Regret: A Model of Its Antecedents and Consequences in Consumer Decision Making

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The article develops a model of regret and tests it via four studies. Study 1 develops a multi-item measure of regret and distinguishes it from satisfaction. It also shows that, while satisfaction directly influences both repurchase and complaint intentions, regret directly influences only repurchase intentions, and its effect on complaint intentions is fully mediated via satisfaction. Study 2 examines the antecedents and moderators of regret. It shows that regret is experienced even in the absence of information on a better-forgone outcome. Furthermore, the moderating effect of three situation-specific characteristics (outcome valence, status quo preservation, and reversibility of the outcome) is examined. Studies 3 and 4 examine the cognitive process underlying the experiencing of regret in the absence of information on a better-forgone outcome. Generation of counterfactuals is identified as the cognitive mechanism that engenders regret. Results show that counterfactuals are most likely to be generated when the chosen outcome is negative and not the status quo.

Among the various antecedents of satisfaction (e.g., expectation, performance, and disconfirmation), performance of the purchased brand is found to be the most diagnostic determinant of satisfaction (Anderson and Sullivan 1993; Yi 1990). However, recent research (e.g., Inman, Dyer, and Jia 1997; Taylor 1997; Tsiros 1998) suggests that performance of the forgone brand is also needed to fully explain postpurchase behavior. Specifically, these studies demonstrate that the comparison between the chosen and forgone alternative can influence consumer behavior. If the comparison is unfavorable (forgone brand performs better than chosen brand) the consumer will experience regret,[1] whereas if it is favorable (forgone brand performs worse than chosen brand), the consumer will experience rejoicing. This experienced regret may lead to brand switching even when consumers are satisfied with the purchased brand. In fact, even anticipated regret may influence choice preference (Simonson 1992). Furthermore, regret has been found to have a negative influence on satisfaction (Inman et al. 1997; Taylor 1997).

However, several issues regarding the relationship between regret, satisfaction, and behavioral intentions remain unexplored. First, the relationship between regret and satisfaction has not been thoroughly examined. Second, it has not been examined whether and how regret impacts behavioral intentions directly as opposed to impacting them indirectly through satisfaction. Third, past research on regret (e.g., Boles and Messick 1995; Inman et al. 1997) has assumed that information on the forgone alternative must always be provided for consumers to experience regret. That may not always be the case, as people may engage in counterfactual thinking (Kahneman and Miller 1986). Such counterfactuals may suggest an alternative for comparing against the actual outcome experienced. Fourth, conditions that moderate the onset and level of regret are not well understood. Finally, the cognitive mechanisms that underscore the experience of regret are not well understood, and given the importance of regret in postchoice valuation, such an understanding is necessary.

In the current article, the literature on regret and satisfaction is briefly reviewed, and a model of regret is proposed. The model incorporates antecedents, moderators, and consequences of regret. Finally, the model and its assumptions are tested via four studies, the article's contributions and

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[1]This article examines experienced or felt regret as opposed to anticipated regret (e.g., Simonson 1992).

implications are discussed, and future research directions are suggested.

REGRET AND SATISFACTION

Should I have purchased a front-wheel-drive rather than a rear-wheel-drive car? Should I have purchased the name brand (Tylenol) rather than a generic (Rite Aid)? Asking such questions seems inevitable after a decision is made. Discovering that a forgone alternative would have led to a better outcome than the one chosen is an unpleasant experience (Landman 1987). In fact, it is so unpleasant that people are willing to pay a "regret premium" to avoid feedback on their decision (Bell 1983; Larrick and Boles 1995). That unpleasant experience has led to a class of decision theories known as regret theory (Bell 1982; Loomes and Sugden 1982). Decision regret is a consequence of decision making under risk and may arise when individuals appear, after the fact, to have made the wrong decision even if the decision appeared to be the right one at the time it was made (Bell 1982; Loomes and Sugden 1982).

When people evaluate outcomes they compare what they *have received* with what they *would have received* had they made a different choice (Boles and Messick 1995; Landman 1987). They regret their decisions if a different choice would have led to a better outcome. Conversely, if a different choice would have led to a worse outcome, people will rejoice. Thus, regret (rejoicing) is the result of comparing one's outcome with a better (worse) outcome that would have occurred had a different alternative been selected. Zeelenberg (1996) defines regret as "a negative, cognitively determined emotion that we experience when realizing or imagining that our present situation would have been better, had we acted differently" (p. 6).

How does regret differ from satisfaction? Is regret similar to satisfaction in that they both result from the comparison of actual performance against a reference point? Both regret and satisfaction represent a response to a comparison. For satisfaction, the comparison is between expected and actual performance, whereas for regret the comparison is between the performance of the chosen and forgone alternatives. More specifically, regret and satisfaction differ in several ways. First, Inman et al. (1997), Oliver (1997), and Tsiros (1998) argue for a conceptual difference between the two constructs. For example, Oliver (1997) views regret as an antecedent of satisfaction, and, therefore, the two constructs must be conceptually different from each other. Second, the reference point for the two constructs is different—for satisfaction it is internal (the expectation for the chosen alternative), whereas for regret it is external (the performance of the forgone alternative). Further, Gardial et al. (1994) found that while satisfaction thoughts include comparisons to internal standards, postpurchase thoughts include comparisons to other brands. Finally, regret is specifically related to choice, whereas satisfaction is related to outcomes. One can be disappointed with an outcome, but one regrets a choice that led to an unfortunate outcome.

Empirical evidence for the distinction between regret and satisfaction comes from two studies (Boles and Messick 1995; Tsiros 1998) that manipulated both the performance of the chosen and forgone alternatives. These studies found that under certain conditions both regret and satisfaction or rejoicing and dissatisfaction may be experienced at the same time. For example, take an investor who wishes to invest $10,000. He considers two stocks (Yahoo and Seagate) but decides to invest in Yahoo due to higher expected return (expectations are that the stock will increase by 20 percent within the next year). A year later Yahoo's stock price increased 25 percent, while Seagate's stock price increased 50 percent. The investor will experience satisfaction (both disconfirmation and performance were positive) and regret (he would have been better off if he had invested his money in Seagate stocks). In fact, he would have been better off by $2,500.

Within the marketing literature, Inman et al. (1997) and Taylor (1997) have investigated regret and satisfaction simultaneously. The study by Taylor (1997) did not explicitly measure regret. The level of expectation for the forgone alternative was measured and conceptualized as regret. In her study, Taylor (1997) found that the impact of regret on satisfaction is significant only under negative disconfirmation.[2] The study by Inman et al. (1997) used an explicit measure of regret (comparison between the chosen and forgone outcome) and found that the level of regret influences the amount of satisfaction experienced. Thus, concerning the model posited in Figure 1, these studies relate to the dotted arrow from regret to satisfaction.

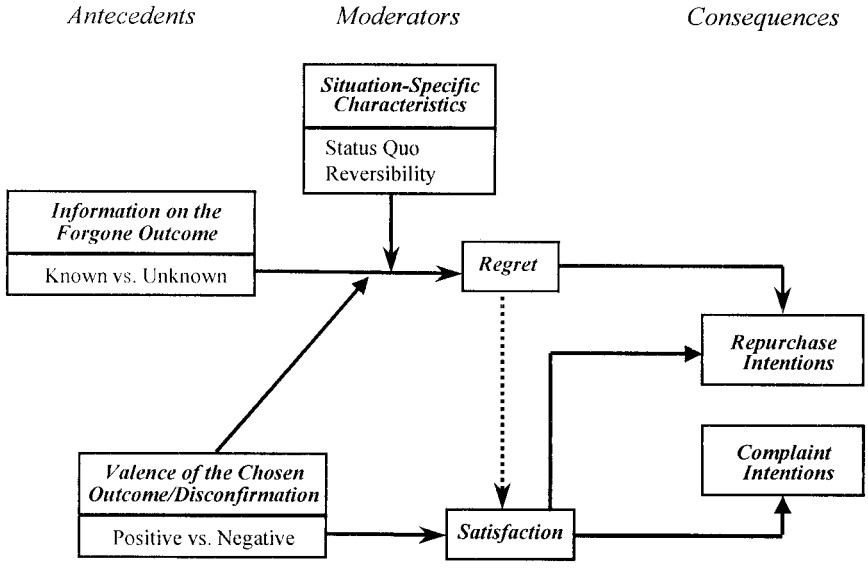
The current article extends our understanding of regret beyond these two studies in five ways. First, it provides a multi-item measure of regret and distinguishes it from satisfaction. Second, it examines how regret and satisfaction influence behavioral intentions such as repurchase and complaint. In doing so, the mediating role of satisfaction on regret's ability to affect behavioral intentions is established. Third, it examines the conditions that facilitate the onset and experiencing of regret. Past studies (e.g., Boles and Messick 1995; Inman et al. 1997) have examined the role of regret only when the forgone outcome is known to the decision maker.[3] In addition to examining those conditions, this article examines how regret may be activated and experienced even when the forgone outcome is not known to the decision maker. Fourth, it examines the moderating role that variables such as valence of the chosen outcome (positive vs. negative), reversibility of the chosen outcome (reversible vs. irreversible), and type of purchase (repurchase vs. switching) play on the level of regret experienced. Finally, it examines the cognitive process that generates regret in the case where the forgone outcome is unknown. In the process

[2] A potential limitation of this method is that subjects may have adjusted their expectations for the forgone alternative after experiencing the chosen alternative. This limitation may have been alleviated if the measure of regret was collected after subjects had a chance to experience the chosen outcome.

[3] The decision maker may be aware of the existence of the forgone alternative but not of its performance (i.e., outcome).

Figure 1

A MODEL OF REGRET IN CONSUMER DECISION MAKING



this article develops a more complete model of the antecedents of behavioral intentions.

A MODEL OF REGRET

Antecedents of Regret

With regret being influenced by the comparison between what is and what could have been, it seems that knowledge of what could have been must be available for regret to be experienced. However, knowledge of the forgone outcome may or may not be always available (see Fig. 1). In particular, knowledge of the forgone outcome may range from complete, as in the case of a stock investment, to no knowledge, as in the case of a consumer of an engagement ring. Although the consumer may have examined several rings, he will have a personal experience (his fiancée's reaction) only with the ring that was eventually purchased.

Past research on regret has always provided participants with information on a better-forgone outcome. Lack of information on a forgone outcome, however, may not always preclude people from making comparisons between the chosen and the forgone outcome. Research shows that, in some instances, people engage in counterfactual thinking (Gleicher et al. 1990; Kahneman and Miller 1986) and construct hypothetical scenarios through mental simulations (Kahneman and Tversky 1982). People undertake counterfactuals in an attempt to provide a comparison standard to reality. These counterfactuals can lead to both favorable and unfavorable comparisons much like upward and downward comparisons in the attribution literature (Pyszczynski, Greenberg, and LaPrelle 1985). Such counterfactuals do not occur in all instances, and their extremity and the degree of confidence that they generate are lower than that of an actual forgone outcome. When information on a better-forgone outcome is available, people will experience more regret than when information on the forgone outcome is not available.[4] Thus, the following hypothesis is proposed:

H1: The level of regret is higher when information on a better-forgone outcome is available than when no information is available.

While the level of regret will be lower when information on the forgone outcome is not available than when it is available, there are situations that influence the level of regret experienced when the information on the forgone outcome is not available. Further, certain situations make the generation of these counterfactuals easier. These situations are examined next.

Moderators of Regret

It is argued here that even when the forgone outcome is not known to the decision maker, he or she may still experience regret. This is possible through the generation of counterfactuals or mental simulations of what might have been. The motivation and ability to generate counterfactuals will be influenced by the amount of risk and personal responsibility involved in the decision. For example, Weiner (1982) suggested that affective reactions to outcomes are stronger when the outcome can be attributed to the actor as opposed to situational factors. The generated

[4]This article will examine the case where the forgone outcome is better than the chosen outcome. Although it is possible for people to construct favorable comparisons (construct a worse-forgone outcome), such counterfactuals are infrequent and have been observed under extreme conditions (e.g., cancer patients in Taylor [1991]).

counterfactuals in turn will influence the level of regret that will be experienced. There are several variables that may influence the motivation to generate counterfactuals. For instance, when no information on the forgone outcome is available, situation-specific characteristics may influence the motivation to generate mental simulations to supplement or even construct reality. Three situation-specific characteristics that may influence the motivation or ability to generate counterfactuals (status quo, irreversibility of outcome, and valence of the outcome) will be examined in this article.

Status Quo. Past literature shows that decisions involving a switch away from the status quo leading to a particular outcome tend to elicit stronger cognitive and emotional responses than decisions involving staying with the status quo leading to an identical outcome (Kahneman 1995; Kahneman and Tversky 1982; Landman 1987). The following scenarios were presented to 138 subjects by Kahneman and Tversky (1982):

> Mr. Paul owned shares in company A. During the past year he considered switching to stock in company B, but he decided against it. He now finds out that he would have been better off by $1,200 if he had switched to the stock of company B.
>
> Mr. George owned shares in company B. During the past year he switched to stock in company A. He now finds that he would have been better off by $1,200 if he had kept his stock in company B.

When asked who feels greater regret, 92 percent of the subjects chose Mr. George. There are at least two explanations for the propensity of changing the status quo to generate higher level of regret than retaining the status quo. One explanation is based on an information-processing perspective: changing the status quo is simply more perceptually salient than retaining the status quo and, therefore, begets more attention. Thus, changing the status quo may be more likely to be remembered during postchoice valuation than retaining the status quo. Moreover, it might be easier to imagine retaining the status quo than it is to imagine changing the status quo. The second explanation is based on an attribution perspective. People may attribute a stronger link between their decision to change the status quo and their attitudes and beliefs than their decision to retain the status quo and their attitudes and beliefs. Therefore, their decision to change the status quo may generate higher perceived personal responsibility for the observed outcome than their decision to retain the status quo. Since responsibility has been closely linked to regret (e.g., Simonson 1992; Zeelenberg et al. 1996), changing the status quo is posited to generate more regret than retaining the status quo.

Past literature on regret (e.g., Boles and Messick 1995; Inman et al. 1997) has only examined the case where the forgone outcome is known to the decision maker. It is argued here that when people decide to switch brands (change the status quo) they will feel a substantial level of regret even when the information on the forgone outcome is not available. The reason for experiencing regret may stem from the fact that deciding to switch generates higher personal responsibility and easier access to an alternative (e.g., status quo), and, thus, it is easier to undo or construct counterfactuals than decide to buy the same brand (retain the status quo). However, when they choose the same brand, they will be less likely to generate counterfactuals and consider other potential outcomes, and, thus, they will experience lower levels of regret. Therefore, the following hypothesis is proposed:

H2: Status quo moderates the effect of knowledge of the forgone outcome on experiencing regret. When the chosen outcome is the result of changing the status quo (switch brands), people will experience regret regardless of the availability of information on a better-forgone outcome. When the chosen outcome is the result of retaining the status quo (stay with the same brand), people will experience a higher level of regret when the information on a better-forgone outcome is known than when it is unknown.

Irreversibility of the Outcome. The level of regret may also be influenced by the irreversibility of the outcome such that outcomes that appear to be irreversible may generate more regret than reversible outcomes (Engel, Blackwell, and Miniard 1995; Landman 1993). For instance, if a purchased product fails to perform at a certain level, consumers may experience a lower level of regret about the decision to purchase the product if it carries an unconditional guarantee than if no guarantee is offered.

As with the discussion on status quo above, past literature on regret examined the role of irreversibility only when the chosen outcome was known by the decision maker. It is argued here that when people realize that the chosen outcome is irreversible, they will experience a substantial level of regret because they feel the decision involved greater risk and they will be able to imagine choosing a product that offers a performance guarantee. When the outcome is reversible, they may feel that the decision is safer, and, therefore, they may not be as prone to experiencing regret. When the forgone outcome is known, regret will be experienced even in the case where the outcome is reversible. However, when the forgone, reversible outcome is not known, very little regret is expected to be experienced by the decision maker. This is so because reversible outcomes may cause decision makers to be more passive and prevent or demotivate them from spending cognitive effort to generate counterfactuals. Thus, the following hypothesis is proposed:

H3: Reversibility moderates the effect of knowledge of the forgone outcome on experiencing regret. When the chosen outcome is irreversible (cannot return the product), people will experience regret regardless of the availability of information on a better-forgone outcome. When the chosen outcome is reversible (money-back guarantee), people will experience a higher level of regret when the information on a better-forgone outcome is known than when it is unknown.

Valence of the Outcome. Both performance and disconfirmation of expectations influence satisfaction (Anderson and Sullivan 1993; Yi 1990). The level of satisfaction, in turn, influences repurchase intentions (Newman and Werbel 1973) and complaint behavior (Bearden and Teel 1983). It is argued here that during postchoice valuation, negative outcomes stimulate more counterfactual thinking than positive outcomes. One reason for this asymmetric counterfactual thinking is that people in a positive affective state have been shown to engage in activities to maintain that positive state, whereas those in a negative affective state will take steps to repair the negative state (Isen and Geva 1987). Thus, those experiencing a positive outcome are less motivated to search for or construct alternative scenarios that can potentially undo the positive state. However, those who experienced a negative outcome may be motivated to avoid such experience in the future and search for a better alternative in an attempt to perform better in the future.[5] However, when information on a better-forgone outcome is available, such mental undoing is not necessary, and people may experience regret regardless of the level of performance of the chosen alternative. Thus, the following hypothesis is proposed:

H4: The valence of the chosen outcome moderates the effect of knowledge of the forgone outcome on experiencing regret. When the chosen outcome is negative, people will experience regret regardless of the availability of information on a better-forgone outcome. When the chosen outcome is positive, people will experience a higher level of regret when the information on a better-forgone outcome is known than when it is unknown.

Consequences of Regret

Research in the customer-satisfaction literature shows that there is a positive relationship between satisfaction and repurchase intentions (Oliver 1980) and a negative relationship between satisfaction and complaint intentions (Newman and Werbel 1973; Richins 1983). However, the impact of regret on such behavioral intentions has not been investigated in the literature.

Regret may influence behavioral intentions such that they may not solely be determined by satisfaction (Thibaut and Kelley 1959). Outcomes may be evaluated not only according to whether they meet a predetermined level of expectation but also relative to alternatives available in the marketplace, and such evaluations are likely to influence repurchase intentions. If the forgone alternative outperforms the chosen alternative, the consumer may very well intend to switch to the forgone alternative at the next purchase occasion, even if he or she is highly satisfied with the chosen alternative.[6] Thus, both satisfaction and regret are likely to directly influence repurchase intentions.

However, a similar effect of regret on intention to complain is unlikely to occur. In other words, it is not expected that consumers will complain to a seller because another product is performing better in the marketplace. They may complain if the product does not perform as expected (dissatisfaction) but not when it meets expectations but performs worse than another alternative (regret). It is argued that in those cases (forgone outcome is better than chosen outcome) people may not complain but, rather, switch brands, and this will be reflected through a decrease in repurchase intentions. The preceding discussion leads to two hypotheses:

H5: Regret has a negative influence on repurchase intentions, and satisfaction has a positive influence on repurchase intentions.

H6: Regret has no influence on complaint intentions, whereas satisfaction has a negative influence on complaint intentions.

Jointly, these two hypotheses posit that the constructs of regret and satisfaction differ also in terms of their consequences. Satisfaction has a direct influence on both repurchase and complaint intentions, whereas regret has only a direct influence on repurchase intentions. This will provide further evidence for the uniqueness of the two constructs and the necessity for distinguishing between them.

As a next step in this direction, it is also important to explore the relationship between these two constructs. Specifically, regret is posited as an antecedent of satisfaction. It has been shown that higher levels of regret decrease satisfaction (Inman et al. 1997; Taylor 1997). In line with these studies, a direct influence of regret on satisfaction is posited. In other words, it is proposed here that a consumer may adjust his or her level of satisfaction with the chosen outcome depending on how this outcome compares against the forgone outcome. For example, the decision maker may reason in the following fashion: well, my choice of stock (IBM) did not meet my original growth expectations but has performed better than my other alternative (Intel). This is not to say that the decision maker will necessarily be satisfied in the above example, but he or she will be more satisfied than if no such comparison is undertaken. Thus, the following hypothesis is proposed:

H7: Regret has a negative influence on satisfaction.

Although Hypothesis 7 largely replicates recent findings (e.g., Inman et al. 1997; Taylor 1997), its contribution can be appreciated in the context of the full model (especially Hypotheses 5 and 6). The model argues for the direct effect of regret on repurchase intentions and for the mediating role of satisfaction between regret and complaint intentions. In other words, the model suggests that though regret does not

[5] In certain cases, people experiencing a negative outcome may be constructing an even worse outcome in an attempt to cope with the current situation. While these cases exist, they are very rare.

[6] However, this may be moderated by the degree of switching costs.

affect complaint intentions directly, it may still have an effect via satisfaction.

In the following section, four studies are reported. The first study uses multiple items to measure regret, empirically distinguish it from satisfaction, and examine its consequences. The second study replicates and extends the first by investigating factors that moderate the level of regret experienced. Finally, studies 3 and 4 examine the role of counterfactuals as a potential mechanism leading to regret.

STUDY 1

Design

The study has a 2 (outcome valence of chosen brand: positive vs. negative) × 2 (outcome of chosen brand compared to forgone outcome: better vs. worse) × 2 (brand choice: Compaq vs. Dell) between-subjects factorial design. Eight experimental conditions were generated. For example, in the first condition, subjects experienced a positive outcome with Compaq that was better than the forgone alternative (Dell). Subjects read about Paul (see Appendix), who encountered a positive experience with his laptop, and, in addition, his experience was worse than the experience of George, who purchased another brand.

Procedure

A computer-purchasing-decision scenario was presented to a group of 91 undergraduate students. Each subject was assigned randomly to one of eight conditions. Subjects read about a person (Paul) who wished to buy a laptop computer. They were instructed to read the scenario and proceed with the questions that followed at their own pace. The first page consisted of a scenario describing one of the eight conditions. Subsequently, measures of regret, satisfaction, and intention to complain and repurchase, as well as the manipulation checks of the independent variables, were obtained. Items measuring the dependent variables were randomly ordered. Subjects took approximately 10 minutes to complete the questionnaire. The items measuring the manipulation of the independent variables followed the items of the dependent variables. After the study was completed they were debriefed, thanked, and dismissed.

Measures: Independent Variables

Separate items were used as indicators of the success of the treatments: chosen outcome (positive vs. negative) and chosen outcome compared to forgone outcome (better vs. worse). The scales for the items ranged from one to seven with four representing the middle point on the scale. One-tailed *t*-tests showed that both treatments were manipulated successfully. Subjects in the positive outcome group perceived the performance of the product as being more positive than those in the negative group (6.26 vs. 1.98, $p < .01$). Subjects in the better-forgone outcome group perceived the performance of the product as being worse than those in the worse-forgone outcome group (2.31 vs. 5.31, $p < .01$). Finally, there was no significant difference between subjects reading about Paul purchasing a Compaq laptop and those reading about Paul purchasing a Dell laptop (all p's $> .30$). Thus, the two groups were combined for the remaining analysis.

Measures: Dependent Variables

Seven-point scales were also used to measure the dependent variables. Three items measured regret, three measured satisfaction, one measured repurchase intentions, and one measured complaint intentions (see Appendix).[7] Satisfaction and regret were the two key constructs in this study. Of the studies examining regret in the literature, only one (Tsiros 1998) has provided a multiple-item measure of regret. Although Oliver (1997) has suggested a multi-item list, it has not been tested empirically. Two of the items (regret 1 and regret 2, in the Appendix) in Oliver (1997) overlap with those used in Tsiros (1998). These two items along with one more item from Oliver's (1997) list were used to measure regret.[8]

Analysis and Results

Cronbach's alpha for both constructs indicate that the scales have very high reliability (regret: $\alpha = .82$; satisfaction: $\alpha = .95$). Discriminant validity was assessed by examining the dimensionality of the six items measuring regret and satisfaction. A confirmatory factor analysis showed that a two-factor solution provides a better fit than a one-factor solution. The one-factor solution had a goodness-of-fit index (GFI) of .81 and a root mean square residual (RMSR) of 1.34, while the two-factor solution had a GFI of .95 and a RMSR of .15. A factor analysis with oblique rotation extracted two factors (the factor loadings and the Cronbach alphas are shown in Table 1). The total explained variance was 89 percent with the satisfaction factor accounting for 60 percent and regret accounting for 29 percent of the variance. The correlation between the two factors was −.32. The cell means for regret and satisfaction are shown in Table 2.

A structural equation model was built (see Fig. 2) in order to test the model's predictions on the consequences of regret and satisfaction (Hypotheses 5–7). The proposed model fits the data well (GFI = .97, RMRS = .12). Figure 2 includes the standardized regression coefficients. As predicted in Hypothesis 5, both regret ($\beta = -.33$, $p < .01$) and satisfaction ($\beta = .43$, $p < .01$) have a direct influence on repurchase intentions. Thus, Hypothesis 5 is supported. As predicted in Hypothesis 6, satisfaction ($\beta = -.41$, $p < .01$) is related negatively to complaint intention, whereas regret is not ($\beta = .09$, $p > .10$). Thus, Hypothesis 6 is supported.

[7] Satisfaction was mainly measured as performance oriented.

[8] Three more items were proposed by Oliver (1997), but those items seem to measure cognitive dissonance and repurchase intentions, and, thus, they were not included in the study.

TABLE 1

FACTOR LOADINGS AND RELIABILITIES FOR REGRET AND SATISFACTION (STUDY 1)

Item	Regret (.82)	Satisfaction (.95)
Paul feels sorry for choosing a Compaq laptop	.85	−.31
Paul regrets choosing a Compaq laptop	.80	−.36
Paul should have chosen a Dell laptop	.77	−.28
Paul is happy with Compaq's performance	−.21	.95
Paul is satisfied with Compaq's performance	−.35	.94
Paul is disappointed with Compaq's performance[a]	−.27	.92

[a]Reverse coded.

Finally, as predicted in Hypothesis 7, regret has a direct influence on satisfaction ($\beta = -.38$, $p < .01$). Thus, Hypothesis 7 is also supported.

As a conclusive test of mediation and model parsimony (cf. Baron and Kenny 1986), a restricted model (the model in Fig. 2 with the path between regret and satisfaction set to zero) was also estimated (GFI = .93, RMRS = .52), and the relationships between the constructs were preserved except for the standardized regression coefficient between regret and complaint intention that became significant ($\beta = .21$, $p < .01$). The full model, however, fits the data significantly better than the restricted model ($\chi^2(1) = 38.35$, $p < .01$). Thus, the effect of regret on complaint intentions is mediated via satisfaction.

Discussion

This study distinguishes between the constructs of regret and satisfaction. Results show that both regret and satisfaction have a direct influence on repurchase intentions. However, the influence of regret on complaint intentions is fully mediated via satisfaction. Thus, this study also shows that the two constructs have different consequences.

While developing a multi-item measure of regret and distinguishing it from satisfaction is an important objective of this article, the main objective is to test the proposed model of regret (see Fig. 1). Examining the antecedents, moderators, and consequences of regret and testing the full model is the main objective of the following study. This study replicates the above results and extends them in two important ways. First, it shows that regret may be experienced even in the absence of information on the forgone outcome. This is important, as past research investigating regret has always provided information on the forgone outcome (cf. Bell 1982; Boles and Messick 1995; Inman et al. 1997). Second, it investigates the factors that moderate the level of experienced regret. Thus, the next study provides a test for the full model proposed in Figure 1.

TABLE 2

CELL MEANS FOR REGRET AND SATISFACTION (STUDY 1)

Chosen outcome	Forgone outcome	Satisfaction	Regret
Positive	Better	5.80	4.81
Positive	Worse	6.29	3.52
Negative	Better	1.83	5.35
Negative	Worse	2.16	4.44

STUDY 2

Design

The study used a 2 (information on the forgone outcome: known vs. unknown) × 2 (type of chosen alternative: retain status quo vs. change status quo) × 2 (chosen outcome: positive vs. negative) × 2 (reversibility of the outcome: reversible vs. irreversible) between-subjects factorial design.[9] In the first condition, information on the forgone outcome was unknown, the chosen alternative represented the status quo, and the outcome was positive and reversible. Subjects had a pleasant experience with their computer purchase, their decision was to stay with their current brand, an unconditional money-back guarantee was offered by the retailer, and they had no information on the forgone outcome (see Appendix). Similarly, the other 15 scenarios were constructed from the other combinations of the treatment levels.

Procedure

A computer-purchasing-decision scenario was presented to a group of 225 undergraduate students. Each subject was assigned randomly to one of 16 conditions. Subjects read about a person (Paul) who wished to buy a laptop computer. They were instructed to read the scenario and proceed with the questions that followed at their own pace. The first page consisted of a scenario describing one of the 16 conditions. Subsequently, measures of regret, satisfaction, and intention to complain and repurchase were obtained. These items were randomly ordered. Following these items, manipulation checks of the independent variables were obtained. Subjects took approximately 15 minutes to complete the questionnaire. After the study was completed, they were debriefed, thanked, and dismissed.

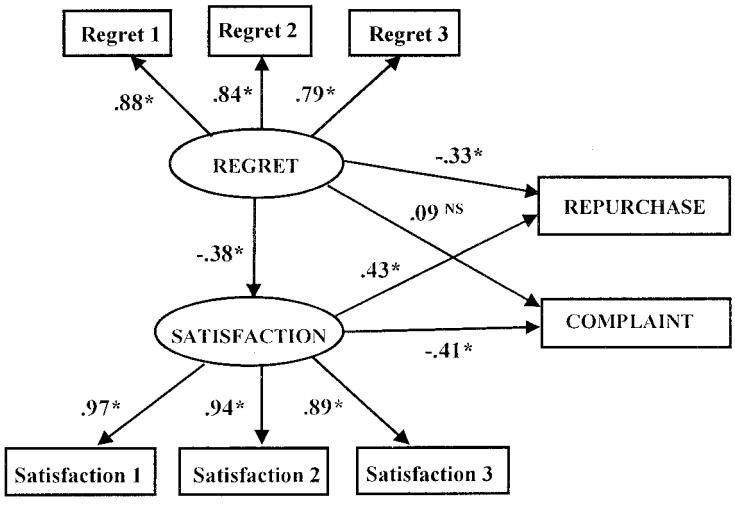
Measures and Manipulation Checks

Four separate items were used as indicators of the success of the four treatments: information on the forgone outcome (known vs. unknown), the chosen alternative (retain the status quo vs. change the status quo), valence of the chosen outcome (positive vs. negative), and reversibility of the

[9]When information on the forgone outcome was known, it was always better than the chosen outcome.

FIGURE 2

THE EFFECT OF REGRET AND SATISFACTION ON BEHAVIORAL INTENTIONS



NOTE.—Coefficients represent standardized estimates. Not significant at $p > .10$.
*$p < .01$.

chosen outcome (irreversible vs. reversible). The scales for the items ranged from one to seven, with four representing the middle point on the scale. One-tailed *t*-tests showed that all four treatments were manipulated successfully. Subjects knowing about the forgone outcome perceived that information as more available than those not knowing the forgone outcome (6.04 vs. 2.17, $p < .01$). Subjects receiving the same brand (OLDBRAND) perceived their choice as preserving the status quo more so (5.51 vs. 2.55, $p < .01$) than those switching to another brand (NEWBRAND). Subjects in the positive outcome group perceived the performance of the product as being more positive than those in the negative group (5.82 vs. 1.87, $p < .01$). Finally, subjects in the reversible outcome group perceived their outcome as more reversible than those in the irreversible outcome group (5.53 vs. 2.61, $p < .01$).

Seven-point scales were also used to measure the dependent variables. These items are borrowed from the first study with some minor adjustments to fit the scenario (see Appendix). To measure regret and satisfaction, the two items with the highest loading on each construct in study 1 (see Table 1) were used in this study.

Analysis and Results

This study examined all seven hypotheses. Since the structural model that tested Hypotheses 5–7 yielded results identical to those in study 1, it is not reported here. The cell means for regret and satisfaction are shown in Table 3.

To test Hypotheses 1–4, an ANOVA was run with regret as the dependent variable and status quo, reversibility, valence, and knowledge as the independent variables (see Table 4). The overall model was significant ($F(15, 205) = 8.69$, $p < .01$). The main effect of knowledge and all three interactions between knowledge and status quo, reversibility, and valence were statistically significant (see Table 4). These results provide support for the first four hypotheses.

A strong main effect of knowledge on regret was observed ($F(1, 205) = 9.15$, $p < .01$). As hypothesized, the group knowing of a better-forgone outcome experienced more regret than the group not knowing of a better-forgone outcome (5.11 vs. 4.12, $p < .01$). These results support Hypothesis 1.[10] As hypothesized, the three interactions (Hypotheses 2–4) were significant ($p < .01$). To further examine the results, simple main-effect tests were also run. The results from this analysis further confirmed the proposed hypotheses.

Among the subjects retaining the status quo (repurchase), those who did not know about a better-forgone outcome experienced a lower level of regret than those who knew about the forgone outcome (3.31 vs. 4.63, $p < .01$). However, as hypothesized, among the subjects changing the status quo (switching), there was no significant difference in the level of regret experienced between those who knew and those who did not know about the forgone outcome (5.57 vs. 5.06, $p > .10$). Both groups experienced a high level of regret. In summary, irrespective of knowledge of a better-forgone outcome, those switching brands experienced high levels of regret, while knowledge of a better-forgone outcome was necessary to generate high levels of regret among

[10]It should be noted that the main effect of status quo, reversibility, and valence and two three-way interactions were also significant. These results are not described since they were not hypothesized a priori and may inflate the type I error.

TABLE 3

CELL MEANS FOR REGRET AND SATISFACTION (STUDY 2)

Status quo	Reversibility	Valence	Knowledge	Regret	Satisfaction
Retain	Irreversible	Positive	Do not know	2.98	6.10
Retain	Irreversible	Positive	Know	4.50	5.81
Retain	Irreversible	Negative	Do not know	5.28	3.09
Retain	Irreversible	Negative	Know	6.57	2.89
Retain	Reversible	Positive	Do not know	2.42	6.10
Retain	Reversible	Positive	Know	3.50	6.00
Retain	Reversible	Negative	Do not know	4.60	3.52
Retain	Reversible	Negative	Know	4.70	3.57
Change	Irreversible	Positive	Do not know	4.57	6.13
Change	Irreversible	Positive	Know	4.58	5.98
Change	Irreversible	Negative	Do not know	6.85	2.44
Change	Irreversible	Negative	Know	6.70	2.24
Change	Reversible	Positive	Do not know	2.52	6.19
Change	Reversible	Positive	Know	4.32	6.25
Change	Reversible	Negative	Do not know	5.33	2.61
Change	Reversible	Negative	Know	6.20	2.49

TABLE 4

THE EFFECT OF STATUS QUO, REVERSIBILITY, VALENCE, AND KNOWLEDGE ON REGRET (STUDY 2) (DEPENDENT VARIABLE: REGRET)

Source	df	Mean square	*F*-value	Significance
Model	15	13.85	8.69	**
Error	205	1.59		
Total	220			
Status Quo (SQ)	1	26.73	16.81	**
Reversibility (R)	1	29.47	18.53	**
Valence (V)	1	47.58	29.92	**
Knowledge (K) (Hypothesis 1)	**1**	**14.55**	**9.15**	**
SQ X K (Hypothesis 2)	**1**	**15.86**	**9.97**	**
R X K (Hypothesis 3)	**1**	**17.02**	**10.70**	**
V X K (Hypothesis 4)	**1**	**16.01**	**10.07**	**
SQ X R	1	1.53	.96	NS
SQ X V	1	2.57	1.62	NS
R X V	1	2.23	2.42	NS
SQ X R X V	1	2.56	3.19	NS
SQ X V X K	1	5.07	2.42	NS
SQ X R X K	1	18.61	11.70	**
R X V X K	1	6.38	4.01	*
SQ X R X V X K	1	1.51	.95	NS

NOTE.—NS at $p > .10$.
*$p < .05$.
**$p < .01$.

those purchasing the same brand. These results support Hypothesis 2 (see Fig. 3*a*).

Among the reversible outcome group, those who did not know about a better-forgone outcome experienced less regret than those who knew about the forgone outcome (2.72 vs. 4.10, $p < .01$). However, as expected, among the irreversible outcome group, there was no significant difference in the level of regret experienced between those who knew and those who did not know about the forgone outcome (5.19 vs. 4.68, $p > .10$). In summary, irrespective of knowledge of the forgone outcome, those receiving an irreversible outcome experienced high levels of regret, while knowledge of the forgone outcome was necessary to generate a high level of regret among those receiving a reversible outcome. These results support Hypothesis 3 (see Fig. 3*b*).

Among the positive outcome group, those who did not know about a better-forgone outcome experienced less regret than those who knew about the forgone outcome (2.52 vs. 5.22, $p < .01$). However, as expected, among the negative outcome group, there was no significant difference in the level of regret experienced between those who knew and those who did not know about the forgone outcome (6.04 vs. 5.76, $p > .10$). In summary, irrespective of knowledge of the forgone outcome, those experiencing a negative outcome experienced high levels of regret, while knowledge of the forgone outcome was necessary to generate a high level of regret among those experiencing a positive outcome. These results support Hypothesis 4 (see Fig. 3*c*).

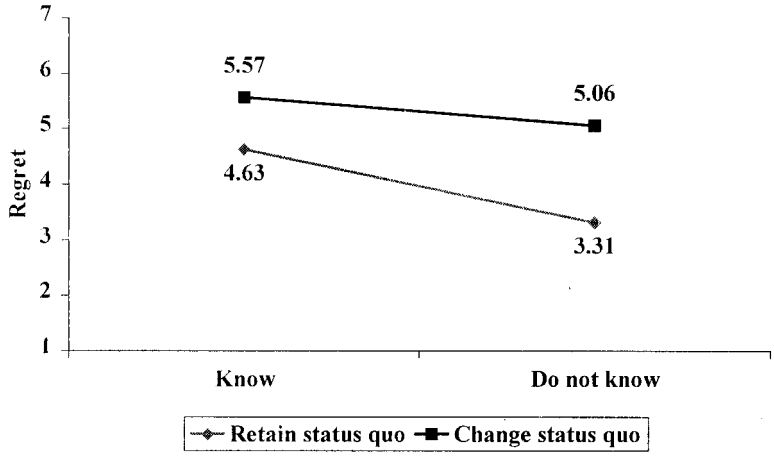
To further demonstrate the distinction between regret and satisfaction, an ANOVA was run with satisfaction as the dependent variable and status quo, reversibility, valence, and knowledge as the independent variables (see Table 5). The overall model was significant ($F(15, 205) = 19.72$, $p < .01$). In this model, only the main effect of status quo and valence were statistically significant. More interesting, none of the three interactions between knowledge and status quo, reversibility, and valence were statistically significant (see Table 5). These results provide further support for the distinction between regret and satisfaction based on their antecedents and moderators.

Discussion

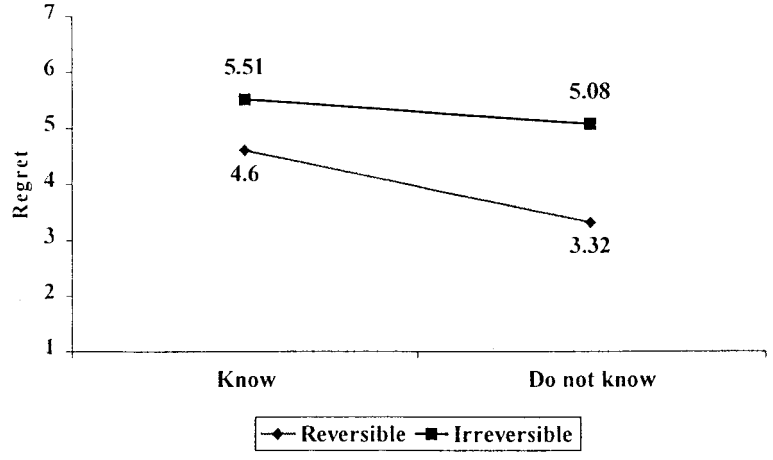
All seven hypotheses are supported by the data. Collectively, studies 1 and 2 provide several insights on the

Figure 3

a. EFFECT OF KNOWLEDGE OF FORGONE OUTCOME AND STATUS QUO ON REGRET



b. EFFECT OF KNOWLEDGE OF FORGONE OUTCOME AND REVERSIBILITY ON REGRET



c. EFFECT OF OUTCOME AND KNOWLEDGE OF FORGONE OUTCOME ON REGRET

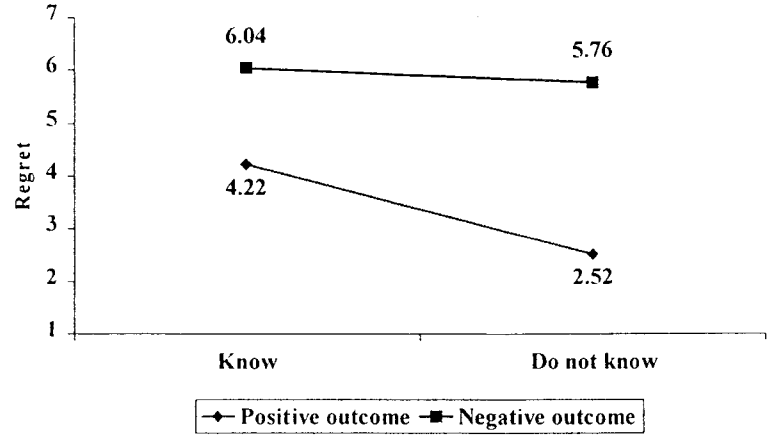


TABLE 5

THE EFFECT OF STATUS QUO, REVERSIBILITY, VALENCE, AND KNOWLEDGE ON SATISFACTION (STUDY 2) (DEPENDENT VARIABLE: SATISFACTION)

Source	df	Mean square	*F*-value	Significance
Model	15	20.51	19.72	**
Error	205	1.04		
Total	220			
Status Quo (SQ)	1	5.61	5.39	*
Reversibility (R)	1	3.48	3.35	NS
Valence (V)	1	276.95	266.29	**
Knowledge (K)	1	1.30	1.25	NS
SQ X K	1	.02	.02	NS
R X K	1	1.37	1.32	NS
V X K	1	.02	.02	NS
SQ X R	1	1.26	1.21	NS
SQ X V	1	12.87	12.38	**
R X V	1	1.40	1.35	NS
SQ X R X V	1	1.11	1.07	NS
SQ X V X K	1	.20	.19	NS
SQ X R X K	1	.02	.02	NS
R X V X K	1	.05	.05	NS
SQ X R X V X K	1	.03	.03	NS

NOTE.—NS at $p > .10$.
*$p < .05$.
**$p < .01$.

importance of regret, its antecedents, moderators, and consequences in consumer decision making. Past literature on regret has always provided information on the forgone alternative. Study 2 demonstrates that information is not necessary to generate regret and in addition identifies conditions under which even lack of information on the forgone outcome may still generate regret. However, the cognitive mechanism underlying such an effect was not directly ascertained. For instance, in developing the hypotheses it was posited that subjects in the "unknown forgone outcome" condition experienced regret as a result of an increase in counterfactual thinking, though no measure of the extent of counterfactual thinking taking place was taken in study 2.

To examine the process of counterfactual generation, another study was conducted. Unlike previous studies where subjects are explicitly asked to think of alternatives to reality (e.g., Roese and Olson 1995), this study did not force subjects to construct counterfactual scenarios. Specifically, the objective of study 3 was to examine the level of counterfactuals generated by varying the status quo and reversibility of the chosen outcome. Conceptually, study 3 examines the cognitive process underlying Hypotheses 2 and 3. The underlying assumption for these hypotheses was that irreversible outcomes caused by changing the status quo would generate higher levels of regret as a result of an increase in counterfactuals.

TABLE 6

THE EFFECT OF STATUS QUO AND REVERSIBILITY ON COUNTERFACTUAL THINKING (STUDY 3)

Condition	Counterfactuals (%)	Decision quality	Decision safety
A. Status quo and reversible ($n = 18$)	3 (17)	5.8 A	5.6 A
B. Status quo and irreversible ($n = 20$)	8 (40)	5.2 A	6.0 A
C. Not status quo and reversible ($n = 21$)	13 (62)	4.1 B	3.2 B
D. Not status quo and irreversible ($n = 19$)	14 (74)	3.0 C	2.8 B

NOTE.—Values with different letters within a column represent statistically significant differences ($p < .01$).

STUDY 3

Method

Participants were 78 undergraduate students. A 2 (type of chosen alternative: retain status quo vs. change status quo) $\times$ 2 (reversibility of the outcome: reversible vs. irreversible) between-subjects design was used. Subjects read a scenario describing one of four versions of the stimuli (the status quo and reversible version is shown in the Appendix). Note that no information was provided on the forgone outcome in this study. Following the description of the scenario, subjects were asked to write down any thoughts that the protagonist in the scenario may be having at that point in time. As mentioned earlier, subjects were not asked to generate counterfactuals because this study examined the likelihood of their generation. In addition, subjects were asked to rate the safety and quality of the decision in the scenario. The safer a decision is perceived to be, the less likely it may be to generate counterfactuals.

Analysis and Results

Responses to the open-ended question were content analyzed. Two doctoral students were instructed to code each response into one of two categories: (1) "what-if" or counterfactual thought or (2) not a counterfactual thought. Responses that alter reality, create hypothetical scenarios, or express an opinion as to what might have been had a different decision been made were to be classified in the first category. Interjudge reliability was 91 percent (77 out of 85 statements). Disagreements were resolved by discussion. The results indicate that a likely cognitive process behind the higher level of regret associated with switching brands or irreversible outcomes is the generation of more counterfactuals (see Table 6).

The highest number of counterfactuals was generated in changing status quo (switch) and irreversible condition. Specifically, 74 percent (14 out of 19) of those switching brands and receiving the irreversible outcome generated

counterfactuals.[11] Sixty-two percent (13 out of 21) of those switching brands and receiving the reversible outcome generated counterfactuals. Forty percent (8 out of 20) of those purchasing the same brand and receiving an irreversible outcome generated counterfactuals. Finally, 17 percent (3 out of 18) of those purchasing the same brand and receiving a reversible outcome generated counterfactuals. Although the difference in counterfactuals between changing and retaining the status quo conditions is significant ($\chi^2(1) = 6.74$, $p < .01$), the difference between the reversible and irreversible conditions is not ($\chi^2(1) = .95$, $p > .10$).

One reason why the reversibility results are weaker than the status quo results may be because these variables are differentially associated to responsibility and availability of an alternative. The decision maker may feel greater responsibility for the result of his or her decision when the choice represents changing the status quo, and, therefore, counterfactuals where the status quo is chosen may be more accessible than when the choice involves retaining the status quo. However, the decision maker may not feel high levels of responsibility for the result of his or her decision when the outcome is irreversible as opposed to reversible, since reversibility of the outcome (offering a money-back guarantee) is less controllable by the consumer.

The responses to the questions on decision quality and decision safety (see Table 6) paint a similar picture and provide further support to the implicit assumption in study 1. Respondents found the decision to purchase the same brand as of higher quality (5.5 vs. 3.6, $p < .01$) and safer (5.8 vs. 3.0, $p < .01$) than the decision to switch brands. No significant difference on decision quality and safety was observed between reversible and irreversible decisions. A strong association between regret and responsibility has been identified in the literature (e.g., Gilovich and Medvec 1994; Simonson 1992; Zeelenberg, Van Dijk, and Manstead 1998). In the words of Gilovich and Medvec (1994, p. 359) "a sense of personal responsibility is central to the experience of regret." Weiner (1982) argued that affective reactions to outcomes are stronger when the outcome can be attributed to the actor as opposed to situational factors. A decision to retain or change the status quo may have a stronger link to personal responsibility than whether the decision is reversible or irreversible (this is usually attributed to the seller) and, therefore, generates greater doubt and counterfactuals.

Similar to study 3, the objective of study 4 was to examine the level of counterfactual generation based on the valence of the chosen outcome. The underlying assumption for Hypothesis 4 was that negative outcomes would generate higher levels of regret as a result of an increase in counterfactuals. Study 4 tests this assumption. Regret was also measured in study 4, and, in addition, the level of satisfaction was measured both before and after information on the forgone outcome is provided to the subjects. This will offer further insight to the relationship between regret and satisfaction.

[11] A typical response was "Paul should have bought Brand B's hiking boots."

STUDY 4

Method

Participants were 53 undergraduate students. A 2 (valence of the chosen outcome: positive vs. negative) × 2 (information on the forgone outcome: known vs. unknown) between-subjects design was used. Subjects read a scenario (see Appendix) providing information on the chosen outcome and the existence of a forgone alternative. Following the description of the scenario, subjects were asked to rate their level of satisfaction with the chosen outcome. Then, subjects were asked to respond to two open-ended questions. The first open-ended question asked subjects if they would like to have any additional information, and the second asked them to write down any thoughts they had up to that point. As in study 3, subjects were not explicitly asked to generate counterfactuals. Finally, half of the subjects were given information on the forgone outcome (which was always better than the chosen outcome), and all subjects were asked to report their level of regret and were once again asked to rate their level of satisfaction with the chosen outcome. Thus, there were four different versions of the scenario (the positive chosen outcome and unknown forgone outcome version is shown in the Appendix). The measures of satisfaction and regret were the same measures used in study 2.

Analysis and Results

Responses to both open-ended questions were content analyzed. Two doctoral students were instructed to code each response to the first question (requesting additional information) into one of three categories: (1) chosen outcome, (2) forgone outcome, and (3) neither outcome. Responses that mentioned both the chosen and the forgone outcome were coded in both the first and second categories. Responses to the second question (thoughts they had up to that point) were coded into one of two categories: (1) what-if or counterfactual thought and (2) not a counterfactual thought. Responses that alter reality and attempt to create hypothetical scenarios were to be classified in the what-if category. Interjudge reliability was 90 percent (35 out of 39 statements) for the first question and 89 percent (32 out of 36 statements) for the second question. Disagreements were resolved by discussion. The results from a content analysis of the two open-ended questions provided support for the cognitive process behind the hypothesis that negative outcomes generate more interest on the forgone outcome and more counterfactual thinking (see Table 7). In summary, there was more cognitive activity when the chosen outcome was negative than when it was positive.

First the data were analyzed on requests for information on the forgone outcome. Although a higher proportion of subjects requested information when the chosen outcome

TABLE 7

THE EFFECT OF OUTCOME ON COUNTERFACTUAL THINKING (STUDY 4)

Condition	Requesting information on forgone alternative (%)	"What-if" counterfactuals (%)
A. Positive outcome (n = 27)	10 (37)	2 (7)
B. Negative outcome (n = 26)	16 (62)	12 (46)

was negative (62 percent, 16 out of 26) than when it was positive (37 percent, 10 out of 27), this difference was not statistically significant ($\chi^2(1) = 1.38$, $p > .10$).[12] Similarly, 46 percent of the respondents (12 out of 26) generated counterfactual thoughts when the chosen outcome was negative, but only 7 percent (2 out of 27) generated counterfactuals when the chosen outcome was positive.[13] This difference, however, was statistically significant ($\chi^2(1) = 7.14$, $p < .01$).

In addition, study 4 examined the influence of regret on satisfaction. First, as expected, the group receiving information about a better-forgone outcome experienced more regret than the group not receiving information on the forgone outcome (5.45 vs. 4.18; $p < .01$). Most important, the level of satisfaction was measured twice in study 4; both before and after the information on the forgone outcome was provided. The results show that the level of satisfaction did not change significantly in the group of subjects not finding out about the forgone outcome (4.94 vs. 4.77, $p > .10$). In contrast, satisfaction levels decreased significantly when subjects were informed about a better-forgone outcome (5.02 vs. 4.17, $p < .05$). Thus, information about a better-forgone outcome and the consequent regret may have led to the decrease in satisfaction in the latter condition.[14] This provides additional support for Hypothesis 7 in a within-subjects design.

Finally, an indirect test of the mediating role of counterfactuals between valence and regret was performed. Since only the negative-outcome conditions generated more than one counterfactual, the test was performed in only those two cells. Eight counterfactuals were generated in the negative-outcome and no-information condition and four counterfactuals were generated in the negative-outcome and information condition. Two groups were constructed within each cell, those who did generate a counterfactual and those who did not. The level of regret between the two groups within each cell was compared. Subjects generating a counterfactual reported a slightly higher level of regret in the information group (6.6 vs. 6.0, $p < .10$) and a significantly higher level of regret in the no-information group (6.0 vs. 4.8, $p < .01$). While this is not a direct test of mediation, it provides some evidence for the mediating role of counterfactuals, especially when no information on the forgone outcome is available.

[12]The majority of the requests for additional information where on the forgone outcome with the most typical response being "I would like to know how brand B performed."

[13]The most typical response classified in the what-if category was "if Paul had chosen brand B, he may have been better-off."

[14]It is possible, however, that this outcome was the result of a demand effect.

Discussion

Conceptually, studies 3 and 4 show that people are more likely to generate counterfactuals when the chosen outcome is negative and not the status quo. Results from study 3 show that people are more likely to generate counterfactuals when the chosen outcome results from changing the status quo than when it results from retaining the status quo. Furthermore, study 3 provides some insight to the relationship between counterfactual generation and decision quality and safety. Decisions that lead to retain the status quo tend to be perceived as of higher quality and safety, and they also tend to generate fewer counterfactuals.

Results from study 4 show that compared to those experiencing a negative outcome, people experiencing a positive outcome are less likely to seek information or construct scenarios about actual or potential forgone outcomes. In addition, the mediation test performed provides some evidence in support of the implicit assumption of Hypothesis 4 that greater regret is experienced as a result of an increase in counterfactuals. Furthermore, study 4 provides some insights on the relationship between satisfaction and regret. When people realize that another alternative would have been more attractive, they tend to be more dissatisfied with the chosen outcome. Thus, when they find out that a better alternative exists, they discount the chosen alternative's performance or update their expectations upward even for past events.

CONCLUSION

This article proposes and tests a model of regret in consumer decision making. The article makes several contributions to marketing theory. First, it develops a multiple-item measure of regret and distinguishes it from satisfaction by showing that the two constructs have different antecedents, moderators, and consequences. Second, it examines how regret may be activated. More specifically, it shows that regret can be experienced even in the absence of information on a forgone outcome. Third, it examines the moderating role of several variables (e.g., valence of the chosen outcome, status quo, reversibility of the outcome) on the experience of regret. When no information on the forgone outcome is available, regret is more likely to be experienced when the chosen outcome is negative, irreversible, or not the status quo. Fourth, it examines how regret and satisfaction influence repurchase and complaint intentions. In doing so, the mediating role of satisfaction in regret's ability to affect behavioral intentions, specifically complaint intentions, is established. Satisfaction influences repurchase and complaint intentions directly, whereas regret influences re-

purchase intentions directly and complaint intentions indirectly through satisfaction. Finally, it identifies the cognitive process by which regret may be generated when information on the forgone outcome is not provided. Generation of counterfactual thoughts about the forgone alternative is identified as one such mechanism. It also shows that such counterfactuals are more prevalent when the chosen outcome is negative and the result of changing the status quo.

Limitations

The four studies reported here have certain limitations. Some of the obvious limitations include limited external validity, single-item measures to assess behavioral intentions (repurchase and complaint), and measuring intentions instead of actual behavior. In addition to the above limitations, information on the forgone alternative may vary greatly, but studies 2 and 4 manipulated information as either present or absent. Information can vary from complete and objective (as in the case of a stock investment) to incomplete and subjective (as in the case of a new-product manager assessing the success of a product concept that was not launched based on a similar product launched by a competitor).

Second, study 3 did not employ a measure of regret. Thus, while the second study provides evidence for an increase in regret due to information on a better-forgone outcome and the third study shows that certain conditions (changing the status quo) will generate more counterfactuals than others, the relationship between counterfactuals and regret could not be tested.

Third, study 4 did employ a measure of regret, but due to the small number of counterfactuals generated, an indirect mediation test was performed only in the negative-outcome groups. The results from this test suggest that counterfactual generation may be the underlying process by which regret is experienced when no information on the forgone outcome is available.

Finally, when information was provided on the forgone outcome, it was always better than the chosen outcome. A more complete picture will be achieved if the other condition (worse-performing forgone outcome) is also examined.

Implications and Future Research Directions

The findings in this article have several implications for research and practice. In keeping with the model in Figure 1, these implications are broadly classified in two categories (antecedents/moderators and consequences) and are discussed next along with some suggestions for future research avenues.

Antecedents/Moderators. An examination of the degree and objectivity of certainty of the information available on the forgone outcome is a natural extension of this research. It could be that the information on the forgone alternative is discounted when its credibility is in question. When information on the forgone outcome is not available, several variables influenced the generation of counterfactuals and the level of regret experienced (e.g., valence, reversibility, and status quo). However, other variables may also be moderating such cognitive activity. For example, the less tangible an outcome is, the less likely it may be for counterfactuals to be generated.[15] Yi (1993) found that the ambiguity (or ease of evaluation) surrounding a product attribute affected the extent to which consumers used their expectations (reference points) in forming a satisfaction judgment. Since service performance is harder to evaluate than goods performance, consumers may be less likely to compare the performance of the chosen with a forgone alternative. This, however, may increase the likelihood of generating counterfactuals when evaluating services. The extent to which services increase or decrease counterfactual generation is an area for future research.

Consequences. The findings reported here suggest that the consideration set continues to be important even after the purchase because a forgone alternative in the set can act as a reference point during the postchoice valuation process. By making regret more salient to their customers, managers may be better able to maintain long-term relationships with them—since regret is found to be directly related to repurchase intentions. Several examples for making regret salient to customers can be found in the marketplace. For example, consider AT&T's advertisements that include actual testimonials of past customers who switched to MCI for bigger savings only to realize that they were saving just a few cents on their monthly bills. After regretting their decision and deciding to come back to AT&T, current AT&T customers may think twice before switching to MCI for bigger savings. In addition, the V8 advertising campaign "I could have had a V8" directly forces consumers to consider a better-forgone alternative. By forcing consumers to make the comparison, the consumers may regret their decision and next time choose a V8 instead of another beverage.

This article shows that regret has a direct influence on repurchase intentions but only an indirect influence on complaint intentions through satisfaction. These results are important, as they shed light on the variability observed in the magnitude of the satisfaction-repurchase intention link for various product categories (Fornell 1992). This article suggests that part of this category-level variability could be as a result of the differential level of regret engendered. This is especially true of categories where information on the forgone outcomes is immediately available to consumers (e.g., publicly traded stocks) and/or where the purchase decisions are not easily reversible (e.g., automobile, house). Thus, incorporating regret to explain cross-category variation in the satisfaction-repurchase intent link is a key research direction. Strategically, it warrants that firms should also manage the level of regret that consumers experience by managing the quantity and content of information available to consumers.

Finally, the relationship between regret and satisfaction

[15]The authors thank a reviewer for this observation.

needs further investigation. For instance, the cognitive mechanism by which regret influences satisfaction needs to be examined more deeply. It is not known if regret influences satisfaction by causing consumers to update the level of expectation or by discounting the level of perceived performance of the chosen alternative. Even more interesting is the possibility that regret can also influence satisfaction with past events. This is especially important in the case of products and services whose consumption unfolds over a period of time as a series of transactions. When making cumulative judgments of satisfaction and intentions, consumers may recall the level of performance they have experienced during past transactions. Even such retrospective evaluations can be influenced by regret. This is an additional avenue for future research.

APPENDIX

Study 1

The wording for the negative-outcome and worse-forgone-outcome conditions is shown in brackets [].

Paul is shopping for a laptop computer. Paul uses a computer at school, but he has slowly realized over the past year that he also needs a portable computer. He believes that he can do a major part of his homework from his laptop either at home or when he travels back home to visit his parents. He thinks that he can be more productive and more efficient with his time if he purchases a laptop computer.

For the past couple of weeks Paul has been looking at the different options that are available on the market. He has narrowed it down to two different brands—one is made by Dell and the other by Compaq.

The specifications and price of the machines are very similar. Each of these manufacturers offers a two-year warranty and 24-hours a day, seven days a week technical assistance.

After thinking about the two options, Paul has decided to go with Compaq. Paul's friend George, who was also looking for a laptop computer, has decided to go with Dell.

Six months later . . .

Now, almost six months later, Paul has not had any problems with his new Compaq laptop. In fact, he has had a good experience with his laptop. He once had a question, and after calling the 800 number, the technical-support representative was very helpful and courteous in answering the question. In addition, he did not have to wait long before getting to a technician.

[Now, almost six months later Paul has had some problems with his new Compaq laptop. In fact, he has had a bad experience with his laptop. Whenever he called with a question, he had to wait several minutes before he could talk to a technician. On several occasions his computer locks up, and he has to shut it down, losing all of his unsaved work. In addition, on several occasions he can not open any applications, and he has to shut down the system and try again. Finally, about two weeks ago, a technician was able to solve these problems.]

Paul's friend (George) who purchased a Dell laptop has had a great experience with his laptop. George never had a problem with his laptop, and Dell had offered him a free one-year Internet service as a bonus for choosing Dell. He recently received an e-mail from Dell informing him that he could upgrade his computer after two years for a small fee or receive a free memory upgrade.

[Paul's friend (George), who purchased a Dell laptop, has had a bad experience with his laptop. George had to call Dell support several times with problems such as a flickering screen and computer lock ups. He had to send his laptop for repair on a couple of occasions, and getting to talk to a technician has been a very difficult task.]

Items measuring regret (7 = strongly agree, 1 = strongly disagree):

Paul feels sorry for choosing a Compaq laptop (regret 1).

Paul regrets choosing a Compaq laptop (regret 2).

Paul should have chosen a Dell laptop (regret 3).

Items measuring satisfaction (7 = strongly agree, 1 = strongly disagree):

Paul is happy with Compaq's performance (satisfaction 1).

Paul is satisfied with Compaq's performance (satisfaction 2).

Paul is disappointed with Compaq's performance (satisfaction 3; reverse coded).

Item measuring repurchase intention (7 = very likely, 1 = very unlikely):

How likely is Paul to purchase another OLDBRAND product in the future?

Item measuring complaint intention (7 = very likely, 1 = very unlikely):

How likely is Paul to complain to the manufacturer?

Study 2

The wording for the negative outcome and information on the forgone outcome conditions are shown in brackets [].

Paul is shopping for a laptop computer. Paul presently owns a desktop computer, but he has slowly realized over the past year that he also needs a portable computer. Paul tends to travel a lot, and he feels that he can put some of his time to better use through the use of a computer. Paul's desktop computer was made by OLDBRAND, and he is quite happy with its performance.

For the past couple of weeks, Paul has been looking at the different options that are available on the market. He has narrowed it down to two different brands. Both of these brands are being carried by the same retailer. The specifications of the machines are very similar. Their only difference is who manufactures them. One is made by NEWBRAND, and the other is made by OLDBRAND.

Each of these manufacturers offers a two-year warranty and 24-hours a day, seven days a week technical assistance. In addition, the retailer is offering an unconditional 90-day money-back guarantee on both computer systems. This is very good, since the product can be returned and the money refunded for any reason—no questions asked. After think-

ing about the two options, Paul has decided to go with OLDBRAND. Paul's friend George, who was also looking for a laptop computer, has decided to go with NEWBRAND.

Now, almost three months later, Paul has not had any problems with his new laptop.

[Now, almost three months later, Paul starts experiencing problems with his new laptop. His friend George, on the other hand, has had a pleasant experience with his laptop.]

Items measuring regret (7 = strongly agree, 1 = strongly disagree):

Paul feels sorry for having chosen OLDBRAND (regret 1).

Paul is regretful for having chosen OLDBRAND (regret 2).

Items measuring satisfaction (7 = strongly agree, 1 = strongly disagree):

Paul is happy with OLDBRAND's performance (satisfaction 1).

Paul is satisfied with OLDBRAND's performance (satisfaction 2).

Item measuring repurchase intention (7 = very likely, 1 = very unlikely):

How likely is Paul to purchase another OLDBRAND product in the future?

Item measuring complaint intention (7 = very likely, 1 = very unlikely):

How likely is Paul to complain to the manufacturer?

Study 3

Paul is shopping for a new pair of hiking boots. He currently owns a pair, but he realized that it is time to get a new one. Paul's current pair of boots is made by BRAND A, and he is quite happy with them.

For the past week or so Paul has been looking at the different boots available on the market. He has narrowed it down to two different brands. The two brands appear to be very similar on the important attributes that Paul is considering. Their main difference is who manufactures them. One is made by BRAND A and the other by BRAND B.

Both manufacturers offer a three-year warranty on the material and workmanship of their products. This is very good, since the product can be returned or exchanged if it turns out to be defective.

After thinking about the two options, Paul has decided to buy the same brand, BRAND A.

Item measuring decision quality (7 = strongly agree, 1 = strongly disagree):

Paul has made a good decision.

Item measuring decision safety (7 = strongly agree, 1 = strongly disagree):

Paul has chosen the safer of the two options.

Open-ended question: Please write down any thoughts Paul may have up to this point.

Study 4

The wording for the negative outcome and information on the forgone outcome conditions are shown in brackets [].

Paul is shopping for a laptop computer. Paul presently owns a desktop computer, but he has slowly realized over the past year that he also needs a portable computer. Paul tends to travel a lot, and he feels that he can put some of his time to better use through the use of a computer.

For the past couple of weeks Paul has been looking at the different options that are available on the market. He has narrowed it down to two different brands. Both of these brands are being carried by the same retailer. The specifications of the machines are very similar. Their only difference is who manufactures them. One is made by BRAND A and the other is made by BRAND B.

Both manufacturers offer the same warranty and technical assistance. After thinking about the two options, Paul has decided to go with BRAND A. Paul's friend George, who was also looking for a laptop computer, has decided to go with BRAND B.

Now, almost three months later, Paul has not had any problems with his new laptop.

[Now, almost three months later, Paul starts experiencing problems with his new laptop. His friend George, on the other hand, has had a pleasant experience with his laptop.]

Open-ended questions:

If you were in Paul's situation, what information, if any, would you like to have at this point?

Please write down any thoughts Paul may have up to this point.

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