

Are Actions Regretted More Than Inactions?

Julie Feldman

University of Arizona

and

John Miyamoto and Elizabeth F. Loftus

University of Washington

Several researchers have claimed that negative outcomes produce greater regret when they result from actions rather than from failures to act (Gleicher et al., 1990; Kahneman & Tversky, 1982; Landman, 1987). We investigated this claim by asking participants to write descriptions of strongly regretted events in their own lives and to rate the intensity of the regrets. Participants reported more inaction than action regrets, and, contrary to prior research findings, regrets produced by actions and inactions were equally intense. We conjecture that many factors that affect the content of real-life regrets are eliminated in studies of hypothetical regret. In real life, actions and inactions do not generally produce the same outcomes. Furthermore, actions and inactions may differ in how easily one can anticipate the potential for harm. Specifically, it is plausible that people control their actions to avoid potential regrets, leaving themselves vulnerable to regrets from inactions. © 1999 Academic Press

Consider the aftermath of a heated argument between two people. It is easy to imagine that following the interchange, both parties would think of things they wished they had said but did not, in addition to things they wished they

This article was based in part on a doctoral dissertation submitted to the University of Washington. A preliminary report was presented at the Annual Meeting of the Judgment and Decision Making Society, St. Louis, November 1994. The authors thank Drs. Beth Kerr, Caroline Mangelsdorf, Maryanne Garry, Kimihiko Yamagishi, Karl Teigan, Anthony Greenwald, Keith Dveirin, and Janet Landman for their comments and suggestions on earlier versions of the manuscript.

Address correspondence and reprint requests to Julie Feldman, University of Arizona, Department of Psychology, Room 312, Tucson, AZ 85721. E-mail: julief@u.arizona.edu.

had not said but did. Most people experience both types of regrets, those that result from their actions (e.g., things they said) and those that result from their failures to act (e.g., things they did not say). A similar phenomenon is illustrated by two common maxims: It is the case both that “fools rush in where angels fear to tread” and that “he who hesitates is lost”!

The question addressed in this paper is whether actions are regretted more than inactions. It is important to notice from the onset that this question is ambiguous. Does it refer to intensity (i.e., regrets due to actions are more intense than regrets due to inactions) or to frequency (i.e., people experience more regrets as a result of actions than inactions)? Notably, the two interpretations are logically independent from one another (i.e., either could be true while the other is false).

In a typical experiment comparing action and inaction regrets, participants are presented with a hypothetical vignette describing two individuals who experience the same bad outcome arrived at in different ways. In one case, the bad outcome results from a decision to act, and in the other, it results from a decision not to act (see Fig. 1). The participants’ task is to decide which individual would feel worse. Kahneman and Tversky (1982) were the first to show that when participants are presented with hypothetical vignettes and asked to predict feelings of regret, the participants believe that bad outcomes following actions (e.g., losing money after switching from one stock to another) would lead to deeper regret than identical bad outcomes following inactions (e.g., losing money after deciding to retain the stock one already has). Landman (1987) extended Kahneman and Tversky’s research to include joy over good outcomes as well as regret over bad outcomes. As predicted, stronger affect was associated with actions than with inactions leading up to good or bad

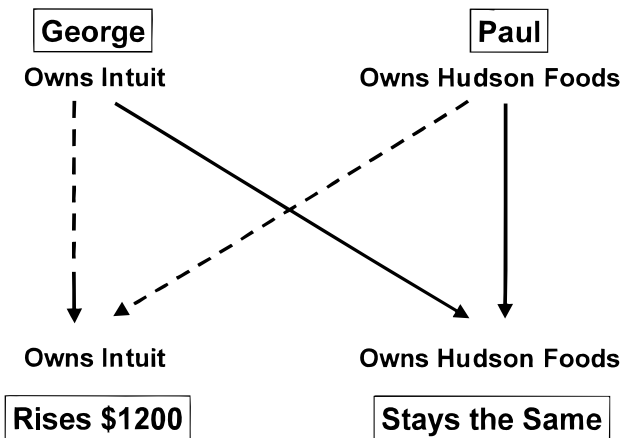


FIG. 1. Illustration of classic regret experiment by Kahneman and Tversky (1982). Dotted lines indicate unchosen but considered options. Solid lines indicate chosen options. George switches to stock in Company A from Company B. Paul considers switching to stock in Company B but decides to keep his stock in Company A. Both find that they would have been better off by \$1200 had they owned stock in Company B.

outcomes. Thus, in cases where the same outcome results from an action or an inaction, actions are regretted more intensely than inactions.

In the vignette studies, actions were more regretted, but why? A few explanations have been proposed. One is that people may feel more personally responsible for (i.e., causally connected to) the things they do than for the things they fail to do. Failure to act can be given several explanations, including forgetfulness, oversight, and habit, all of which serve to keep the person protected from taking full responsibility for the bad outcome. In addition, there is a tendency in the Western ethical tradition to hold people more accountable for their actions than for their failures to act. For example, Ritov and Baron (1990) found that people were reluctant to vaccinate children when the vaccine can cause a bad outcome, even when the chances of a bad outcome are significantly higher if no vaccine is administered. They concluded that people are biased not to act, especially when acting has even a small chance to cause harm. Spranca, Minsk, and Baron (1991) extended this research to include judgments of morality, and found the same "omission bias": Ratings of harmful omissions were judged to be less immoral than ratings of harmful commissions.

In a series of inventive vignette studies, Zeelenberg (1996) manipulated the degree to which people feel personally responsible for actions and inactions to determine the role of attributional processes of blame and self-recrimination in regret. He found that when a decision to act is easier to defend or explain than a decision not to act (due to a negative prior outcome), the inaction was regretted more intensely. However, Connolly, Ordonez, and Coughlan (1997) demonstrated that decisional agency and self-blame are not required to produce the "action" effect. They found the same action effect regardless of whether or not participants perceived themselves to be responsible for or in control of the action leading up to the negative outcome.

A more cognitive explanation is that acts of commission are more likely to suggest the possibility of not acting or doing something differently, whereas acts of omission do not so easily suggest possible actions. According to this view, actions are more likely to lead one to think counterfactually about the ways things could have been had one not acted (Kahneman, 1995; Kahneman & Miller, 1986; Kahneman & Tversky, 1982). Kahneman and Tversky (1982) propose that regret is motivated by thoughts of ways to "undo" events that have resulted in bad outcomes. When confronted with unsatisfactory outcomes, people are likely to feel regret when they imagine alternatives that would have resulted in better outcomes. Counterfactual thinking occurs when reality is compared to representations of what might have been that are generated after an event has occurred (postcomputed representations). Generating counterfactual alternatives to bad outcomes initiates "if only" statements and consequently, regret. Imagine the case in which Frank makes a last-minute decision to switch airplane flights and this new flight crashes. A natural reaction to hearing about the tragedy is to mentally "undo" Frank's choice to switch flights. Because it is easy to imagine Frank on the original flight, his death seems all the more tragic. Now imagine Sally, who was booked on the fatal flight months in advance. Her subsequent death does not seem as tragic (Miller, Turnbull, &

McFarland, 1990). Kahneman and Miller's (1986) norm theory predicts that Frank's death should evoke more affect than Sally's because it is easier to mentally construct the counterfactual alternative in which Frank does not switch flights than it is to mentally construct the counterfactual alternative in which Sally switches flights. Actions are generally more mutable (i.e., more easily "undone" or changed in hypothetical reasoning) in counterfactual thoughts than are inactions, and therefore they are the source of deeper regret.

Norm theory proposes that abnormal events are more mutable and thus evoke greater affect (Kahneman & Miller, 1986). A norm in this case refers to a postcomputed representation specifying what would be expected in a given situation based on prior experience with similar situations. Each event generates a norm consisting of a set of plausible alternatives to what occurs in reality. The normality of an event is determined by comparing what actually occurs with that particular event's norm. An event is judged more abnormal to the degree that it differs from its norm.¹ The more abnormal an event, the easier it is to imagine counterfactual alternatives that restore normality. Actions are considered more abnormal than inactions because it is easier to imagine maintaining the status quo than to imagine causing the status quo to change. Consequently, regrets attributed to actions will evoke greater affect. In the flight example, switching flights was more abnormal than not switching, so Frank's death evoked a stronger emotional response than Sally's.

Most of the tests of the predictions of norm theory use studies of hypothetical vignettes. However, there are qualitative differences between regrets that are presented in controlled experiments and naturally occurring regrets that people experience in real life. First, what people think they would feel in a hypothetical regret situation may not be what they would actually feel in a real-life regret situation. Consequently, participants may not be able to accurately predict regret intensity in response to hypothetical regrets. This kind of criticism is often leveled against studies of hypothetical choices but is not the focus of our criticism of vignette studies (it may or may not be a problem in the domain of regret). Our main concern is that the population of events that people regret in real life may have influences that are excluded from experimental studies. In Kahneman and Tversky (1982), Gleicher et al. (1990), and Landman (1987), the same bad outcome is produced by either an action or an inaction, and they find that people anticipate that the action regret would be more intense. What this shows is that under conditions where *ceteris paribus* is met, actions are regretted more than inactions.

In real life, however, everything may not be equal: Actions and inactions may not produce the same bad outcomes. Instead there is one population of outcomes produced by actions and another—overlapping, but distinct—population of outcomes produced by inactions, and these populations can systematically differ. For example, if someone had a car accident while driving

¹ The word "abnormal" is used here without the connotations of deviant psychology. In other words, in the technical sense, it is abnormal to brush your teeth in the morning if you usually brush your teeth only at night.

under the influence of alcohol, the outcome would probably be attributed to drinking (an action). By contrast, if someone avoids seeing a doctor and then finds out that he or she has a disease that would have been treatable if detected earlier, the resulting regret would probably be attributed to inaction. It would be implausible to attribute the drunken accident to one's inaction, just as it would be implausible to attribute the tardy discovery of the disease to an action. There are also outcomes that can be attributed to either actions or inactions; e.g., a bad grade on an exam might be attributed to a failure to study or to recreational activities that precluded study. We argue that in real life, many bad outcomes are most plausibly attributed only to actions or only to inactions, although some outcomes are susceptible to both attributions, making it a difficult area to study.

Studies of autobiographical regrets suggest a different pattern than the vignette studies. A questionnaire study by Kinnier and Metha (1989) indicated that it may not be actions that people regret most in real life, but rather missed opportunities. Participants in three age categories were presented with 25 predetermined areas of regret and asked to indicate what they might do differently if they had their lives to live over. Kinnier and Metha found that the most common regret in all age groups was the desire for education foregone, a missed opportunity (inaction). Landman and Manis (1992) found a similar result. Several groups of different ages and backgrounds were asked what they might do differently if they had their lives to live over with respect to four different life domains: education, extracurricular activities, romantic relationships, and family relationships. The two possibilities that were most often mentioned were the desire for education that had been foregone (inaction regret) and the wish that one had not married and had children at an early age (action regret).

Gilovich and Medvec (1994) conducted several studies that addressed the claim that actions are regretted more than inactions. Their first study was a telephone survey of the general public. Participants were asked to think about their greatest regret due to an action and their greatest regret due to an inaction. (Henceforth, the two types of regrets will be referred to as action regrets and inaction regrets, respectively.) When asked which regret was more intense, 21 of 30 participants reported that the inaction regret was more intense. In a second study, 77 participants were asked to describe their greatest regrets to the experimenter. Subsequently, coders classified the regrets as due to actions or inactions. Of the 213 regrets described, 63% were inactions. Gilovich and Medvec concluded that when people think about their greatest regrets in real life, inaction regrets are more intense (first study) and more prevalent (second study) than action regrets. However, when Gilovich and Medvec (Study 5) asked participants to think about their greatest regret due to an action and their greatest regret due to an inaction from just the past week, they found no difference in intensity between action and inaction regrets.

A couple of potential problems with the methodology used in these studies preclude clear interpretation. In Studies 1 and 5, only the participants knew the content of the regretted event. In particular, these regrets were not classified by

trained coders. Hence, there was no control over the possibility that participants did not draw the distinction between action and inaction regrets in the same way that it is discussed in the regret literature. For example, inactions may be more available for recall than actions. Consequently, although the majority of participants judged their so-called inaction regret to be the stronger in Study 1, it is possible that trained coders would have changed the classification of the regrets, thereby altering the conclusions of the first study. The second study suffers from a complementary methodological concern. Because the participants in this study described the content of the regretted events to the experimenters (who, in turn, categorized them), it is possible that participants were biased not to report events whose exposure would be embarrassing, self-incriminating, or guilt-inducing. In other words, participants may have engaged in self-censorship in their selection of regrets to report. If there were a tendency to censor action regrets more than inaction regrets, the conclusions of the second study could reflect this bias, rather than the true prevalence of action and inaction regrets. We are highlighting these potential biases because (1) our first study is designed to take them into account, and (2) our second study does not support Gilovich and Medvec's (1994, Study 1) finding that inactions are regretted more intensely, and instead suggests that there may be no difference between action and inaction regret intensity.

In summary, the answer to the question "Are actions regretted more than inactions?" may depend on the conditions under which regret is studied. In situations where actions and inactions produce the same bad outcome, actions are more regrettable than inactions. Autobiographical studies of regret, in which the outcomes of actions and inactions may not be the same, suggest that inactions are more regrettable. The measurement of regret may be affected by other potential biases, including self-censorship by participants, differences in participant-coder classification of regret type, and the effect the retrieval cue of "regret" has on the recall of a particular regret experience. Moreover, any attempt to measure regret intensity as a function of regret type confounds to some extent the sampling of regrets with the manner in which participants are asked to recall regrets. Although we do not know of an experimental design that would completely eliminate such potential biases, our study attempts to overcome some of the limitations mentioned above.

EXPERIMENT 1

Experiment 1 was motivated by the following idea: If people are asked to recall something they deeply regret, will they more often recall regrets due to actions than regrets due to inactions, or vice versa? Furthermore, do regrets that result from actions and inactions differ in their intensity? We examined these questions by asking participants to recall something they regret, to classify the regret as an action or inaction, and to rate the intensity of the regret. We predicted that participants would be more likely to recall regrets produced by inactions than by actions.

As we have noted, there is a potential methodological concern if participants

describe regretted events to the experimenter. We introduced a second condition, in which participants were asked to think about something as if they were describing it to someone else, but they were explicitly instructed not to disclose the nature of the regret to the experimenter. Because participants were fully aware that there was no way for the experimenter to know the specific facts about these regrets, self-censorship would not bias the regrets recalled by these participants. (The condition in which participants were asked to write about their regret is henceforth referred to as the “write” condition, and the condition in which participants were asked only to think about their regret is henceforth referred to as the “think” condition.)

Another methodological concern is that if one relies solely on a participant's classification of the regret without determining the actual content of it, there is no guarantee that participants construe the action/inaction distinction as the experimenter does. Experiment 1 included measures to detect this potential bias. Participants in both the think and the write conditions were asked to answer questions about various aspects of their regrets. For example, When did the regret occur? or Who else was involved in the regretted event(s)? If the regrets in the think and write conditions were sampled from the same population, the responses to such questions should be identical in the two conditions. Thus, differences in the responses to such questions would indicate indirectly that the regrets in the think and write conditions were systematically different, while preserving the confidentiality of the regrets in the think condition.

Method

Participants. A total of 157 male and female undergraduates in an introductory psychology course at the University of Washington participated in this experiment.

Materials. The questionnaire packet was 4 pages long and consisted of a consent form followed by a single item asking participants to either write or think about something they regret deeply. The consent form informed participants that the purpose of the study was to identify the kinds of events that lead to regret. Participants were also told that their identity would remain confidential. The consent form and the instructions to the participant did not mention the distinction between action and inaction regrets. In the think condition, participants were instructed to think about something they regret deeply; they were told to describe the regret to themselves as if they had to explain it to someone else. They were not asked to write anything that would divulge the specific content of the regret. In the write condition, participants were instructed to write about something they regret deeply. In both conditions, we defined regret for the participants as “sorrow mingled with dissatisfaction on account of something done or left undone” (*Merriam-Webster's Collegiate Dictionary*, 1986).

In addition, participants were asked to make a series of judgments in the following order: (1) to rate the intensity of the regret on a 7-point scale (1 = very slight regret, 7 = very strong regret); (2) to classify the regret as either

an action or an inaction or to indicate that the distinction did not apply; (3) to indicate when the regret occurred; (4) to indicate whether other people were involved and if so, who these people were; and (5) to characterize themselves as someone who more often regrets actions, as someone who more often regrets inactions, or as someone who regrets both actions and inactions equally often. Some of these questions were of direct theoretical interest, such as regret classification, regret intensity, and self-characterization as someone who more often regrets actions or inactions. Others served as checks for whether similar types of regrets were recalled in the write and think conditions.

Procedure. Questionnaires were distributed to participants in a group testing session. Approximately half of the participants received a questionnaire for the think condition, and the other half received a questionnaire for the write condition; participants were randomly assigned to these conditions. Participants required approximately 15 min to complete the questionnaire.

Coding of regrets. Two coders were trained to distinguish between three categories of regret: (1) action, (2) inaction, and (3) distinction does not apply (DNA). A regret was coded as an action if it was produced by an act of commission by the participant (e.g., cheating on a significant other, fighting with a sibling, getting drunk). A regret was coded as an inaction if it was produced by an act of omission by the participant (e.g., not visiting a dying relative, not studying enough, not telling someone something important). A regret was coded as DNA if it could not be categorized as an action or an inaction (e.g., regret because there is fighting in the Middle East or because many people are homeless). The coders were blind to one another's coding of the regrets and to the participant's self-coding.

Results and Discussion

All significance levels and p values are based on two-tailed tests unless otherwise stated.

Preliminary analyses. The preliminary analyses addressed two issues: (1) Did the coders agree among themselves and with the participants' classifications? and (2) Did responses in the think and write conditions differ reliably on any of the variables?

The two coders agreed on the classification of 79 of 82 regret descriptions (96.3%) in the write condition. In addition, both coders agreed with the participant's classification in 78 cases (95.1%). Because participant-coder agreement was high, we will interpret participants' classifications in both the think and write conditions as valid indications of whether regretted events were actions or inactions. This finding is important because in the think condition, the participants' classifications were the only classifications available to us. If the participants and coders had disagreed with the classification of regrets in the write condition, it would have been difficult to interpret the participants' classifications in the think condition. Because of this finding, we were able to

combine the participants' classifications for the think and write conditions and treat them as consistent classifications of regret type.

Next we checked whether the think and write conditions differed on any of the dependent measures. We compared participants' responses in the write and think conditions on the five variables. Except for one variable, the think and write conditions did not differ significantly. If someone else was involved in the regretted event, it was more likely to be a friend in the think condition (51.9%) than in the write condition (30.5%). The chi-square test for homogeneity was marginally significant ($\chi^2(2) = 5.36, p = .07$). On the whole, the write and think conditions presented similar profiles of responses, and we will treat the written descriptions as representative of regrets in general.

Main analyses. The main issues in Experiment 1 concern the intensity and prevalence of action and inaction regrets. Summed over the write and think conditions, there were 62 action regrets and 85 inaction regrets. We excluded the 9 participants who classified their regrets as DNA, and we found that 42.2% of the remaining regrets were action regrets ($z = -1.81, p = .07$). The 95% confidence interval for the proportion of action regrets was $.422 \pm .080$. The confidence interval shows that inaction regrets are at least as prevalent as or more prevalent than action regrets. Our second experiment replicates this finding.

One might argue that action regrets are more self-incriminating because people feel more responsible for their actions. In combination with the assumption that the write condition is more likely to cause participants to avoid self-disclosure, one might predict that inaction regrets should be more prevalent in the write condition than in the think condition. The results do not support the prediction, however, because the excess of inaction over action regrets was even greater in the think condition (60.9% versus 39.1%) than in the write condition (55.1% versus 44.9%).

Table 1 shows mean regret intensity for action and inaction regrets. On the average, regret intensity was significantly greater for action regrets than for inaction regrets ($t(150) = 2.32, p = .02$; 95% confidence interval = $.52 \pm .44$). Action regrets were regretted more intensely, even if they were recalled less frequently. We also looked for a systematic difference in the intensity of regrets in the write and think conditions. If participants in the write condition were censoring the more embarrassing, shameful, or guilt-inducing regrets, then one might expect that the stronger regrets would be found in the think condition.

TABLE 1
Mean and Standard Deviation of Regret Intensity

Condition	<i>n</i>	Type of regret			Marginal
		Action	Inaction	Distinction NA	
Write mean (<i>SD</i>)	82	5.51 (1.48)	5.33 (1.11)	5.75 (0.96)	5.53
Think mean (<i>SD</i>)	75	5.93 (1.11)	5.07 (1.55)	5.00 (1.58)	5.33
Marginal	157	5.72	5.20	5.38	

TABLE 2

Participants' Regret Classifications and Self-Characterizations of Typical Regrets

Participant's classification of regret	Typical regrets			Marginal
	Done	Left undone	Done and undone equally	
Action	14 (23.0%)	14 (23.0%)	33 (54.1%)	61 (39.4%)
Inaction	7 (8.2%)	51 (60.0%)	27 (31.8%)	85 (54.8%)
DNA	1 (11.1%)	4 (44.4%)	4 (44.4%)	9 (5.8%)
Marginal	22 (14.2%)	69 (44.5%)	64 (41.3%)	155

Contrary to this expectation, average regret intensity was slightly greater in the write condition, and the planned comparison between the write and think conditions was not significant ($t(150) = .59, p = .56$; 95% confidence interval = $.20 \pm .66$). The interaction between the experimental condition and the type of regret recalled was also not significant ($F(2, 150) = 1.44, p = .24$). These results are further evidence against the hypothesis that the write and think conditions differed in the type of events recalled.

Table 2 cross-classifies participants by participant's regret classification and participant's self-characterization. Of the 61 participants who classified their regrets as actions, 14 (23.0%) characterized themselves as someone who typically regrets things that are left undone. In contrast, of the 85 participants who classified their regrets as inactions, 51 (60.0%) characterized themselves as someone who typically regrets things that are left undone. A chi-square test was computed for type of regret recalled versus self-characterization of typical regrets (to avoid excessively low expected cell frequencies, participants were omitted if their regret was in the DNA category). The chi-square test was highly significant ($\chi^2(2) = 20.61, p < .0001$). Thus, participants who produced action or inaction regrets characterized their own typical regrets differently.

One explanation for the association between type of regret recalled and self-characterization of typical regrets is that participants who reported inaction regrets may also experience inaction regrets more often, whereas participants who reported action regrets may also experience action regrets more often. The fact that action regrets were rated more intensely in the present study could be due to other unobserved, but systematic differences in the decision-making styles of people who experience action regrets or inaction regrets more often. The only way to avoid this bias is to sample action regrets from people who initially think of inaction regrets as well as to sample inaction regrets from people who initially think of action regrets. Our second experiment corrects this bias.²

² We note that the association between type of regret and self-characterization of typical regrets does not necessarily indicate that participants who recalled action regrets or inaction regrets were systematically different, for the association could be the result of an availability bias. The self-

Effect of time on the prevalence and intensity of action and inaction regrets. The temporal pattern of recalled regrets was not related to the frequency of action and inaction regrets ($\chi^2(2) = 2.82, p > .20$). The interaction between intensity and type of regret was also not significant ($F(2, 141) = .54, p > .50$). There was also no main effect of time on regret intensity ($F(2, 141) = .39, p > .60$). We will discuss the relation between these results and Gilovich and Medvec's (1994) temporal pattern hypothesis in the general discussion.

EXPERIMENT 2

The potential selection bias in Experiment 1 resulted from the fact that action regrets were rated only by participants who recalled action regrets, and inaction regrets were rated only by participants who recalled inaction regrets. If participants who reported actions and participants who reported inactions differed in their styles of personal decision making, these differing styles could also account for the observed differences in regret intensity. If this were the case, the inference that action regrets are generally more intense would be invalid, for the tendency to recall action or inaction regrets would merely be a correlate of personalities that experience stronger or weaker regrets. We cannot say that action regrets are stronger than inaction regrets in the general population, for we did not sample action regrets from this population. Rather, we sampled action regrets from the subpopulation for whom action regrets were more available, and similarly for inaction regrets.

The design of Experiment 2 corrects this selection bias. There were three conditions in Experiment 2 (see Fig. 2). The free-choice condition replicated and extended the findings from Experiment 1. Participants were first asked to recall, classify, and rate the intensity of something they regret. Participants were then asked to produce and rate the intensity of a regret of the opposite type (i.e., an action regret if the first regret was an inaction, or an inaction regret if the first regret was an action). The area in the box in Fig. 2 depicts the part of the free-choice condition that has the same structure as Experiment 1. The free-choice condition improves on the design of Experiment 1 by measuring the intensity of inaction regrets among participants who initially recalled an action regret, and the intensity of action regrets among participants who initially recalled an inaction regret.

One limitation of the free-choice condition is that some of the action regrets occurred spontaneously to participants (Node 1 in Fig. 2), whereas other action regrets were produced by participants who were instructed to recall an action regret (Node 4 in Fig. 2). Similarly, some of the inaction regrets occurred

characterization followed the recall of a regretted event and the classification of the regret as an action or inaction. The writing or thinking about a regret and the act of classifying the event as an action or inaction could have primed the participant to characterize himself or herself as someone who typically has regrets of this same type. Our second experiment contains controls to avoid this alternative explanation.

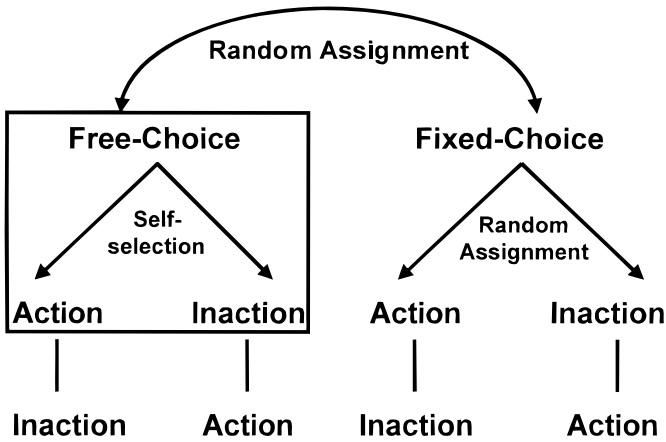


FIG. 2. Illustration of the three recall conditions in Experiment 2. The area in the box indicates the part of the free-choice condition with the same structure as Experiment 1. Separate branches indicate different between-subject conditions. Nodes 1–4 refer to the free-choice condition. Nodes 5–8 refer to the two fixed-choice conditions. Nodes 1, 2, 5, and 6 refer to the first regret recalled. Nodes 3, 4, 7, and 8 refer to the second regret recalled.

spontaneously to participants (Node 2 in Fig. 2), whereas others were produced by participants who were instructed to recall an inaction regret (Node 3 in Fig. 2). In order to assess whether regrets produced with or without instructions to produce a regret of a specific type differ systematically, we included two “fixed-choice” conditions (see Fig. 2). In contrast to the free-choice condition, in which participants were initially allowed to choose to recall either an action or an inaction regret, in the fixed-choice condition participants were *instructed* to write about a regret of a specific type, action or inaction. The order in which participants were instructed to describe the two types of regrets was counterbalanced (action first, followed by inaction, Nodes 5 and 7; inaction first, followed by action, Nodes 6 and 8).

The design of Experiment 2 yields several useful analyses of regret intensity. First, we can compare the intensity ratings of action regrets (Nodes 1 and 4 combined) to intensity ratings of inaction regrets (Nodes 2 and 3 combined) in the free-choice condition. This analysis requires pooling regrets that are produced with and without instructions to recall a regret of a specific type. Second, we can conduct within-subject comparisons of action and inaction regrets for participants who were instructed to produce actions first (Node 5 versus node 7) and for participants who instructed to produce inactions first (Node 6 versus Node 8). These analyses are subject to possible order effects, which should be detectable because order is counterbalanced. Finally, order effects can be eliminated by comparing the action and inaction regrets that were produced first by participants in the fixed-choice conditions (Node 5 versus Node 6). Notice that the analogous comparison in the free-choice condition (Node 1 versus Node 2) is more difficult to interpret because of the potential for selection bias discussed above.

Another finding from Experiment 1 was that when asked retrospectively to characterize their regrets, participants thought their regrets were more often

due to inactions. In Experiment 2, we asked participants to characterize both their typical regrets (i.e., whether they experienced more regret over what they did or over what they failed to do) and their tendencies regarding regret (i.e., whether they anticipated more fear about the consequences resulting from their actions or from their failures to act). It is plausible that people who anticipate greater regret resulting from actions will refrain from taking action, and as a consequence, their regrets will generally result from failures to act. The responses to self-characterizations of typical regrets and tendencies concerning regret allow us to examine this hypothesis.

Method

Participants. Participants were 622 University of Washington undergraduates in an introductory psychology course.

Materials and procedure. The questionnaire consisted of a consent form, followed by a brief description of the distinction between action and inaction regrets. Participants were told that in some cases we regret something we have done (e.g., buy a stock and see it go down in price) and in some cases we regret something we have failed to do (e.g., not buy a stock and see it go up in price).³ This description was provided to help participants follow directions in the fixed-choice condition when they were told to write about either an action or an inaction regret.

One third of the participants were randomly assigned to the free-choice

³ Landman. (personal communication) pointed out that the regrets that were presented as examples to the participants introduced a confound into the experimental design. To regret the buying of a stock whose value drops is to regret a loss, whereas to regret the failure to buy a stock whose value increases is to regret a missed opportunity, or failure to gain. Might not this difference between an example of a loss and an example of a failure to gain account for differences in the intensity of action and inaction regrets that participants recalled? In reply, we first note that this confound should enhance the intensity of action regrets over inaction regrets because the example of a loss due to an action should suggest more intense regrets than the example of a failure to gain due to an inaction. If this confound were influencing our data, the unconfounded effect of actions would be smaller than the observed effect and the unconfounded effect of inactions would be larger than the observed effect. In other words, the confound should lend spurious support to the claim that actions are regretted more intensely than inactions, a claim that we are attempting to refute. Given that our data showed no differences between the intensities of naturally occurring action and inaction regrets, one may infer that if this confound did affect our data, the true state must be that inaction regrets are more intense on the average than action regrets, an even stronger refutation of the claim that actions are regretted more intensely than inactions. The preference literature shows that losses produce larger absolute changes in value than do objectively equivalent gains (Tversky & Kahneman, 1991), but not that mentioning a loss of unspecified magnitude leads to recall of more intensely felt regrets than does mentioning a failure to gain that is also of unspecified magnitude. Hence, it is not at all clear that regrets of differing intensities are retrieved when one mentions an unspecified loss versus an unspecified failure to gain as an example of possible regrets. Indeed, we are rather skeptical that this could occur and intend to test the question empirically in a follow-up study. Here, however, our point is that even if this effect occurred, it would lead to an even stronger denial of the claim that actions are regretted more than inactions.

condition. Participants in this condition were asked to describe something they regret; to classify their regret as an action, inaction, or DNA; and to rate the intensity of the regret. They were then instructed to describe a regret of the opposite type (i.e., an action regret if an inaction regret was first recalled, and an inaction regret if an action regret was first recalled). The remaining two thirds of the participants were randomly assigned to one of the two fixed-choice conditions. One third of the participants were asked to first describe an action regret, then to describe an inaction regret (fixed-choice condition—action first). The remaining third of the participants were asked to first describe an inaction regret and then to describe an action regret (fixed-choice condition—inaction first). Henceforth, the three conditions will be referred to as Recall Condition 1 (free-choice condition), Recall Condition 2 (fixed-choice condition—action first), and Recall Condition 3 (fixed-choice condition—inaction first).

All participants were asked to make judgments about their typical anticipated regrets and typical regrets. When making a judgment about type of anticipated regrets, participants were asked: “What do you think is more characteristic of yourself? (a) you choose not to do things because you fear what would happen if you did, or (b) you choose to do things because you fear what would happen if you didn’t.” A response of (a) was interpreted as greater anticipated regret for actions; a response of (b) was interpreted as greater anticipated regret for inactions. When making a judgment about typical regrets, participants were asked: “What do you think happens more often to you? (a) you tend to regret things you have done, or (b) you tend to regret things you have not done.” The questions were counterbalanced in terms of which question was asked first. Half of the participants were asked about their personal tendencies after describing their first regret (at Nodes 1, 2, 5, or 6) and about their typical regrets after describing their second regret (at Nodes 3, 4, 7, or 8). The remaining participants made these self-characterizations in the opposite order.

We also varied the wording in the instructions to recall the regrets. Half of the participants were asked to describe something they regret “deeply,” while the remaining participants were asked just to describe something they regret (“deeply” was not mentioned). This wording difference was employed because we considered it possible that deep regrets might be due more often to actions but that ordinary regrets might be due more often to inactions.

Participants were asked to rate the strength of each regret on the same 7-point rating scale used in Experiment 1. For each regret described, participants were asked to judge: (1) the frequency with which they experienced regrets as intense as the regret described and (2) the degree to which they anticipated the possibility they might end up feeling regret (in the situation described by the participant). In addition, participants were asked how reasonable it is in general to feel regret following negative outcomes. Questionnaires also included demographic questions (i.e., age, year in school, and gender).

Coding of regrets. The coding procedure for Experiment 2 differed from that of Experiment 1 in the following way: In Experiment 2, a regret that contained both an action and an inaction antecedent was given a separate

code (i.e., “a mixture of actions and inactions”) and was excluded from further analyses. For example, “I regret stealing money and not telling my parents about it” would be coded as a mixture of action and inaction. In Experiment 1, such a regret was classified “DNA.” In other respects, the coding procedure for Experiment 2 was essentially the same as that of Experiment 1. The regrets produced by participants in Experiment 1 were used as practice items during the training of the coders. The coders then coded the regret descriptions from Experiment 2. While coding these responses, the coders were blind to the condition of the experiment, to the participant’s classification of the regret, and of course, to each other’s coding.

Results and Discussion

Coding of regrets as actions and inactions. We will first describe the results for the coding as they affect the interpretation of our main results. The coders agreed on 94.5% of the classifications of the first regret ($N = 622$) and on 95.4% of those of the second regret ($N = 609$).

Consistency between the participants’ and coders’ classifications. In the following analysis, the *participant’s classification* refers to the participant’s classification of a regret as an action, inaction, or DNA. (We assume that participants in Recall Conditions 2 and 3 classified regrets as actions or inactions in order to comply with instructions to recall a regret of a particular type, action or inaction, depending on the condition and order.) The *coders’ classification* refers to a classification of a regret that both coders agreed upon, as an action, inaction, both an action and an inaction, or DNA. If the coders disagreed on the classification of a regret, then the coders’ classification of that regret was treated as missing data. In Recall Condition 1, the participant’s classification of the first regret agreed with the coders’ classification in 82.0% of the cases ($n = 217$), and the participant’s classification of the second regret agreed with the coders’ classification in 84.5% of the cases ($n = 207$).

Prevalence of action and inaction regrets. To test for the relative prevalence of action and inaction regrets, separate analyses were performed on the coders’ and participants’ classifications of the first regrets in Recall Condition 1, in which participants were free to recall regrets of either type. Inaction regrets were more prevalent than action regrets (117 versus 90, or 56.5% versus 43.5%, $z = 1.81$, $p = .035$, one-tailed binomial test) in the participants’ classifications. In the coders’ classifications, inaction regrets were also more prevalent (115 versus 86, or 57.2% versus 42.8%, $z = 1.98$, $p = .024$, one-tailed binomial test). In terms of either classification, these results replicate the finding in Experiment 1 that inaction regrets are more prevalent.

Effect of wording on regret intensity. The wording of the regret question (“recall something you regret” versus “recall something you regret deeply”) was not found to have any effect on regret frequency and intensity. Therefore, this distinction will be ignored in the following analyses.

Effect of regret type on intensity. The initial analysis is essentially an attempt to replicate the finding from Experiment 1 that regret intensity was greater for action regrets than for inaction regrets. *T*tests were used to compare the first reported action and inaction regrets of participants in Recall Condition 1 (Node 1 versus Node 2). Based on the participants' classifications, there was no significant difference in the intensity of action and inaction regrets ($t(204) = .31, p > .70$; $M_{\text{Action}} = 5.58, M_{\text{Inaction}} = 5.53$, estimated difference = $.05 \pm .33$). Based on the coders' classifications, however, action regrets were significantly more intense than inaction regrets ($t(198) = 2.71, p < .01$; $M_{\text{Action}} = 5.78, M_{\text{Inaction}} = 5.32$, estimated difference = $.45 \pm .33$).⁴

This initial analysis provides an ambiguous replication of the finding that action regrets are more intense than inaction regrets; the replication is ambiguous because the difference was only significant in terms of the coders' classifications of regrets. This analysis suffers from the same potential selection bias that was present in Experiment 1, namely, the possibility that participants who more readily recall action regrets may differ systematically from participants who more readily recall inaction regrets. Fortunately, the design of Experiment 2 permits analyses that avoid this bias.

The remainder of the analyses will focus on regrets as classified by the coders.⁵ Table 3 shows the means for action and inaction regrets, the standard errors of the difference scores, and the standardized effect sizes in the three recall conditions. The action mean for Recall Condition 1 is the mean over all action regrets in this condition regardless of whether the regret was recalled first or second, and similarly for the inaction mean. The standard errors and effect size estimates were derived from a one-way ANOVA in which the within-subject difference between action and inaction ratings served as basic data. Earlier, it was noted that regret ratings in Experiment 1 were potentially biased by the exclusion of both the action regrets of participants who thought of an inaction regret and the inaction regrets of participants who thought of an action regret. This potential bias is avoided in Table 3 because Recall Condition 1 includes the action and inaction regrets that were omitted in

⁴ The discrepancy between the two analyses was due to the 29 observations that were classified differently by the coders and participants. Without attempting to describe these differences exhaustively, we note that the 11 observations that were coded as actions by participants and as inactions by the coders had a mean of 4.18, and the 8 observations that were coded as inactions by the participants and as actions by the coders had a mean of 5.75. Because 4.18 was lower than the participants' action mean and 5.75 was higher than the participants' inaction mean, reclassifying these observations as inactions and actions, respectively, increased the difference between the action and inaction means.

⁵ Under the coders' classification, data were excluded if (a) the participant failed to rate the regret intensity of either the first or the second regret (typically an oversight); or (b) if the coders disagreed on the classification of the first or second regret; or (c) if the regret as classified by the coders was inappropriate for the experimental condition, e.g., if the coders classified the regret as an inaction but the regret was the first regret produced in Recall Condition 2 (action regrets first). Data were excluded under the participants' classification only if the data failed the first criterion (a). Despite the difference in sampling criteria, the effects of the action/inaction distinction were virtually identical under either the participants' or the coders' classification of the regrets.

TABLE 3

Mean Intensity for Action and Inaction Regrets for the Three Recall Conditions:
Regret Type Classified by the Coders

Condition	<i>n</i>	Action	Inaction	<i>SE</i> Dif.	95% conf. int.	Std. eff. size
RC 1 ^a	158	5.62	5.51	.13	.11 ± .25	.07
RC 2	158	5.43	5.56	.13	-.13 ± .25	.08
RC 3	141	5.60	5.42	.14	.18 ± .27	.11
Combined	457	5.55	5.49	.08	.06 ± .15	.04

^a For Recall Condition 1, the action mean is the mean over all action regrets in this condition without regard for whether the regret happened to be the first or second regret recalled, and similarly for the inaction mean.

Experiment 1. The small difference and narrow confidence interval (.11 ± .25) indicate that the intensities of action and inaction regrets were virtually identical in Recall Condition 1. In Recall Conditions 2 and 3, participants recalled action or inaction regrets under instructions to recall regrets of particular types. In these conditions, the differences between action and inaction regrets were also small (.13 ± .25 and .18 ± .27, respectively). Moreover, the effects of regret type did not differ significantly between the three conditions ($F(2, 454) = 1.54$, $MSE = 2.63$, $p > .20$). Averaged over all conditions, the action/inaction difference was .08 ± .15, with 95% confidence.

The standardized effect size estimates for Recall Conditions 1, 2, and 3 were .07, .08, and .11, respectively, and averaged over all three conditions the estimate was .04. Cohen (1988, 1992) suggested a heuristic classification of effect sizes according to which standardized mean differences of .20, .50, and .80 are classified as "small," "medium," and "large," respectively. By these criteria, the estimated effect sizes for the action/inaction distinction were smaller than "small." From the formulas and tables in Cohen (1988), the probability of detecting a small (.20) effect at the .05 level in an individual recall condition with 150 participants was approximately .68. Across the three conditions with roughly 450 total participants, the probability of detecting a small effect was approximately .97. Thus, the present experiment had considerable power to detect small effects.

It should be apparent from Table 3 that there was little variation in the mean ratings of action and inaction regrets. Separate one-way analyses of variance for the action and inaction ratings found no significant differences between the recall conditions (for action ratings, $F(2, 454) = .99$, $MSE = 1.73$, $p > .30$; for inaction ratings, $F(2, 454) = .47$, $MSE = 1.54$, $p > .6$). A planned comparison of the action regrets in Recall Conditions 2 and 3 yielded a 95% confidence interval of $-.17 \pm .30$ and a standardized effect size estimate of .13. The analogous comparison for inaction regrets yielded a 95% confidence interval of $.14 \pm .28$, and a standardized effect size estimate of .11. Because Recall Conditions 2 and 3 differed in the order in which the action and inaction regrets were recalled, these results can be interpreted as showing that response order had little or no effect on regret intensity.

Note also that Recall Condition 1 contained a subset of regrets that were recalled without instructions to recall a specific type of regret. Although it is conceivable that such unconstrained recall might produce regrets that differed in intensity from regrets that were recalled under instructions to recall specifically an action or inaction regret, there was no evidence for a difference between Recall Condition 1 and the other two recall conditions. A planned comparison between the action regrets in Recall Condition 1 and the average of the action regrets in the other two conditions was not significant ($t(454) = .42, p > .40$, estimated difference = $.10 \pm .25$); the analogous comparison for the inaction regrets was also not significant ($t(454) = .15, p > .80$, estimated difference = $.02 \pm .24$). The standardized effect size estimates were .08 and .01, respectively. Thus, regrets that were constrained to be a specific regret type and regrets that were not so constrained did not differ in intensity.

There was some weak evidence for selection bias. In Recall Condition 1, the first recalled action regrets were significantly more intense than the first recalled inaction regrets in terms of the coders' classification. When selection bias was corrected by including the action regrets of those who first recalled an inaction regret and the inaction regrets of those who first recalled an action regret, the difference was no longer significant, and the estimate of the difference was small. Under the participants' classifications of regrets, there was no evidence for selection bias. The order in which regrets were recalled had no detectable effect on regret intensity, nor did the distinction between recall that was constrained to be an action or inaction (Recall Conditions 2 and 3) and recall that was unconstrained (a subset of the responses in Recall Condition 1). We found that the effect sizes of potential biases were very small by conventional criteria. It appears that the only bias that might have affected regret intensity was the potential selection bias, and this effect disappeared in the analyses that avoided its influence.

Type of anticipated regret and typical regrets. All participants were included in this analysis. The order in which the two questions were asked made no difference, so the following analyses of self-characterizations ignore order. Table 4 cross-classifies participants by typical regrets and type of anticipated regret. A significant majority of participants characterized themselves as someone who typically regrets things that are left undone (59.7%, $N = 610, z = 4.33, p < .0001$). Gilovich and Medvec (1994) reported a similar finding. On the other

TABLE 4
Typical Regrets and Type of Anticipated Regret

Anticipated regret done	Typical regrets		
	Left undone	Marginal	
Action	153 (25%)	241 (40%)	394 (65%)
Inaction	93 (15%)	123 (20%)	216 (35%)
Marginal	246 (40%)	364 (60%)	610

hand, with respect to anticipated regrets, a significant majority of participants characterized themselves as someone who typically chooses not to act because they fear what would happen if they did (64.6%, $N = 610$, $z = 7.17$, $p < .0001$).

Table 4 is an unusual 2×2 table, in that a chi-square test for independence and a test for correlated proportions both answer interesting research questions. McNemar's test for correlated proportions tests whether the marginal distributions in Table 4 are identical, i.e., whether the proportion of individuals who typically experience action regrets is the same as the proportion who typically anticipate regret for actions. One might expect these proportions to be the same, if one learns to anticipate regret for one's conduct from prior experiences of regret. On the other hand, if anticipations of regret tend to suppress the behaviors that produce regret, the typical regrets in past experience should be those not easily anticipated in planning future behavior. McNemar's test supports the latter hypothesis because these marginal proportions are significantly different ($\chi^2(1) = 64.7$, $p < .0001$). The test for statistical independence tests whether responses to the question about typical regrets are independent from anticipations of regret. It seems *prima facie* implausible that these variables should be independent, because one would expect past experiences of regret to influence anticipated regret. The results, however, suggest that the questions are independent, because the chi-square was not significant ($\chi^2(1) = .87$, $p > .30$), and the conditional frequency of characterizing one's typical regrets as action regrets was very similar for participants who typically anticipated action and inaction regrets (39% vs 43%).

GENERAL DISCUSSION

A central hypothesis about regret in the social-cognition literature is that actions are regretted more than inactions. We found that inactions are more prevalent and, contrary to Gilovich and Medvec's (1994) findings, at least as intensely regretted as actions. If everything else were equal (i.e., the same bad outcomes result sometimes from doing action X and sometimes from failing to do action X), it might well be that actions would then be regretted more than inactions, as was observed in the vignette studies (Gleicher et al., 1990; Kalne-man & Miller, 1986; Kahneman & Tversky, 1982; Landman, 1987). In real life, however, there is uncontrolled, systematic variation between the conditions under which action and inaction regrets are likely to be experienced. Consequently, the requirement of *ceteris paribus* is not usually satisfied.

In the present study, we incorporated a number of different controls and other features of experimental design in an attempt to eliminate potential confounds and to estimate effect sizes. First, our sample sizes were large enough to demonstrate null effects. Second, we had careful controls against self-censorship as a bias in the types of regrets people reported. Third, we avoided selection biases that might result if only action or inaction regret intensity were reported, and not both. Finally, we had controls for identifying any discrepancy in the way participants and coders classify regrets as actions and inactions. This is important, because it demonstrates that prior reports based on experimenters'

classifications can be trusted to reflect the action–inaction regret distinction and also because investigators conducting future studies of real-life regrets can confidently classify action and inaction regrets (T. Gilovich, personal communication, July 1, 1996).

Prevalence of Action and Inaction Regrets

When participants are asked to describe their deepest regret, inactions are reported more often than actions. Gilovich and Medvec (1994) and the present study found approximately a 60/40 split between inaction and action regrets. These results show that the frequency interpretation of the claim that actions are regretted more than inactions is not sustained.

We propose two hypotheses to explain the greater prevalence of inaction regrets. The behavior selection hypothesis asserts that people are more likely to anticipate when an action might lead to a bad outcome than when a failure to act might lead to a bad outcome. Our attention is more likely to be drawn to what we are doing than to what we are not doing, unless there is some specific obligation or reminder that draws our attention to what we are not doing. The result would be that people are more likely to suppress potentially injurious actions. Consequently, when looking back, people would have more inactions than actions to regret. Although we did not test this directly, a subset of results (Experiment 2) do lend support to this hypothesis. A majority of participants (65%) reported anticipating greater regret for actions than for inactions. However, when reflecting on their past experiences, the majority of participants (60%) characterized themselves as people who typically regret their failures to act.

Direct tests of the behavior selection hypothesis need to be done before any conclusions can be drawn; however, at least one study suggests that bad outcomes associated with actions are easier to imagine than bad outcomes associated with inactions. Beyth-Marom, Austin, Fischhoff, Palmgren, and Jacobs-Quadrel (1993) presented participants with risk decisions and asked them to generate perceived consequences. They found that more consequences were produced for accepting than for rejecting risky options. This suggests that it is more difficult for people to anticipate bad outcomes for decisions not to act than for decisions to act. According to Dawes (1988), people have a tendency to focus on consequences of actions to the exclusion of thinking about actions not taken.

The idea of postevent framing is an outgrowth of two lines of research: (1) the Kahneman and Miller (1986) notion that norms are often constructed after the event and not before and (2) studies suggesting that experience does not uniquely impose a single interpretation, but rather, people have considerable freedom to interpret experience in different ways. The postevent framing hypothesis proposes that after experiencing a bad outcome, people can often attribute the outcome to either their actions or their inactions. For example, if a woman is laid off from her job, she can regret not doing things (e.g., not working harder) that would have earned her greater credit, or she can regret

the things she did (e.g., offending people) that could have contributed to her termination. If people feel more responsible when bad outcomes are produced by their actions than when they are produced by their failures to act, they may be biased to construe events leading up to regrettable outcomes as inactions in an effort to minimize self-blame. Thus, the postevent framing hypothesis asserts that there may be biases toward construing the antecedents of regrettable events as inactions.

Intensity of Action and Inaction Regrets

Ratings of regret intensity were no different for actions than for inactions provided that each participant produced one regret of each type. Our Experiment 2 differs from Experiment 1 and most studies of autobiographical regrets in that every participant produced both an action and an inaction regret, and the experiment had sufficient statistical power to detect even small differences in regret intensity.

Other studies of autobiographical regrets have suggested that what people regret most are missed opportunities (inactions) (Kinnier & Metha, 1989). These studies suffer from the same selection bias that was potentially present in our Experiment 1, and controlled for in Experiment 2. Gleicher et al.'s (1990), Kahneman and Tversky's (1982), and Landman's (1987) studies suggest that actions may be more intensely regretted than inactions. These studies are difficult to generalize to life experiences, because in real life, the same bad outcome is not the result of an action in one case and an inaction in another case. In real life, the action and inaction regrets constitute distinct albeit overlapping populations of experiences. Notably, there is some evidence that suggests people tend to limit themselves to a single option (whether or not to act) when making risk decisions (Fischhoff, 1996); however, outcomes of these single-option decisions are not likely to be the same or even similar.

Gilovich and Medvec (1994, Study 1) asked participants about their real-life regrets and found that inactions were regretted more intensely than actions. However, this study suffers from a potential problem: Because only the participants knew the content of their regrets, there was no control over the possibility that participants did not draw the distinction between action and inaction regrets in the same way that it is discussed in the regret literature. In addition, participants were asked to indicate which type of regret was more intense but were not given the option of indicating that the action and inaction regrets were equally regrettable. Therefore, one cannot determine from their data what the magnitude of the difference in intensity was between action and inaction regrets. It is even possible that action and inaction regrets were equally intense, but given the forced-choice question of which regret was more intense, participants engaged in some tie-breaking strategy that favored inactions. The current study suggested that in real life, there may be no difference in intensity between action and inaction regrets.

Other explanations for the prevalence and intensity of regret. Several different explanations might account for the discrepancy in findings between hypothetical vignettes and open-ended questionnaires about real-life regrets. First, hypothetical situations only tap hypothetical regret, from which real-life emotional experiences may differ systematically. Gilovich and Medvec (1994, 1995a, 1995b) rejected this explanation in favor of the hypothesis that there may be a temporal pattern to the experience of regret: Actions produce stronger regret in the short term, but inactions produce stronger regret in the long term. In an experiment designed to test the temporal hypothesis, participants were presented with a hypothetical vignette similar to the stock market scenario in Fig. 1. Two individuals (Dave and Jim) are torn between a decision about whether to stay at or transfer from their current university. Dave decides to stay, Jim decides to transfer, and both decisions turn out badly. The main departure from Kahneman and Tversky's experiment was that participants were asked not only who would feel worse immediately following the bad outcome, but also who would feel worse in the long term. Interestingly, participants thought that Jim (who transferred) would experience greater regret initially but that Dave (who did not transfer) would feel worse in the long run.

Gilovich and Medvec (1994) also tested whether their proposed temporal pattern of regret would generalize to real-life regrets. They asked participants to describe their greatest inaction and action regrets both from the past week and from their entire lives. For each time period, they asked the participants which they regretted more: the action or the inaction. When asked about regrets from the past week, about half the participants (53%) reported greater regret for actions, and the other half reported greater regret for inactions. However, when participants were asked about regrets from their entire lives, inactions were regretted more (84% of the time).

Our Experiment 1 found that regrets suffered in the last month did not differ from regrets suffered in the last year or earlier than the last year. Although this appears to conflict with the hypothesis of a temporal pattern to the experience of regret, our result is confounded by selection bias. Participants were first asked to describe something they regret and then to specify when that regret occurred. It may be the case that participants who think of action regrets also tend to think of regrets from a particular time period, and similarly for participants who think of inaction regrets. Because our Experiment 1 did not sample the inaction regrets of participants who first thought of action regrets, and the action regrets of participants who first thought of inaction regrets, we cannot distinguish the true effects of time period from the potential selection bias.

Other possible differences between actions and inactions might be key to understanding their relation to regret. Kahneman (1995) offered an additional explanation for Gilovich and Medvec's (1994) pattern of results: Short-term and long-term regrets involve qualitatively different emotions that operate according to different principles. According to Kahneman, "hot" regret refers to the relatively short-term "kicking yourself" pain, while "wistful" regret is related to long-term, less intense sad thoughts of what might have been. Anthony Greenwald (personal communication, 1995) suggested another variant

of Gilovich and Medvec's temporal pattern hypothesis: Actions may provide faster feedback than inactions. In other words, it may generally take less time to recognize that an action has produced a bad outcome than to recognize that an inaction has produced a bad outcome. For example, consider a mother who now regrets that she did not invest in braces for her teenage daughter's teeth, because she now realizes that this daughter, as an adult, suffers from neck problems from poorly structured teeth. One can think of many examples where the bad consequence of an inaction only appears substantially after the failure to act. Although we currently lack empirical proof, we conjecture that this is less often the case with regret for actions. Feedback from actions is more temporally proximal to the action, and consequently, feelings of regret often follow soon after the event of acting.

Alternatively, it may be the production process that we require of our participants that explains why inactions are produced more frequently than actions (B. Fischhoff, personal communication, October 26, 1998). It may be disproportionately more difficult to tell regret stories about actions than about inactions for reasons of formulation rather than humiliation, whereas it may be disproportionately easier to imagine details of decisions to act than of decisions not to act with experimenter-produced vignettes.

There is another explanation for why the results from hypothetical vignette studies differ from open-ended questionnaire studies. Specifically, the population of events that people regret in real-life may be different than those described in the vignette studies. In real life, actions and inactions may not produce the same types of outcomes, and furthermore, actions and inactions may differ in how easily one can anticipate the potential for harm. For example, if it is easier to anticipate the potential for harm due to action than due to inaction, people might be more conservative in their choice of which actions to take. Consequently, greater harm and more intense regrets would result from failures to act. Our study does not negate the findings of Kahneman and Tversky (1982), Kahneman and Miller (1986), Landman (1987), and Connolly et al. (1997); rather it suggests that the implications of hypothetical vignette studies for real-life regrets are limited, i.e., that they are relevant only to limited situations in which *ceteris paribus* holds and cannot be generalized to real-life regrets.

The generalizability of our findings may be unclear, since we used a limited sample of stimuli and situations to elicit recollections of regret. We have shown that, at least under some conditions, regret intensity does not differ whether following a decision to act or not to act. Future studies should examine the effect of sampling directly so as to identify which situations are triggered and missed by using "regret" as the retrieval cue and which experiences in everyday life get labelled "regret" as compared to "guilt" or "remorse."

REFERENCES

- Beyth-Marom, R., Austin, L., Fischhoff, B., Palmgren, C., & Jacobs-Quadrel, M. (1993). Perceived consequences of risky behaviors: Adults and adolescents. *Developmental Psychology*, **29**, 549–563.
- Cohen, J. (1962). The statistical power of abnormal social psychological research: A review. *Journal of Abnormal and Social Psychology*, **65**, 145–153.

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, **112**, 155–159.
- Connolly, T., Ordonez, L. D., & Coughlan, R. (1997). Regret and responsibility in the evaluation of decision outcomes. *Organizational Behavior and Human Decision Processes*, **70**, 73–85.
- Dawes, R. (1988). *Rational choice in an uncertain world*. San Diego, CA: Harcourt Brace Jovanovich.
- Edwards, W. (1965). Tactical note on the relation between scientific and statistical hypotheses. *Psychological Bulletin*, **63**, 400–402.
- Festinger, L. (1953). Laboratory experiments. In L. Festinger & D. Katz (Eds.), *Research methods in the behavioral sciences*. New York: Holt.
- Fischhoff, B. (1996). The real world: What good is it? *Organizational Behavior and Human Decision Processes*, **65**, 232–248.
- Gilovich, T., & Medvec, V. H. (1994). The temporal pattern to the experience of regret. *Journal of Personality and Social Psychology*, **67**, 357–365.
- Gilovich, T., & Medvec, V. H. (1995a). The experience of regret: What, when, and why. *Psychological Review*, **102**, 379–395.
- Gilovich, T., & Medvec, V. H. (1995b). Some counterfactual determinants of regret and satisfaction. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 259–282). Mahwah, NJ: Erlbaum.
- Gleicher, F., Kost, K. A., Baker, S. M., Strathman, A. J., Richman, S. A., & Sherman, S. J. (1990). The role of counterfactual thinking in judgments of affect. *Personality and Social Psychology Bulletin*, **16**, 284–95.
- Greenwald, A. C. (1975). Consequences of prejudice against the null hypothesis. *Psychological Bulletin*, **82**, 1–20.
- Kahneman, D. (1995). Varieties of counterfactual thinking. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 375–396). Mahwah, NJ: Erlbaum.
- Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, **93**, 136–153.
- Kahneman, D., & Tversky, A. (1982). The psychology of preferences. *Scientific American*, **246**, 160–173.
- Kinnier, R. T., & Metha, A. T. (1989). Regrets and priorities at three stages of life. *Counseling and Values*, **33**, 182–193.
- Landman, J. (1987). Regret and elation following action and inaction: Affective responses to positive versus negative outcomes. *Personality and Social Psychology Bulletin*, **13**, 524–536.
- Landman, J., & Manis, J. D. (1992). What might have been: Counterfactual thought concerning personal decisions. *British Journal of Psychology*, **83**, 473–477.
- Merriam-Webster's collegiate dictionary* (9th ed.). (1986). Springfield, MA: Merriam-Webster.
- Miller, D.T., Turnbull, W., & McFarland, C. (1990). Counterfactual thinking and social perception: Thinking about what might have been. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 305–331). New York: Academic Press.
- Ritov, I., & Baron, J. (1990). Reluctance to vaccinate: Omission bias and ambiguity. *Journal of Behavioral Decision Making*, **3**, 263–277.
- Siegel, S. (1956). *Nonparametric statistics for the behavioral sciences*. New York: McGraw-Hill.
- Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment and choice. *Journal of Experimental Social Psychology*, **27**, 76–105.
- Zeelenberg, M. (1996). *On the importance of what might have been: Psychological perspectives on regret and decision making*. Amsterdam: University of Amsterdam, Faculty of Psychology.