental simulations predominate. Indeed, research by Medvec, Madey, and Gilovich (1995) on counterfactual thinking by Olympic athletes is consistent with this position. In their research, Medvec et al. found that silver medalists (those who place second) feel worse than bronze medalists (those who place third) despite objectively doing better. For silver

medalists, the most available counterfactual world is upward (i.e., "I almost won the gold medal"). For bronze medalists, on the other hand, the most available counterfactual world is downward (i.e., "I almost didn't win any medal"). Thus, bronze medalists can *rejoice*, and the extent of their *rejoicing* should be related to the degree to which their counterfactual world is especially downward in nature (Medvec & Savitsky, 1997). Indeed, regret theory may well benefit from a consideration of how mental simulations serve as the psychological mechanism responsible for *rejoicing*.

In addition to considering basic research questions, there are many applied directions suggested by the current study as well. One of the basic themes of this work is that mental simulations can frame purchase decisions. Although the current work focused on price guarantees as one mechanism to reduce upward counterfactuals and prefactuals, other techniques might achieve similar results. For example, maintenance agreements and extended warranties probably defuse upward mental simulations in similar ways. In addition to taking away undesirable possible worlds, other techniques may prove effective by providing competing or distracting mental simulations to consumers. For instance, "limited time only" offers provide the compelling prefactual, "If I don't buy it today, it will be more expensive later." Again, mental simulations in these cases should mediate behavior by making people consider the implications of very available alternative worlds. One attractive feature of using mental simulations in this fashion is that influence is accomplished implicitly, reducing the likelihood that reactance (e.g., Brehm & Brehm, 1981) or mistrust (e.g., Eagly, Wood, & Chaiken, 1978) will create a boomerang effect.

In sum, the current study shows that upward mental simulations and the experience of regret are reduced by eliminating uncertain and unattractive alternative worlds. This work is one of a handful of studies that has examined prefactual thinking. It shows that prefactuals relate to anticipated regret, and that the elimination of upward alternative worlds affects both. When retailers provide price guarantees, they can take away a common prefactual thought that makes consumers apprehensive and anxious about purchasing products. Also, this study shows that price guarantees can even promote consumer satisfaction and happiness long after the purchase. By understanding the role of mental simulations as an underlying cognitive mechanism in this process, persuasive appeals can become more effective at increasing consumer satisfaction and reducing consumer anxiety.

APPENDIX

Craig and Dale do not know each other, but they are both planning to buy a new personal computer. They are both college students and their

budgets are tight. As you know, computers can vary a great deal in price from place to place, and often the same machine can become less expensive in time because its components will eventually cost less. However, both Craig and Dale need a computer soon, so on separate days during the same weekend, they each go to ComputerNation, a large computer showroom.

ComputerNation has a lowest price guarantee that states if a customer finds the same computer advertised for less within 30 days of a purchase, they will pay the customer the price difference in cash when the customer brings in a competitor's advertisement. Neither Craig nor Dale was aware of this lowest price policy when they walked into ComputerNation.

During that weekend, one of the computers on display is the CompuStar 2000, which costs \$1800. The CompuStar 2000 is a good, but not outstanding, mid-range computer that would serve the needs of most college students for the next couple of years.

Craig goes to the store and is approached by a salesperson who forgets to mention the price guarantee policy. After browsing for awhile, Craig decides to buy the CompuStar 2000 for \$1800. Dale shops at the store and is approached by a salesperson who mentions the price guarantee policy. After browsing for awhile, Dale decides to buy the CompuStar 2000 for \$1800.

REFERENCES

- Bell, D. E. (1982). Regret in decision making under uncertainty. *Operations Research*, 30, 961-981.
- Bell, D. E. (1985). Disappointment in decision making under uncertainty. *Operations Research*, 33, 1-27.
- Brehm, S. S., & Brehm, J. W. (1981). *Psychological reactance: A theory of freedom and control*. New York: Academic Press.
- Davis, C. G., Lehman, D. R., Wortman, C. B., Silver, R. C., & Thompson, S. C. (1995). The undoing of traumatic life events. *Personality and Social Psychology Bulletin*, 21, 109-124.
- Eagly, A. H., Wood, W., & Chaiken, S. (1978). Causal inferences about communicators and their effect on opinion change. *Journal of Personality and Social Psychology*, 36, 424-435.
- Fishburn, P. (1983). Nontransitive measurable utility. *Journal of Mathematical Psychology*, 26, 31-67.
- Gleicher, F., Boninger, D. S., Strathman, A., Armor, D., Hetts, J., & Ahn, M. (1995). With an eye toward the future: The impact of counterfactual thinking on affect, attitudes, and behavior. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 263-304). Mahwah, NJ: Lawrence Erlbaum.
- Kahneman, D., & Miller, T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, 93, 136-153.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.
- Kahneman, D., & Tversky, A. (1982). The simulation heuristic. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 201-208). New York: Cambridge University Press.
- Loomes, G. (1988). Further evidence of the impact of regret and disappointment on choice under uncertainty. *Economica*, 55, 47-62.
- Loomes, G., & Sugden, R. (1982). Regret theory: An alternative theory of rational choice under uncertainty. *Economic Journal*, 92, 805-824.
- Markman, K. D., Gavanski, I., Sherman, S. J., & McMullen, M. N. (1993). The mental simulation of better and worse possible worlds. *Journal of Experimental Social Psychology*, 29, 87-109.
- Markman, K. D., Gavanski, I., Sherman, S. J., & McMullen, M. N. (1995). The impact of perceived control on the imagination of better and worse possible worlds. *Personality and Social Psychology Bulletin*, 21, 588-595.
- Medvec, V. H., Madey, S. F., & Gilovich, T. (1995). When less is more: Counterfactual thinking and satisfaction among Olympic medalists. *Journal of Personality and Social Psychology*, 69, 603-610.
- Medvec, V. H., & Savitsky, K. (1997). When doing better means feeling worse: A model of counterfactual cutoff points. *Journal of Personality and Social Psychology*, 72, 1284-1296.
- Miller, D. T., & Taylor, B. R. (1995). Counterfactual thought, regret, and superstition: How to avoid kicking yourself. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 305-331). Mahwah, NJ: Lawrence Erlbaum.
- Plous, S. (1993). *The psychology of judgment and decision making*. New York: McGraw-Hill.
- Ritov, I. (1996). Probability of regret: Anticipation of uncertainty resolution in choice. *Organizational Behavior and Human Decision Processes*, 66, 228-236.
- Ritov, I., & Baron, J. (1995). Outcome knowledge, regret, and omission bias. *Organizational Behavior and Human Decision Processes*, 64, 119-127.
- Roese, N. J. (1994). The functional basis of counterfactual thinking. *Journal of Personality and Social Psychology*, 66, 805-818.
- Roese, N. J. (1997). Counterfactual thinking. *Psychological Bulletin*, 121, 133-148.
- Roese, N. J., & Olson, J. M. (1995). Outcome controllability and counterfactual thinking. *Personality and Social Psychology Bulletin*, 21, 620-628.
- Roese, N. J., & Olson, J. M. (1997). Counterfactual thinking: The intersection of affect and function. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 1-59). San Diego, CA: Academic Press.
- Sherman, S. J., & McConnell, A. R. (1995). Dysfunctional implications of counterfactual thinking: When alternatives to reality fail us. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 199-231). Mahwah, NJ: Lawrence Erlbaum.
- Sherman, S. J., & McConnell, A. R. (1996). The role of counterfactual thinking in reasoning. *Applied Cognitive Psychology*, 10, S113-S124.

- Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research*, 19, 105-118.
- Spellman, B. A. (1997). Crediting causality. *Journal of Experimental Psychology: General*, 126, 323-348.
- Sugden, R. (1985). Regret, recrimination and rationality. *Theory and Decision*, 19, 77-99.
- von Neumann, J., & Morgenstern, O. (1947). *Theory of games and economic behavior*. Princeton, NJ: Princeton University Press.
- Zeelenberg, M., Beattie, J., van der Pligt, J., & de Vries, N. K. (1996). Consequences of regret aversion: Effects of expected feedback on risky decision making. *Organizational Behavior and Human Decision Processes*, 65, 148-158.
- Zeelenberg, M., van Dijk, W. W., van der Pligt, J., Manstead, A. S. R., van Empelen, P., & Reinderman, D. (1998). Emotional reactions to the outcomes of decisions: The role of counterfactual thought in the experience of regret and disappointment. *Organizational Behavior and Human Decision Processes*, 75, 117-141.

This research was supported by NIMH Grant No. MH58449. The authors thank John Everhardt, Jessica Fortier, and Amy Johnson for their help in conducting these experiments.

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