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Decisions and Revisions: The Affective Forecasting of Changeable Outcomes

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People prefer to make changeable decisions rather than unchangeable decisions because they do not realize that they may be more satisfied with the latter. Photography students believed that having the opportunity to change their minds about which prints to keep would not influence their liking of the prints. However, those who had the opportunity to change their minds liked their prints less than those who did not (Study 1). Although the opportunity to change their minds impaired the postdecisional processes that normally promote satisfaction (Study 2a), most participants wanted to have that opportunity (Study 2b). The results demonstrate that errors in affective forecasting can lead people to behave in ways that do not optimize their happiness and well-being.

> In a minute there is time
> For decisions and revisions which a minute will reverse.
>
> —T. S. Eliot, *Poetry* (Vol. 6)

For as long as anyone can remember, people have hungered for information about their personal futures, confident that if they knew their fates they would also know their fortunes. Alas, knowing the future is not the same as knowing how much one will like it when one gets there. In a score of studies, people have been shown to mispredict how they will feel after relocating a household, breaking up with a romantic partner, losing an election, receiving a gift, learning they have a serious illness, failing to secure a promotion, scoring well on an examination, failing to lose weight, reading tragic stories, winning a football game, receiving personality feedback, being insulted, tasting food, and so on (Baron, 1992; Buehler & McFarland, 2001; Coughlan & Connolly, 2001; Frederick & Loewenstein, 1999; Gilbert, Brown, Pinel, & Wilson, 2000; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Kahneman, 1994; Kahneman & Snell, 1990, 1992; Loewenstein & Adler, 1995; Loewenstein & Frederick, 1997; Loewenstein, Nagin, & Paternoster, 1997; Loewenstein, O'Donoghue, & Rabin, 2000; Loewenstein, Prelec, & Shatto, 1998; Loewenstein & Schkade, 1999; Mellers, 2000; Mellers & McGraw, 2000; Mellers, Schwartz, & Ritov, 1999; Mitchell, Thompson, Peterson, & Cronk, 1997; Rachman, 1994; Rachman & Arntz, 1991; Read & Loewenstein, 1995, 1999; Read & van Leeuwen, 1998; Schkade & Kahneman, 1997; Schmitt & Kemper, 1996; Schwarz, Jacquin, & Telch, 1994; Sieff, Dawes, & Loewenstein, 1999; Simonson, 1990; Snell, Gibbs, & Varey, 1995; Totterdell, Parkinson, Brinner, & Reynolds, 1997; van Boven, Dunning, & Loewenstein, 2000; van Hout & Emmelkamp, 1994; Wilson, Meyers, & Gilbert, 2001; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000; Zeelenberg, van Dijk, Manstead, & van der Pligt, 1998). These mispredictions are not mere failures of anticipation; people make such errors even when the time, place, and manner of the event's unfolding are known in advance. How can people be right about the future and yet wrong about how they will feel when it happens?

Immune Neglect

People have a special talent for restructuring their views of outcomes so that those outcomes are experienced more positively (Affleck & Tennen, 1996; Aronson, 1969; Brehm, 1956; Cooper & Fazio, 1984; Dunning, 1995; Festinger, 1957; Freud, 1937; Greenwald, 1980; Kunda, 1990; Steele, 1988; Taylor, 1989; Tesser, 2000). For example, voters recognize the strengths of the candidates they opposed once those candidates are elected (Gilbert et al., 1998), contestants realize how valuable prizes are moments after winning them (Beggan, 1992; Kahneman, Knetsch, & Thaler, 1990, 1991; Loewenstein & Adler, 1995), high school students become acutely aware of a college's weaknesses on learning that it has rejected them (Lyubomirsky & Ross, 1999), and college students appreciate how forgivable lies are after telling one (Simon, Greenberg, & Brehm, 1995) and how biased standardized tests are after failing one (Dunning, Leuenberger, & Sherman, 1995). Human beings are famous for seeking, attending to, interpreting, and remembering information in ways that allow them to

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feel satisfied with themselves and their lots. Social psychologists have studied these tendencies under a variety of rubrics—including dissonance reduction, self-deception, ego defense, positive illusion, emotion-based coping, self-affirmation, and self-serving attribution, to name but a few—and although there are important differences among these theoretical treatments, all converge on the notion that people are adept at subjectively optimizing their outcomes. Indeed, the various strategies that enable this optimization may be thought to constitute a kind of *psychological immune system* (Antonovsky, 1987; Gilbert et al., 1998; Vaillant, 1993) that protects people from the emotional consequences of suboptimal outcomes.

Despite the power and ubiquity of the psychological immune system, recent research suggests that people who face the prospect of suboptimal outcomes are curiously unaware of the immunity they will enjoy once those outcomes are realized. For example, participants in one study were less distressed when they received negative personality feedback from a computer than when they received the same feedback from a clinician, presumably because it was easier for them to repudiate the diagnosis of a machine than of a trained professional (Gilbert et al., 1998). When asked to predict how they would feel if they received negative feedback from these sources, however, participants expected to feel equally upset under both circumstances, as though the opportunities for repudiation (which they would later seize with vigor) were invisible to them in prospect. In fact, when participants were told that a negative personality assessment *might have been* written about them and were then asked to pretend that it *had been* written about them, these pretenders were unable to simulate the tendency of true experiencers to discount the feedback and malign its source (Gilbert, Ochsner, Norwick, & Wilson, 2001). These effects have been demonstrated in a variety of domains, suggesting that there is a general tendency for people to neglect their psychological immune systems when forecasting their affective reactions to future events.

Changeability

An ironic consequence of the failure to anticipate the operation of the psychological immune system is that people may inadvertently take actions that impair its operation and thereby jeopardize their prospects for satisfaction. For example, if people fail to consider those features of future situations that are likely to trigger the psychological immune system ("Bad news is bad news, so why does it matter whether it comes from a clinician or computer?"), they may inadvertently make choices that diminish their opportunities to subjectively optimize future outcomes ("I guess I'll hear what the clinician has to say"). One of the most potent triggers for the psychological immune system is the *changeability* of an outcome (Frey, 1981; Frey, Kumpf, Irle, & Gniech, 1984; Girard, 1968; Jecker, 1964; cf. Lowe & Steiner, 1968). When suboptimal outcomes threaten a person's satisfaction, the first line of defense is to change the outcome, and it is only when such efforts prove futile that the psychological immune system is called on to transform the person's subjective experience of that which he or she cannot change. For instance, when conversation with a blind date proves uninteresting, people normally change partners ("I'll never go out with *him* again"), but when conversation with a spouse proves uninteresting, people normally change their attitudes ("Dull yes, but with a heart of gold"). Economist and philosopher Adam Smith remarked on "the never failing certainty with which all men, sooner or later, accommodate themselves to whatever becomes their permanent situation," which he described as a situation in which "there is no expectation of change" (Smith, 1759/1982, p. 149). As Smith correctly recognized, people attempt to change that which they prefer not to accept and then find ways to accept that which they cannot change, which is to say that unchangeable outcomes are more likely than changeable outcomes to be subjectively optimized.[1]

Because unchangeability is such a potent trigger for the psychological immune system and, hence, an impetus for the self-generation of satisfaction, we might expect people to seek and value it. In fact, just the opposite seems to be the case. People generally react with anger, disappointment, and regret to that which they perceive as a threat to their decision freedom (Brehm, 1966) and consider unchangeability so undesirable that they may willingly pay to avoid it. People patronize expensive boutiques that allow them to return merchandise easily rather than discount stores at which sales are final, happily paying a premium for the peace of mind that comes from knowing that they can undo a decision that ultimately proves ill advised (Wood, 2001). Adjustable rate mortgages, lease–purchase contracts, and prenuptial agreements are just a few of the instances in which people pay premiums today for the opportunity to change their minds tomorrow. Such premiums are often worth their cost because people may be better informed about an outcome after they have had an opportunity to try it on for size. A few days spent test driving a little red roadster tells a potential buyer quite a lot about what it might be like to own one, and thus it may be to the buyer's advantage to pay a modest premium for a contract that includes a refund period before irrevocably committing him or her to the purchase.

But if keeping one's options open is wise in some respects, its benefits may come at a cost (Schwartz, 2000). Preserving the possibility of changing an outcome may preclude the possibility of subjectively optimizing that outcome, and, as such, people who keep their options open may find it relatively difficult to generate satisfaction with the outcomes they have chosen. Little red roadsters are naturally cramped, and although the diminutive dimensions may delight the committed owner ("It feels like a space capsule—yahoo!"), they may nag at the buyer whose contract includes an escape clause ("This car really *is* tiny; maybe I should return it"). The committed owner, who is working to subjectively optimize the outcome, is likely to attend to the car's virtues and overlook its flaws, thus becoming more satisfied as time passes; however, the buyer for whom change is still possible, and whose psychological immune system has thus not yet been triggered, is likely to evaluate the new car more critically, paying special attention to its imperfections as he or she tries to decide whether to keep it. And even if the buyer does keep it and thereby renders the decision unchangeable, all of the critical thinking he or she did

[1] Myers (2000) noted that the increased availability and acceptability of divorce in the last half century should have increased the average satisfaction among those who remain married by taking the least happy couples out of the data set. In fact, satisfaction with marriage in America has decreased each year for the last 25 years, and Myers suggested that this may be due to the fact that the acceptability of divorce renders marriage changeable.

during the protracted evaluation period may leave him or her with the unshakable feeling that the car's good points just barely outweighed its bad, thus spoiling the fun forevermore. In this way, buyers who pay to have escape clauses in their contracts may paradoxically undermine, rather than advance, the cause of their own satisfaction.

The Present Studies

Do people prefer changeable outcomes? Are they ultimately more satisfied with unchangeable outcomes? Do they foresee the costs of changeability? We conducted three studies to address these questions. In Study 1, we sought to determine whether people are more satisfied with unchangeable than changeable outcomes and, if so, whether they can predict that this will happen. We taught a photography course for a small group of students and asked them to relinquish one of the two prints they made. Some students were asked to predict how satisfied they would be with their print if they did or did not have the opportunity to change their minds later. Other students were or were not given this opportunity, and their satisfaction with their print was measured over several days. In Study 2a, we measured participants' actual and predicted satisfaction with a changeable or unchangeable choice of art posters to rule out an alternative interpretation of the findings from Study 1. Finally, in Study 2b, we presented participants with the protocol from Study 2a and asked them whether they would prefer to participate in the changeable or unchangeable condition. We expected these studies to show that participants are more satisfied with unchangeable outcomes but prefer changeable outcomes because they do not foresee this effect.

These predictions are intimately related to the rich literature generated by cognitive dissonance theory over the past half century, and it is thus worth noting at the outset some points of contact and departure. Dissonance theory may predict (as we do) that changeability will decrease people's satisfaction with their outcomes because people are, by definition, less certain that changeable outcomes will occur, and certainty about an outcome's occurrence has been shown to facilitate dissonance reduction (Allen, 1964; Cooper & Goethals, 1974). On the other hand, dissonance theory may also predict that changeability will increase people's satisfaction with their outcomes because people may feel that they have greater choice with regard to changeable outcomes ("I not only chose it initially, but I also chose not to change when I could have"), and perceived choice has been shown to facilitate dissonance reduction (Cooper, 1971; Davis & Jones, 1960; Linder, Cooper, & Jones, 1967). In other words, dissonance theory can explain any difference between the satisfaction of those who can and cannot change the consequences of their decisions. Although we predicted that people would experience more satisfaction when they could not change their outcomes than when they could (a pattern of data that may be explained in terms of dissonance theory but that is not uniquely predicted by it), the more important part of our hypothesis (and one that is not broached by dissonance theory) is that forecasters would not anticipate this difference and would thus prefer changeable outcomes.

Study 1

We taught a photography course in which students learned to shoot photographs and develop prints in a darkroom, and we then gave them a choice that was changeable or unchangeable. Although field studies of this sort are expensive, labor intensive, and unlikely to yield unambiguous patterns of data, we believed that the realism and richness of the data would justify their collection and that any ambiguities that arose could be dealt with in subsequent laboratory studies in which greater control could be exerted.

Method

Overview

Students in an extracurricular photography course shot and printed two personally meaningful photographs and were then asked to choose one to relinquish and one to retain. Some participants (changeable condition) were told that they could exchange the retained print for the relinquished print after a few days, and the remaining participants (unchangeable condition) were told that they could never exchange the prints. Forecasters predicted how much they would like the prints several days after making their choices, and experiencers made their choices and then several days later reported how much they liked the prints.

Participants

Thirty-eight female and 26 male undergraduate students at Harvard University were recruited through an advertisement seeking "people interested in learning to develop black and white photographs while taking part in a psychology study on teaching methods" that was placed in campus buildings and undergraduate dormitories. Participants received extensive training and instruction in photography, but they received no additional payment or course credit for taking part.

Shooting Photographs

Participants reported to an office in a campus building that was not associated with the Psychology Department. A female experimenter (who was at this point unaware of condition assignments) explained that she was studying teaching methods and that if the participants were willing to take part in such a study, the experimenter would spend several hours in private sessions teaching them to print photographs. The experimenter explained that participants would receive one or two souvenir photographs to take home but that the main benefit of the study was that they would learn to use a darkroom. Participants were given automatic 35-mm cameras loaded with film and were instructed to spend a few days shooting 12 photographs "representative of your time here [at Harvard] that are meaningful to you." When they had done so, participants returned their film to the experimenter and scheduled a 90-min darkroom session for a few days later. In the meantime, the experimenter produced negatives from the participants' film.

The Darkroom Session

Participants returned a few days later for a private darkroom session. The experimenter began the darkroom session by showing participants a contact sheet that displayed a small image of each of their 12 photographs. Participants were asked to report how much they liked each photograph on a Likert scale that ranged from 1 (*not at all*) to 9 (*very much*). Participants were then asked to choose two of the photographs for printing. Next, the experimenter taught participants to make prints from negatives and helped them produce two prints (approximately 20 cm × 25 cm), which were subsequently labeled Print A and Print B. The experimenter then escorted participants to an office, where they completed the *preference measure,* a baseline assessment of the magnitude of participants' preference for one of the two prints. Specifically, participants rated how much they preferred Print A to Print B on a Likert scale that ranged from 1 (*I like Print A much*

less than Print B) to 17 (*I like Print A much more than Print B*). As a means of enhancing the credibility of the cover story, participants also rated the composition, quality of lighting, and so on of each print and answered several questions about teaching methods and their darkroom experience.

Changeability Manipulation

Participants were randomly assigned to the *changeable* or *unchangeable* condition. In both conditions, the experimenter (who spoke with a British accent) explained that the administrators of the teaching project normally kept one of each participant's prints on file at their headquarters in England as an example of student work. She then asked participants to donate one of their prints for that purpose. When participants agreed, the experimenter asked them to decide which of the two prints they would relinquish and which they would retain.

Changeable condition. Participants in the changeable condition were told to "pick your favorite, but you will be able to change your mind later if you like." Once the participant had made his or her choice, the experimenter placed the relinquished print in an envelope along with the negatives and explained that the relinquished print and the negatives would be mailed to the project headquarters in England 5 days later. She added, "I'm going to have the other photo here for a few days. If you change your mind in that time and decide you would rather keep the other photo, you can easily swap it." The experimenter then promised to phone the participant 4 days later "just before we send them off to see if you want to change your mind." The experimenter then asked the participant to place the envelope in a desk drawer that was labeled *Photography Study*.

Unchangeable condition. Participants in the unchangeable condition were told to "pick your favorite, and feel free to take your time since you won't be able to change your mind." Once participants made their choices, the experimenter placed the relinquished print in an envelope along with the negatives and explained that the relinquished print and the negatives were going to be mailed to the project headquarters right away. The experimenter said, "We're going to send all this off to England. I'm including yours with some other stuff that's being sent off tonight." The experimenter then asked the participant to place the envelope in a tray that was labeled *To Be Mailed*.

After depositing the envelopes in the desk drawer or the mailing tray, participants were assigned to play the role of forecaster or experiencer. For pragmatic reasons, the data for the experiencers were collected before the data for forecasters, and thus assignment to these conditions was not random.

Forecasters

The experimenter asked forecasters to predict how they would feel about the two prints 4 days later (just before the opportunity to exchange the prints would expire for participants in the changeable condition). Forecasters made these predictions by completing the preference measure (as well as the filler items) as they thought they would be likely to complete it 4 days later. After the forecasters had completed the questionnaire, the experimenter thanked them, gave them a written educational summary of the darkroom procedures, and promised to send a follow-up questionnaire by e-mail several days later. Two days later, the experimenter sent e-mails to the forecasters explaining that there would be no follow-up questionnaire. Several weeks later, forecasters were fully debriefed by e-mail and given the opportunity to retrieve their relinquished photograph and negatives.

Experiencers

After depositing the envelopes in the desk drawer or the mailing tray, experiencers were thanked, given a written educational summary of the darkroom procedures, and told that they would receive a follow-up questionnaire by e-mail several days later.

Second-day measure. Two days after the darkroom session, experiencers received a questionnaire by e-mail. First, experiencers read a brief description of the two prints and were asked to recall which print they had retained and which they had relinquished. Next, experiencers completed the preference measure (and the filler items). They were then told that some participants had been given the opportunity to change their minds about which print they would keep and which they would relinquish, whereas other participants had not been given this opportunity. Experiencers reported how they felt about having been assigned to their particular experimental condition on a Likert scale that ranged from 1 (*really glad to be in my situation*) to 9 (*really wish I was in their situation*). Next, experiencers rated how much they had thought about the prints since the darkroom session on a Likert scale that ranged from 1 (*not at all*) to 9 (*very much*). Experiencers in the changeable condition then rated the likelihood that they would later want to exchange the retained print for the relinquished print on a Likert scale that ranged from 1 (*not at all likely*) to 9 (*very likely*). Finally, all experiencers answered several filler questions intended to enhance the credibility of the cover story.

Fourth-day measure. Four days after the darkroom session, the experimenter phoned the experiencers in the changeable condition and asked whether they wished to exchange the retained print for the relinquished print. The experiencers' answers were recorded.

Ninth-day measure. Nine days after the darkroom session, experiencers once again received the preference measure (and filler items) by e-mail. Several weeks later, experiencers were fully debriefed by e-mail and were given the opportunity to retrieve their relinquished photograph and negatives.

Results and Discussion

Our theorizing led to two predictions. First, we predicted that forecasters would not expect the changeability of their outcome to influence their relative liking for the retained print. Second, we expected that the changeability of the outcome would influence the experiencers' relative liking for the retained print such that experiencers would report greater relative liking in the unchangeable condition than in the changeable condition.

Excluded Data

Of the 64 participants, 2 forecasters refused to relinquish a print, 1 experiencer chose to exchange her photo, and 6 experiencers returned the 2nd-day measure after the opportunity to exchange the prints had expired. The data from these 9 participants were removed from the data set, thus leaving 13 experiencers and 17 forecasters in the unchangeable condition and 12 experiencers and 13 forecasters in the changeable condition.

Inconsistent Responding

In studies that require participants to rate items and then choose one, some participants inevitably choose the lower rated item. The data from these participants present a variety of interpretative problems: Did they change their minds? Did they fail to pay attention? Was their ranking or their choice the better measure of their preference? Some researchers have dealt with this problem by excluding these "inconsistent responders" from their analyses (Allen, 1964; Brehm, 1956; Walster, 1964), whereas others have included them (Frey et al., 1984; Heine & Lehman, 1997; Shultz, Léveillé, & Lepper, 1999). Of the 55 participants included in the

present study, 5 forecasters and 5 experiencers were inconsistent and relinquished the print they had previously claimed to like most. We dealt with this inconsistency by performing all analyses on a data set that excluded these participants (exclusive analyses) and then on a data set that included these participants (inclusive analyses). The inclusive analyses revealed slightly weaker statistical effects on a few measures, but otherwise the two sets of analyses yielded identical patterns of means in all instances. To test our hypothesis conservatively, we present the inclusive analyses.

Experimental Chronology

Figure 1 displays the experimental events in their chronological order, including the average time of return of the 2nd-day measure (Day 2.83; SD = 0.82 days) and of the 9th-day measure (Day 11.00; SD = 1.55 days). As the figure indicates, forecasts were made for a time (Day 4) that was slightly later than the time at which experiences were measured (M = Day 2.83). Because we could not know precisely when experiencers would return the 2nd-day measure, and because it was critical that these measures be returned before Day 5 (when the opportunity to exchange the prints expired and the changeable decisions became unchangeable), we decided to err in the direction of measuring experiencers a bit early. To be sure that the small difference between the timing of the forecasts and the measurement of the experiences did not cloud the interpretation of our results, we sent experiencers the 9th-day measure. We reasoned that if experiencers' responses did not change between the 2nd-day and 9th-day measures, it would be safe to assume that they had felt on Day 4 as they reported feeling on Day 2.83 and Day 11.00.

Baseline

Before undergoing any experimental manipulations, all participants rated how much they preferred Print A to Print B on a Likert scale that ranged from 1 (*I like Print A much less than Print B*) to 17 (*I like Print A much more than Print B*). A 2 (role: experiencer vs. forecaster) × 2 (condition: changeable or unchangeable) analysis of variance (ANOVA) performed on the baseline preference measure revealed no significant effects, all Fs(1, 51) < 2.19, all ps > .14, all rs < .20. Individual comparisons revealed that these effects were small and nonsignificant for experiencers, $t(23) = 1.19$, $p = .24$, $r = .24$, and for forecasters, $t(28) = 0.12$, $p = .91$, $r = .02$.

Second Day

Our hypothesis suggested that experiencers would report a greater increase in the magnitude of their preference for the retained print when their decisions were unchangeable than when they were changeable but that forecasters would predict no such difference.[2] Forecasters' predictions and experiencers' reports of their preferences were submitted to separate 2 (time: baseline measure vs. 2nd-day measure) × 2 (condition: changeable vs. unchangeable) ANOVAs. The analyses revealed no effects of the manipulations on forecasters' predictions, all Fs(1, 27) < 1.41, all ps > .24, all rs < .22. As Figure 2 shows, forecasters did not expect the changeability of their decision to increase or decrease their relative liking for the retained print. The analysis of experiencers' reports, however, revealed a Time × Condition interaction, $F(1, 22) = 5.68$, $p = .03$, $r = .45$. Unchangeable experiencers showed a greater increase in their relative liking for the retained print than did changeable experiencers.

On the 2nd-day measure, experiencers also reported how they felt about having been assigned to their particular experimental condition. Experiencers in the changeable condition (M = 4.75, SD = 1.60) and unchangeable condition (M = 4.58, SD = 1.38) were equally satisfied in this regard, $t(22) = 0.27$, $p = .79$, $r = .06$. To the extent that a null result with a miniscule effect size is informative, this one suggests that experiencers did not realize that the changeability manipulation had influenced the magnitude of their preference for the retained print. Experiencers also reported how much they had thought about the prints since the darkroom session, and analyses revealed no differences between experiencers in the changeable condition (M = 5.45, SD = 1.57) and the unchangeable condition (M = 5.25, SD = 1.96) on this measure, $t(21) = 0.27$, $p = .79$, $r = .06$. Finally, experiencers in the changeable condition were asked whether they thought they would want to exchange the retained print for the relinquished print 2 days later, and they generally thought they would not (M = 2.50, SD = 1.83; 1 = *not at all likely*, 9 = *very likely*).

Fourth Day

They were right. Experiencers in the changeable condition were contacted by telephone 2 days later (4 days after the darkroom session) and asked whether they wished to exchange the retained print for the relinquished print. Only 1 wished to do so, and that participant was removed from all analyses (see the Excluded Data section).

Ninth Day

It is important to recall that experiencers completed the 9th-day measure at least 4 days after the opportunity to exchange the retained print had expired. A 2 (condition: changeable vs. unchangeable) × 2 (time: 2nd-day measure vs. 9th-day measure) ANOVA revealed no effects on this measure, all Fs(1, 22) < 0.44, all ps > .51, all rs < .14. In other words, the 9th-day measure was indistinguishable from the 2nd-day measure. In addition, the 9th-day measure differed from the baseline measure in precisely the way that the 2nd-day measure did. A 2 (time: baseline measure vs. 9th-day measure) × 2 (condition: changeable vs. unchangeable) repeated measures ANOVA revealed only a marginally significant Time × Condition interaction, $F(1, 23) = 4.05$, $p = .06$, $r = .39$. In short, even after the changeable decision had become unchangeable, the change in experiencers' relative liking for the retained print remained stable. This suggests that the dissatisfaction induced by changeability may linger even after the opportunity to change has itself expired. It is also worth noting that the fact that experiencers' preferences were remarkably stable between Day 2.83 and Day 11.00 suggests that the small difference between the time to which forecasters were predicting (Day 4) and the time

[2] Up to 2 participants failed to answer some questions, and thus some of the analyses described subsequently had up to two missing values.

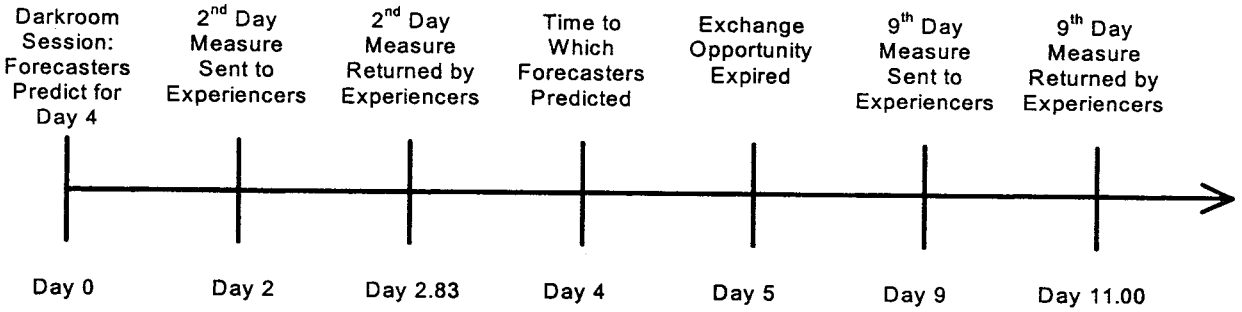

Figure 1. Chronology for Study 1.

at which experiences were initially measured (Day 2.83) was not problematic for the interpretation of our results.

Conclusion

Forecasters believed that the changeability of their outcomes would not influence how they felt about them over time, and they were wrong. Contrary to forecasters' predictions, those experiencers who had been given the opportunity to change their outcome were less likely to grow relatively fond of it over the course of several days than were experiencers who had not been given that opportunity, even though only one of the experiencers who had been given the opportunity chose to exercise it. These findings suggest that changeability can have costs that people do not foresee.

Study 1 was meant to provide an in vivo demonstration of the unforeseeable costs of changeability, and such studies naturally trade experimental control for experimental realism. The study has several limitations, including the fact that participants were not randomly assigned to forecaster or experiencer conditions. But the most significant limitation derives from the changeability manipulation itself. In Study 1, we informed participants about the changeability of their outcomes before they chose which print they would relinquish. As such, it is possible that the manipulation did not influence the way experiencers thought and felt about their choices (as our theorizing suggests) but that it instead influenced the way participants made those choices in the first place. For example, if participants in the unchangeable condition made more careful choices because they knew that they would have no opportunity to change their minds later, then the subsequent increase in their relative liking for the retained print may have been the natural consequence of good decision making rather than the result of more successful attempts to subjectively optimize their outcomes. In short, the data from Study 1 show that people do not expect changeability to influence their preferences over time, but the data are less clear with regard to the actual effects of changeability. To be sure that neither this nor any other limitation was responsible for the effects we observed, we attempted to replicate these results in a laboratory study.

Study 2a

Forecasters and experiencers were asked to choose between two art posters and were told that their choices were changeable or unchangeable only after they had made them. This procedural change eliminated the possibility that participants in the changeable and unchangeable conditions made their choices differently. In addition, we asked participants to rank the posters, and we then offered all participants a choice between their third- and fourth-ranked posters. We predicted that, as in Study 1, forecasters would

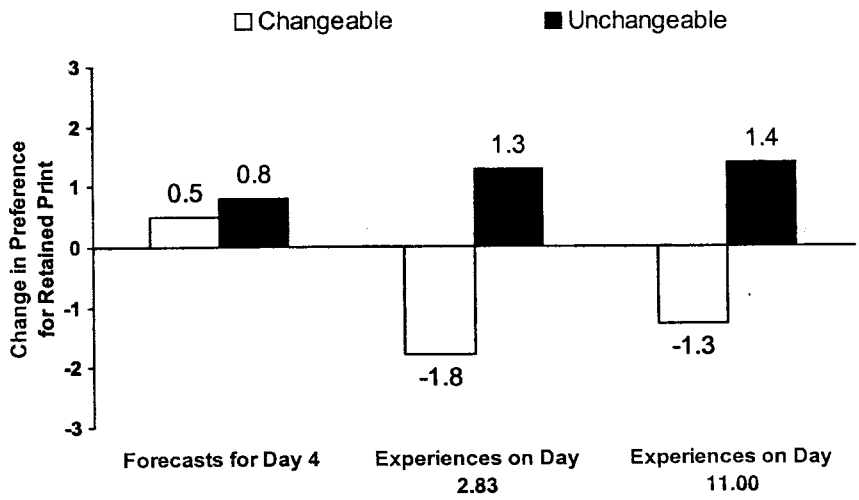

Figure 2. Forecasted and experienced change in preferences for retained prints in Study 1.

expect the changeability of their choices to have no influence on how they felt about their poster. However, we expected that experiencers would be more likely to show an increase in their liking for their poster when their choices were unchangeable than when they were changeable.

Method

Overview

Participants were offered a choice between two art posters. After making this choice, some participants (changeable condition) were told that they could exchange the chosen poster for the unchosen poster at any time during the next month, and the remaining participants (unchangeable condition) were told that they could not exchange the poster at any time. After making the choice, forecasters predicted how much they would like the posters 15 min later, whereas experiencers reported their liking for the posters 15 min after making the choice.

Participants

Thirty-five female and 25 male undergraduate students at Harvard University were recruited through an advertisement placed in a campus building. Participants were paid $5 in exchange for taking part.

Procedure

On their arrival at the laboratory, participants were greeted by a female experimenter (unaware of condition assignments) who escorted them to a laboratory room, where they remained for the duration of the study. The experimenter explained that she was studying "art appreciation in everyday life." The experimenter then showed the participant nine framed posters of paintings by well-known artists such as Claude Monet, Vincent Van Gogh, and El Greco. The experimenter asked the participant to rank the posters in order of preference. Because each poster was relatively large (approximately 55 cm × 70 cm) and thus unwieldy to move about the room, the experimenter gave the participant a stack of cards, each of which bore the artist's name and the title of one of the posters as well as a number that corresponded to a number that was visibly attached to the framed poster itself. Participants were asked to indicate their preferences by sorting the cards from most liked to least liked.

When the participant had finished sorting the cards, the experimenter took the cards and surreptitiously gleaned the participant's rankings. The experimenter then told the participant that she happened to have extra copies of those posters that the participant had ranked third and fourth and that, in addition to the compensation that the participant had been promised, the participant could also have one of these extra posters. Participants were then asked to select one of the two extra posters to take home. After the participant had done so, the experimenter randomly assigned the participant to the *changeable* or *unchangeable* condition and to the *forecaster* or *experiencer* condition. Participants in the changeable condition were told

> Before we go on, I just want to let you know that you do have the option to change your mind about which of these two posters you take home. I'm only mentioning this because sometimes people ask and it's absolutely no problem. So if you change your mind about which poster you want to take home before you leave today or even any time in the next month, you can just let me know and we will exchange it for you. I'll also give you our phone number before you leave in case you change your mind later.

Participants in the unchangeable condition were told

> Before we go on, I just want to check that you are sure about your choice because it is a final choice. I'm only mentioning this because occasionally people ask, and we aren't able to exchange the posters or anything.

The experimenter then placed the chosen and unchosen posters against the wall where the participant could see them and stacked the other posters so they could not be seen. Participants were told that their next task was to write an essay that described some or all of the posters to someone who had not seen them. At this point, the procedure differed for forecasters and experiencers.

Experiencers. The experimenter left the room while experiencers wrote about the posters and returned 15 min later. She handed the experiencer a new stack of cards with which to rank the posters and explained that "we just want you to do this because some people find that their feelings for the posters may change during the study. Other people find their feelings for the posters stay the same."

Forecasters. The experimenter told forecasters that, before writing about the posters, she would like them to predict how much they would like the posters after writing about them for 15 min. She gave the forecasters a new stack of index cards with which to rank the posters and offered them the same explanation she had offered experiencers.

After ranking the posters a second time, all participants were debriefed and dismissed. During debriefing, participants were truthfully told that an extra copy of the poster they had chosen was not immediately available but that the experimenter would either purchase one for them or pay them an extra $5 for taking part.

Results and Discussion

Inconsistent Responding

Ten forecasters and 12 experiencers responded inconsistently by choosing to keep their fourth- rather than their third-ranked poster. These participants were evenly distributed across the changeable and unchangeable conditions: forecasters, $\chi^2(1, N = 31) = 1.01$, $p = .32$, experiencers $\chi^2(1, N = 29) = 1.14$, $p = .28$. This suggests either that participants did not strongly favor one of the two posters or that their choices were based on criteria other than liking (e.g., they already owned an El Greco or they planned to give the poster to a roommate). Neither of these possibilities presented a problem for the testing of our hypotheses. As in Study 1, the data were analyzed both including and excluding these participants. The exclusive analyses revealed slightly weaker statistical effects in some instances as a result of diminished power but revealed identical (or stronger) patterns of means in all cases. To maintain consistency with Study 1, we relied on the inclusive analyses.

Changes in Liking

We predicted that experiencers in the unchangeable condition would show an increase in their liking of their poster but that experiencers in the changeable condition would not. Experiencers' rankings of their poster were submitted to a 2 (time: predecision ranking vs. postdecision ranking) × 2 (condition: changeable vs. unchangeable) ANOVA, and this analysis revealed the expected interaction, $F(1, 27) = 4.29$, $p = .05$, $r = .37$. As shown in Figure 3, experiencers in the unchangeable condition subjectively optimized their outcomes by increasing their liking for their poster, $t(13) = 2.32$, $p = .04$, $r = .54$, whereas experiencers in the changeable condition showed no such increase, $t(14) = 0.31$, $p = .76$, $r = .08$. We predicted that forecasters in the changeable and

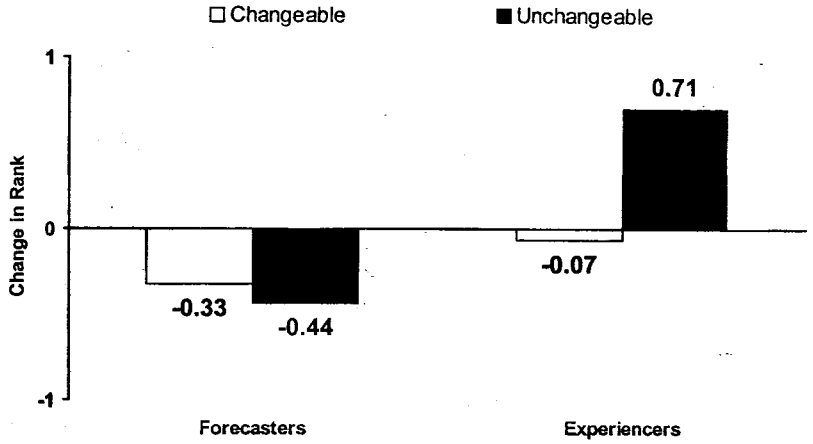

Figure 3. Forecasted and experienced changes in liking for chosen poster in Study 2a.

unchangeable conditions would not expect the changeability of their decisions to influence their liking of their poster. A 2 × 2 ANOVA (as just described) performed on forecasters' rankings revealed no effects, all $Fs(1, 29) < 1.49$, all $ps > .23$, all $rs < .22$. Forecasters did not expect a change in their liking in either the unchangeable condition, $t(15) = 1.11$, $p = .29$, $r = .27$, or the changeable condition, $t(14) = 0.67$, $p = .51$, $r = .18$. Because Study 2a was meant to clarify the results of Study 1, it may be useful to reiterate the fact that participants in Study 2a learned about the changeability of their outcomes only after they had chosen them, and thus changes in their satisfaction must have been due to psychological processes that occurred after the choice was made rather than to differences in the way the choice was made or in what was chosen.

Study 2b

The foregoing studies suggest that people are more likely to generate satisfaction with unchangeable than changeable outcomes but that they do not recognize in prospect that this will happen. Because people recognize the benefits of changeability but apparently do not recognize the costs, they should prefer changeable to unchangeable outcomes. In Study 2b, we presented participants with the experimental protocol of Study 2a and asked them to decide to which of the two experiencer conditions they would prefer to be assigned. We expected that participants would prefer to be assigned to the changeable condition, that is, to the condition of Study 2a in which experiencers proved to be least satisfied.

Method

Overview

Participants learned about the procedure for Study 2a and were asked whether they would prefer to be experiencers in the changeable or unchangeable condition.

Participants

Fifty-five female and 34 male undergraduate students at Harvard University were recruited outside campus dining halls by a female experimenter who invited them to complete a brief questionnaire in exchange for candy and $2.

Procedure

Participants were told that before executing large-scale studies, psychologists often give people detailed descriptions of those studies and ask them to predict how they would react. Participants were asked to imagine how they would react if they were participating in a study of "art appreciation and choice" for which they would be paid $5. Participants were asked to imagine the following scenario:

> The researcher explains that the study is about art appreciation in everyday life. She arranges nine large framed art posters by famous artists such as Van Gogh, Monet, and El Greco. You are asked to rank them in order of your preference. The researcher then tells you that in addition to your payment for taking part in the study, you will be able to take home a copy of one of the posters. You are given a choice between the posters that you ranked third and fourth, for which the researcher has available copies.

Participants were then told that the large-scale study would be conducted in one of two ways, and two versions of the study were then described (in counterbalanced order). Version A (the *unchangeable* version) was described as follows: "The researcher explains that your choice of poster to take home is final and you will not be able to exchange the posters." Version B (the *changeable* version) was described as follows: "The researcher explains that you are free to change your mind and swap the poster you chose for the one you did not choose before you leave, or any time in the following month."

After reading the two descriptions, participants were asked to indicate the version of the study in which they would prefer to participate by circling the phrase "Version A" or "Version B." Participants were then asked to indicate the version in which they thought the average student would prefer to participate.

Results and Discussion

Inspection of the data revealed that 66.3% of the participants preferred the changeable to the unchangeable version of the study ($Z = 3.07$, $p = .002$, two-tailed). In addition, 84.3% of the participants believed that the average student would prefer the changeable version as well ($Z = 6.47$, $p < .001$, two-tailed).

Clearly, participants preferred to be assigned to the condition in which experiencers were the least satisfied.

General Discussion

Smart people do foolish things, and these things tend to be of two sorts. The first sort are those that trade short-term pleasures for long-term pains. People smoke cigarettes, snort cocaine, have sex with strangers, and fail to save for their retirements, and these shortsighted behaviors are puzzling because the people who do them generally know that they will eventually pay a high price for their indulgence. In these instances, people take actions in spite of having foreseen their costs (Ainslie, 1992; Laibson, Repetto, & Tobacman, 1998; Loewenstein & Elster, 1992; Loewenstein & Thaler, 1989). The second sort of foolish behavior is less puzzling but perhaps more insidious. People bet on horses, consult horoscopes about important decisions, and marry for money, and they take these foolish actions because they do not foresee their costs. Our studies show that people prefer to have the opportunity to change their outcomes, and believe such opportunities will not influence their experience of those outcomes, but that, in fact, these opportunities inhibit the psychological processes that would otherwise have helped them manufacture satisfaction. As such, a preference for changeability is sometimes a foolishness of the second variety.

Of course, the fact that changeability can sometimes inhibit satisfaction does not mean that a preference for changeability is foolish in all instances. For example, changeability may have tangible benefits when the consequences of a decision are not clear in prospect and the odds of making a truly dreadful mistake are therefore quite large. If one were forced to choose a place of residence, a job, or a marriage partner without knowing much about the option beforehand, changeability would allow one to remake the decision when more information was available and hence might well enhance one's ultimate satisfaction. In addition, changeability can itself be a source of utility (Elster & Loewenstein, 1992; Lovallo & Kahneman, 2000), and the pleasure people derive from the mere knowledge that they can change their minds may sometimes outweigh its deleterious effects. Nonetheless, we suspect that people often prefer changeability even when its potential benefits are unlikely to be realized. Indeed, businesses count on this. Stores allow customers to return merchandise with which they are dissatisfied only because they know that the vast majority of dissatisfied customers will never exercise that option. Policies that make it difficult for customers to exchange merchandise (e.g., requirements that merchandise have original tags, that it be shipped out of state, and that customers wait for refunds) allow merchants to lure customers with the promise of changeability while effectively lowering the likelihood that the customer will actually reap its benefits. The bottom line is that changeability has potential advantages and disadvantages, and the present research suggests that the potential advantages are clear and tempting, whereas at least one of the potential disadvantages is not easily predicted.

The Illusion of Intrinsic Satisfaction

Everyone knows that what we look at determines what we see and that people who look upward are more likely to see geese than are people who look downward, look inward, or shut their eyes entirely. This truth is almost too obvious to bear. The less obvious truth (discovered by Werner Heisenberg in 1927) is that the mere act of observing an object changes the object so that the way an object appears to us when we see it is not the way it appears when it is not appearing to anyone at all. Outcomes are a bit like that too. Everyone knows that the outcomes we experience determine how we feel and that people who experience chocolate truffles are more likely to feel delight than are people who experience cold gruel, itchy underwear, or untimely lawn mower accidents. The less obvious truth is that the mere act of unchangeably owning an outcome changes the outcome so that the way an outcome feels to us once we own it is not the way the outcome feels when it is not being owned by anyone at all. Owning an outcome generally makes it feel better.

Quantum mechanics is knotty business, and it is little wonder that ordinary perceivers ignore it and act instead as though their perceptual experiences were due entirely to the enduring intrinsic properties of the object, as though the smoothness and redness and roundness were always there "in the apple" waiting to be discovered and none of these properties was altered or induced by the mere act of looking. Similarly, it is little wonder that ordinary decision makers ignore the complexities of psychology and act instead as though their hedonic experiences were due entirely to the enduring, intrinsic properties of their outcomes, as though the wonderfulness or awfulness they are experiencing was always there "in the outcome" waiting to be experienced and none of these properties was altered or induced by the mere act of making the outcome their own. If every apple contained a fixed amount of sweetness, then decision making would merely be an attempt to estimate that sweetness before deciding which apple to buy, and because such estimates may be mistaken, the opportunity to exchange apples after taking a bite would be an invaluable asset. But the fact is that irrevocably owned apples are sweeter than those that are merely tasted. The ratio of fructose to cellulose is an objective and unchanging property of apples, of course, but the experience of sweetness is a subjective property that increases when *an* apple becomes *my* apple.

All of this suggests that the failure to anticipate the psychological costs of changeability may be an instance of a more fundamental problem, namely, the general failure to appreciate the role that psychological processes play in creating one's experience of the world. Kant (1781/1965) revolutionized Western philosophy with his doctrine of idealism, which held that "the world as we know it is a construction, a finished product, almost—one might say—a manufactured article, to which the mind contributes as much by its moulding forms as the thing contributes by its stimuli" (Durant, 1926, p. 272). The idea that experience results from the interaction of the properties of the object and the mind has dominated philosophical thought for two centuries, but it seems to have been lost on ordinary people, who are more often realists than idealists, behaving as though their experience were solely a reaction to and reflection of the intrinsic properties of objects and events (Gilbert & Gill, 2000; Griffin & Ross, 1991; Ross & Ward, 1996). This belief leads people to be confident that what they are seeing is as they see it (Gilovich, 1991), that what they are remembering happened as they remember it (Bartlett, 1977; Bransford & Johnson, 1973; Loftus, 1992), and that what they are imagining will be as they are imagining it (Dunning, Griffin,

Milojkovic, & Ross, 1990; Griffin, Dunning, & Ross, 1990). When people represent the past in memory, the present in perception, or the future in imagination, they seem tacitly to assume that these representations correspond to the actual properties of the objects or episodes they are remembering, seeing, or considering.

People, then, seem to believe that the world is as they experience it, and their failure to recognize the costs of changeability may be an instance of this more general error. Just as people believe that their mental experiences faithfully reflect the intrinsic properties of objects and events, so may they believe that their emotional experiences faithfully reflect the "intrinsic goodness" of outcomes. Were goodness intrinsic, the opportunity to change one's mind would not change one's satisfaction any more than the opportunity to return a lawn mower changes its color, shape, or size. Alas, satisfaction is a response not to the properties of outcomes but to the psychological construal of those outcomes, and hence factors such as changeability can exert a profound influence on it. As long as people think of satisfaction as a reaction rather than an action, they are bound to make errors when predicting it.

Coda

The future is not ours to see, and most of us are pretty much resigned to that fact. Yet, even in those rare instances in which we can predict in exquisite detail what the future will hold, we are often wrong about how we will feel when it happens. Our inability to forecast our future affective states is driven in part by the fact that an important class of variables—those that determine the ease with which we will be able to change our feelings about an outcome once it becomes unchangeably ours—is largely invisible to us in prospect. As such, we make decisions as though our future satisfaction depended entirely on the immutable, intrinsic properties of the events we are about to experience and take little account of our ability to reshape our view of things. If life is an apple, then its sweetness depends as much on the taster as the tasted. The present studies remind us that when we overlook this fact, we risk missing the best fruit on the tree.

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