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## **Regret: The Roles of Consistency-Fit and Counterfactual Salience**

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### **ABSTRACT**

Four studies examined the role of a decision's consistency with the orientation of the decision-maker in determining regret. In accordance with our consistency-fit model of regret, the consistency of a decision in relation to decision-makers' goals (Experiments 1), mood states (Experiment 3), and personality orientations (Experiments 2 and 4) predicted regret levels such that consistent decisions were less regrettable than decisions that were inconsistent. In Experiment 1, consistent decisions were defined in relation to decision-makers' goals of changing their typical behavior. Results revealed that decisions that were consistent with the goals of changing their typical behavior were less regrettable. In addition, Experiments 2-4 found that the salience of counterfactuals augmented participants' feelings of regret, supporting the view that accessible alternatives to chosen courses of behavior can serve as affective cues. Implications of a consistency-fit view of regret for norm theory, self-regulation and affect as information were discussed.

Regret is a pervasive part of life and is cited as one of the most frequently experienced emotions (Shimanoff, 1984). Therefore it is not surprising that the topic of regret has been approached from a variety of perspectives, including philosophical treatises, literature, and social science (see Gavansky & Wells, 1989; Landman, 1993; Roese & Olson, 1995). "Indeed, to regret entails a whole host of psychic processes, including thinking, imagining, feeling, comparing, evaluating, doubting, denying, refusing, or affirming . . ." (p. 45, Landman, 1993). However, with the development of Kahneman's norm theory (e.g., Kahneman, 1995; Kahneman & Miller, 1986), regret almost became synonymous with counterfactuals: Now regret is commonly defined as a "counterfactual emotion" ((e.g., Roese & Olson, 1995; Roese, Sanna, & Galinsky, 2005).

From the perspective of norm theory, regret is associated with the generation of imagined alternatives to an undesired outcome. Counterfactual thought has been defined as a logical proposition—a conditional—containing an antecedent (If only . . .) and a consequent (then the outcome would have been different; Roese & Olson, 1995). Counterfactuals are thoughts concerning how a behavior or outcome could be undone or how a behavior may not have *been* executed (Kahneman & Miller, 1986). The normativeness of a behavior can alter the number of counterfactuals generated and the level of experienced regret. Normativeness traditionally has been conceptualized in terms of frequency and/or typicality. Atypical behaviors or decisions are more mutable and thus generate especially high levels of regret. However, from the consistency-fit model, and as demonstrated in Experiment 1, atypical actions are not always more regrettable.

## **CONSISTENCY-FIT AND SELF-REGULATION**

Feelings of regret that derive from the consistency of a decision may help us navigate through the mine fields of life by providing important feedback about whether our choices are in line with our aspirations or our character. Feelings of regret may help move us away from choices that do not fit our goals, whether we have desires to make changes or to maintain our current states. More specifically, the consistency-fit of a decision and resulting levels of regret may serve as cues operating within the monitoring or "test" phase of regulatory feedback-loops (e.g., Baumeister & Heatherton, 1996; Carver & Scheier, 1981). Test phases necessarily involve comparisons of the actual state of the self to standards; therefore, comparisons indicating that poor decisions were of a type that were commensurate with these standards or goals (i.e., were consistent) would be less regrettable than those that were incongruent with these goal states. According to this view, one would predict that decisions that do not turn out well but are in agreement with the nature of individuals' personality or goals would be less regrettable than are more incongruent decisions, even when the negative outcomes are objectively the same. At the very least, congruent decisions are potential means to desired ends and were the result of personalized processes.

Goals can involve desires to change (e.g., lose weight, quit smoking) or can involve desires to maintain current states. In the case of goal-related change, regret tells us that our decisions are not moving us in a desired direction. For example, choosing to eat a high calorie meal is not consistent with goals to lose weight and

may be regretted, especially if the meal is not particularly good. Experiment 1 assessed this hypothesis.

Goals also can involve desires to maintain current states or ways of being. As Shakespeare wrote in Hamlet—"This above all: to thine own self be true." This classic passage expresses the idea that behaving in ways that are "true to self" is in itself an important terminal goal. So, making poor decisions that are not consistent with one's personality may be more regrettable than poor decisions that are consistent with one's character. Regardless of whether the goal is to maintain or change, feelings of regret may function within self-regulatory systems as affective feedback providing information about whether our life choices are in line with our goals.

According to this consistency-fit perspective, poor decisions that are consistent with persons' goals are predicted to be less regretted than are inconsistent decisions—that is, consistency-fit predicts regret (e.g., Seta, McElroy, & Seta, 2001). Further, because a poor outcome is inherently more inconsistent with individuals' goals of obtaining positive outcomes, individuals should feel more intense levels of regret when poor decisions produce very negative outcomes than when they produce less severe ones. For instance, a decision to buy a boring educational toy that resulted in a child's disappointment would be less regrettable than a decision involving negative health consequences to the child.

As this example indicates, and as found in our previous research (Seta et al., 2001), the intensity of the negative outcome per se also affects regret. Negative affect may provide both motivation and direction to behavior. For example, because of heightened levels of negative affect (regret) that resulted from incongruent prior decisions, individuals may avoid making these choices in the future. Thus this component of regret also may operate within self-regulatory systems.

## **COUNTERFACTUALS AND REGRET**

There is little evidence that counterfactuals are related to regret. Few studies have actually empirically investigated the relationship between counterfactuals and regret, but those that have did not find a significant relationship between these variables, (e.g., N'gbala & Branscombe, 1997; Seta et al, 2001). Nevertheless, it seems logical that there should be such a relationship. Counterfactual thinking increases awareness of how the present circumstances could have been different "if only . . . ." When these alternatives are salient, obtained poor outcomes may be perceived as especially negative and undesirable. The present research was designed to assess whether a relationship between counterfactuals and regret would be obtained when counterfactuals were made salient to participants. We also investigated whether there is a relationship between the numbers of counterfactuals generated and regret. To investigate this issue, we manipulated the salience of regret in Experiments 2-4 and assessed the effect of these manipulations on participants' regret levels.

Our previous research has demonstrated a primary role of consistency between a decision and characteristics of decision-makers in determining regret levels, but found no evidence of a relationship between regret and the number of counterfactuals

generated (Seta et al., 2001). In the present work, we took steps to increase the salience of counterfactuals with expectations that the salience manipulations would affect the likelihood of finding a role of counterfactuals in determining regret. It may be the case that regret occurs through a direct route of comparing decisions to relevant standards or may influence regret by affecting the number of counterfactuals generated.

When made salient, the number of counterfactuals generated may serve as affective cues affecting regret levels. For example, when persons are aware of many alternatives to the obtained poor outcome, such as when counterfactuals are salient, regret levels may be higher than when there are fewer accessible counterfactuals or when counterfactuals do not come easily to mind. This suggestion is in line with the perspective of Sanna and Schwarz's affect as information analysis (e.g., Sarma & Schwarz, 2004; Schwarz, 1998; Schwarz & Clore, 1996).

## OVERVIEW

Experiment 1 extended the consistency-fit analysis into the domain of goal-related motives to change current normative or typical behavior. Previous research testing and supporting the consistency-fit model (Seta et al., 2001) did not include manipulations designed to implicate motives to change from typical states. Rather, in these studies, the critical consistency relationships were between decisions and aspects of decision-makers' mood states or behavioral orientations (e.g., risk-averse or risk-seeking tendencies).

In Experiment 1, participants read about a decision-maker who had a goal to make a change in her eating habits and then made a decision to order a meal that was either consistent or inconsistent with that goal. The meal proved not to be especially good. According to the consistency-fit model, persons should judge the decision-maker as having a relatively high level of regret when she made a choice that was inconsistent with her goal. Thus, we predicted that the target person who made a decision that was typical, but inconsistent with her goal (e.g., an overweight person ordering a high calorie meal) would be judged as having more, not less regret than the target person who made an atypical, but consistent decision. This prediction is based on the idea that consistency can serve a self-regulatory function in producing heightened levels of regret when one's decisions are not commensurate with desired end states. We tested this idea in Experiment 1.

In Experiments 2-4, we varied the consistency of a decision in relation to the decision-makers' personality characteristics (Experiments 2 and 4) or mood states (Experiment 3). We predicted that the consistency of the decision with respect to extant mood states and personality characteristics would predict participants' feelings and judgments of regret; low levels of consistency would be associated with high levels of regret. In our previous research (e.g., Seta et al., 2001), we did not find evidence that the production of counterfactuals increased regret. Experiments 2-4 were designed in an attempt to extend this work by assessing whether a relationship between the numbers of counterfactuals generated and regret levels would be obtained when we manipulated the salience of counterfactuals. Interestingly, research has assumed that counterfactuals augment feelings of regret; yet, very little research has assessed this assumption (see Seta, et al., 2001 for further

discussion). By finding evidence that the salience of counterfactuals increases regret, this research would provide some evidence that this common assumption has validity.

In Experiment 2, we used the classic Kahneman "Mr. Paul" stock switching paradigm, with modifications that involved describing the nature of Mr. Paul's personality. In doing so, we were able to manipulate the consistency of Mr. Paul's decision with respect to his personality orientation. From the consistency-fit perspective, we predicted that participants would judge Mr. Paul's level of regret to be especially intense when his decision was inconsistent with his personality orientation. The design also included two measures of participant's judgments of "Mr. Paul's" regret. One came before participants were asked to generate counterfactuals about Mr. Paul's decision and one came after this counterfactual generation task.

In Experiment 3, we assessed participants' own poor decisions and their regret levels in an autobiographical, decision-retrospection paradigm (e.g., Roese, Hur, & Pennington, 1999) and tested whether the consistency of participants' decisions with respect to mood maintenance goals influenced their feelings of regret. In addition, the timing of participants' regret responses were manipulated; they either came pre- or post-counterfactual generation. Counterfactuals should be more salient when they preceded, rather than followed, participants' judgments of regret; thus, we predicted that participants would experience the highest level of regret in the post-counterfactual generation condition.

Study 4 used a quasi-experimental design in which we used the procedure of Experiment 3 but included both introverted and extraverted participants. According to our consistency-fit model, decisions that are inconsistent with decision-makers' personality orientation are more regrettable than are decisions that are consistent with these orientations. Staying home is consistent with the orientation of an introvert; therefore, introverted persons should find unfavorable outcomes associated with a decision to go out more regrettable than those associated with a poor decision to stay home and extraverted persons should find unfavorable outcomes associated with a poor decision to stay home to be more regrettable than a poor decision to go out. This study also provided an opportunity to further assess the role of counterfactual generation within this autobiographical retrospection paradigm.

Studies 2-4 also provided an opportunity to assess whether consistency manipulations play a role in determining the number of counterfactuals persons generate. For example, it may be the case that persons may think of more alternative realities when their decision was inconsistent with their goal states, moods, or personalities than when their decision was more consistent. If this is the case, then consistency might affect regret by influencing the number of counterfactuals generated. To assess this possibility, we measured both the number of counterfactuals participants generated as well as their judgments of the consistency of the decisions. Regression analyses were conducted to assess whether these factors were independent or redundant predictors of regret.

## **EXPERIMENT 1**

The consistency-fit conceptualization of regret is that it is a negative emotional state that results from a mismatch between a poor decision and the decision-maker's goals, mood-state or personality characteristics, as well as from the consequences that are associated with a decision that turns out poorly. When there is a mismatch, and thus a poor consistency-fit, decision-makers experience more regret than when there is not a mismatch. The following experiment tested the view that the congruence between a person's goal and his or her decision is a factor determining subsequent feelings of regret. In Experiment 1, participants read about a person who was either underweight or overweight and had made a New Year's resolution to change her eating habits and either gain (underweight condition) or lose (overweight condition) some weight. Then the target person made a decision to order a meal that was either high or low in calories, constituting a goal-consistent or inconsistent manipulation. We assess participants' judgments of the amount of regret the target felt about this decision when the meal turned out not to be especially tasty.

### **METHOD: EXPERIMENT 1**

#### **Participants, Design, and Procedures**

Sixty-two participants (25 women and 37 men) from Wake Forest University participated in Experiment 1 in exchange for partial credit toward their research option in Introductory Psychology. They were assigned randomly to one of two between subjects conditions: goal consistent or goal inconsistent decisions. Whether the goal was to lose or gain weight was counterbalanced within each of these conditions (between subjects) and each of these conditions was represented within the single session comprising the study.

Participants were informed that the study dealt with decision-making and, after informed consent was obtained, were asked to consider a situation in which a person was underweight (or overweight) and made a New Year's resolution to change her eating habits and either gain (or lose) some weight. A week later, she went to dinner with friends and had a choice between meals that cost just about the same but differed in the caloric content. The target was then described as having made a decision to order the meal with the most calories (which was goal consistent in the gain weight condition but was goal inconsistent in the lose weight condition) or was described as having made the decision to order the meal with the least calories (which was goal consistent in the lose weight condition and goal inconsistent in the gain weight condition). They read that this meal was not especially tasty and were asked how much regret they thought the person felt given her meal choice. We also measured whether participants felt they could relate to this situation, and how they judged the realism of the described scenario.

### **RESULTS AND DISCUSSION: EXPERIMENT 1**

Most of the participants found the situation described in this study to be realistic. The modal value of the realism question was 90 and the median was 80 (on a 100-point scale with higher numbers indicating higher realism judgments.)

Initial analyses found no significant effects of whether the goal described in Experiment 1 was to gain or lose weight; therefore this counter-balancing factor was not considered in further analyses. A one-factor ANOVA on the experimental conditions (goal consistent and goal inconsistent decision) was conducted, revealing a significant effect of this manipulation,  $F(1, 62) = 4.09, p < .05$ . As expected, participants judged the target as feeling the most regret when she had made a decision that was inconsistent ( $M = 65.31$ ) than when her decision was commensurate with her goal ( $M = 53.27$ ). [1]

The results of this study showed that judged regret levels were lower for poor decisions that were in line with goals than for poor decisions that were inconsistent with goals. These results were predicted from the assumptions of the consistency-fit model and suggest that the consistency-fit of a decision and resulting levels of regret may serve as cues operating within the monitoring or "test" phase of regulatory feedback loops (e.g., Baumeister & Heatherton, 1996; Carver & Scheier, 1981). Test phases necessarily involve comparisons of the actual state of the self to standards; therefore, comparisons indicating that poor decisions were at least of a type that were commensurate with these standards (i.e., were consistent) should be, and were, judged as less regrettable than poor decisions that were incongruent with goals. Experiment 1 supported this reasoning and provided support for a definition of regret that posits decision-consistency as a key determinant of regret.

## EXPERIMENT 2

The classic "Mr. Paul" stock switching vignette has been the paradigm most often utilized in early research on regret. In spite of the limitations of using scenarios, we decided that exploring a role for counterfactual generation and consistency relationships should be explored in this classic paradigm so that our results could be easily compared with these studies. In addition, people's perceptions of the emotions others experience are important in their own right and this method is appropriate for assessing this type of person perception. So, the classic "Mr. Paul" stock switching vignette was utilized with the modification that Mr. Paul was described as a risk-taker. Because we described the target as a risk-taker, we expected participants to judge his regret level to be relatively higher when Mr. Paul choose not to switch stocks (inaction) than when he choose to switch stocks (action condition). We took initial regret judgments after participants read about the poor outcomes of the target's decision. We then asked them to generate counterfactuals using typical procedures utilized in the study of counterfactuals (e.g., Roese et al., 1999). Following the counterfactual generation task, we asked participants to make another judgment about Mr. Paul's level of regret. The intervention of counterfactuals between the two regret measures was predicted to make counterfactuals accessible and salient and, therefore, increase participants' judgments of regret relative to their first responses.

## METHOD: EXPERIMENT 2

### Participants and Design

Sixty female participants from introductory psychology classes from a public University (UNCG) were assigned randomly to a 2 x 2 mixed-factor design. The between-participants component of the design consisted of two types of decisions (action/inaction) described as performed by a risk-seeking businessman. The salience of counterfactuals variable was manipulated within-subjects by asking participants to indicate their regret judgments before (nonsalient) and after (salient) they listed counterfactual statements.

### Procedure

Participants completed the experiment in small groups in the context of a study of person perception. All materials were presented in written form so that all conditions were represented within each session. Participants read a description of a businessman. These descriptions contained information that was virtually identical to that used by Kahneman and Tversky (1982). In the action vignette, participants read "Mr. Paul owned shares in Company B. During the past year, he switched to stock in Company A. He now finds that he would have been better off by \$1,200.00 if he kept his stock in Company B." In the inaction vignette, they read "Mr. Paul owned shares in Company A. During the past year he considered switching to stock in Company B—but he decided against it. He now finds that he would have been better off by \$1,200 if he had switched to Company B."

We added information about the decision-maker to this classic scenario. Participants read that the businessman was a person who enjoyed taking risks. They read "Mr. Paul loves to take risks. He has been known throughout his life as someone who was willing to take a chance. When he was in high school, his friends all categorized him as a risk-taker. At this point in Mr. Paul's life, he still likes to take chances."

After reading this information, participants proceeded to make consistency ratings about how consistent the target's decision was with respect to his preferred behavioral orientation: Participants were asked how consistent/inconsistent the decision (not switch stocks in the inaction condition or switch stocks in the action condition) was with the type of behavior that Mr. Paul typically desired. We used an anchored "101" point scale where "0" represented "very inconsistent" and "100" represented "very consistent." They also completed a decision-desirability measure.<sup>^</sup> It is important to note that they were not given information about the undesirable consequences of his decision until after they completed these measures. Participants were then given information about the outcomes of Mr. Paul's decision.

As in the classic scenario, the level of negative outcomes was the same in both conditions. In both action and inaction conditions, he would have been better off by \$1,200.00 if he made a different decision. Thus the objective quality of the poor outcome was identical in both scenarios. Following this information, participants were asked how much regret they thought Mr. Paul felt. For this question, we used an anchored "101"-point scale where "0" represented "not at all" and "100" represented "very much."

Next, participants were given a counterfactual generation task in which they were asked to imagine how the outcomes might have been different for Mr. Paul "if only . . ." They were given a blank sheet of paper and directed to list as many "if only" statements as they could think of, which is a typical counterfactual generation task. Finally, participants were given another questionnaire and were asked to make another judgment concerning how much regret Mr. Paul felt, using the scale described above for the initial regret rating.

## RESULTS AND DISCUSSION: EXPERIMENT 2

*Consistency Ratings.* Given the characterization of the decision-maker as having a risky personality, we expected that participants would think that his decision to switch stocks (act) was more consistent than his decision not to switch stocks (inaction). This was the case; ratings of consistency were higher in the action condition ( $M = 61.5$ ) than in the inaction condition ( $M = 32.1$ ),  $f(1, 59) = 23.7$ ,  $p < .0001$ .

*Regret Judgments.* Participants' judgments of regret were entered into a mixed-factor ANOVA including the between-subjects variable of decision type (action, inaction) and the within-subjects variable of counterfactual salience (pre- versus post-counterfactual generation). This ANOVA revealed a significant main effect of decision type (action/inaction),  $F(1, 58) = 14.81$ ,  $p < .001$ , in which decisions to not switch stocks (inaction) were rated as more regrettable,  $M = 77.3$ , than were decisions to switch stocks (action),  $M = 55.7$ . This outcome was predicted: given that the target—Mr. Paul—was described as being a risk-taker, inactions should have been, and were, more inconsistent with his personality orientation and were judged as especially regrettable. No other effects reached traditional levels of significance in this analysis; all  $F_s < 1$ .

*Mediation Analyses of Decision-Type (Action, Inaction).* We performed a regression analysis with action/inaction (dummy-coded) serving as the predictor variable and initial, pre-counterfactual, judgments of regret as the dependent variable. This analysis revealed that action/inaction was a significant predictor of regret,  $\beta = -.52$ ,  $p < .01$ , satisfying the first step in Baron & Kenny's (1986) procedure for mediation analysis (see David A. Kenny's website for further discussion). Following step 2 in this procedure, we then tested whether consistency, our potential mediator, was related to the outcome variable of regret. This regression demonstrated that consistency was significantly related to regret,  $\beta = -.64$ ,  $p < .01$ . Following the logic of the steps of the analysis, we then performed a regression analysis with action/inaction and consistency serving as predictor variables and judgments of regret as the outcome variable. Consistency predicted initial judgments of regret,  $\beta = -.42$ ,  $p < .01$ , and reduced the effect of decision-type (action/inaction) to a nonsignificant level,  $\beta = .05$ ,  $p < .70$ . The fact that consistency judgments reduced the action/inaction effect to a nonsignificant level suggests that consistency mediated the influence that the type of decision had on participants' perceptions of regret. As can be inferred from the negative beta value, the relationship between consistency ratings and regret was such that regret judgments increased as judged consistency decreased, in line with predictions from the consistency fit model. Using the Sobel test, we assessed whether the influence of consistency on regret (as a mediator) was significantly better than the action/inaction variable alone—this was the case, Sobel test statistic =  $-3.33$ ,  $p < .001$ . [3]

*Counterfactuals.* A similar analysis as described above was performed with counterfactuals as the predictor variable. In this analysis, we found no significant relationship between the number of counterfactuals generated and the action/no action effect in Step 1 of the Baron and Kenny analysis. This means that the number of counterfactuals was not a possible mediator or moderator of the decision-type. In this study, counterfactuals did not mediate the influence of decision-type on regret. However, we assessed how counterfactuals were related to regret pre- and post-counterfactual generation, independent of whether regret was due to an action or inaction (i.e., decision-type). In this analysis, action/inaction (dummy-coded) and number of counterfactuals generated served as predictor variables and the difference between participants' pre- and post-counterfactual generation regret judgment was the outcome variable. Results revealed that counterfactuals significantly predicted the difference between initial (pre-counterfactual) and later (post-counterfactual) judgments,  $\beta = .31$ ,  $p < .01$ . As can be inferred from the positive beta value, there was a positive relationship between the number of counterfactuals generated and increases in participants' judged regret from their pre- to their post-counterfactual generation response.

### **EXPERIMENT 3**

In Experiment 2, we used a modification of Kahneman's classic stock switching paradigm. This is a classic paradigm, and perceptions of others' emotions are important in their own right. However, assessing the roles of consistency and counterfactuals in a more personally-relevant paradigm is desirable. Therefore, Experiment 3 was conducted using participants' retrospection of their own real-world experiences of regret. In the present experiment, we explored how these retrospections were affected by consistency relationships and the salience and number of counterfactuals generated.

We asked our participants to recall a situation in which they were in a happy and active mood and made a decision to stay home (inaction condition) or to go out (action condition) for the evening. This procedure has been used in previous research and has been shown to be a valid paradigm that reflects participants' own experiences of regret (e.g., Roese et al, 1999). In addition to being realistic, this kind of situation represents a circumstance in which we would predict and have found an "inaction" effect in regret (Seta et al., 2001). This "inaction" effect is not as common and is not the effect predicted from classic norm theory (see also Gilovich & Medvec, 1994; Zeelenberg, Dijk, van Bos, Vanden, & Peters, 2002).

According to Kahneman and Miller (1986), inaction is typically the normal state of organisms; therefore, actions are usually higher in mutability than are inactions and should therefore produce higher levels of regret. However, in keeping with the idea that the consistency relationships between decisions and aspects of the self are important determinants of regret, inaction can often produce higher levels of regret than action. In this experiment, we again set up a situation in which we expected inaction decisions to be less consistent than action decisions. Participants were asked to think about a time when they felt happy and active, and made a decision to either go out for the evening or to stay home.

Pre-testing indicated that both of these situations are realistic to students and that the vast majority can recall times in which they made these kinds of decisions and things did or did not turn out well. In this context, we expected that when our student sample looked back on making a decision to go out while in a happy and active mood, they would rate this decision to be more consistent than decisions to stay in for the evening. Taking action was predicted to be the kind of decision that fit with their prevalent mood states and their goal to maintain this mood state. Therefore, we predicted that participants would express more regret from poor decisions they made to refrain from acting (i.e., not going out) than from acting (going out). In contrast to Study 2, which included a within-participants manipulation of counterfactual generation, Study 3 employed a between-participants manipulation of this variable, asking half of our participants to generate counterfactuals before indicating regret and asking half to generate counterfactuals after indicating their regret.

## METHOD: EXPERIMENT 3

### **Participants and Design**

Participants were 241 undergraduates, 100 males and 141 females, who were enrolled in introductory psychology courses at a small private university (Wake Forest University). Students volunteered as an option for completing research class requirements. A 2 x 2 between subjects design was used to assess the effects of decision-type (action/inaction) and counterfactual salience (regret ratings taken either before or after counterfactual generation). The primary measured variables were decision consistency, regret levels, and the number of counterfactuals generated.

### **Procedure**

Participants completed the experiment in small groups and were assigned randomly to conditions. Materials were presented in written form so that all experimental conditions could be (and were) presented in every session. Participants were asked to write down six statements that described themselves when they felt happy and active. Following this procedure, participants were asked to think back to a situation in which they were at home and contemplated going out for the evening. We directed them to think back to a time in which they were feeling active and happy and decided to either go out (action condition) or to stay home (inaction condition) but had learned that they would have had a better time if they had made the opposite decision.

Procedures then diverged; half the participants were asked to generate counterfactuals (counterfactual salience condition) and half made regret responses without generating counterfactuals (counterfactual not salient condition). Regret ratings were made on the same type of scale as described in Experiment 2 and the counterfactual instructions were identical to those used in this previous experiment.

## RESULTS AND DISCUSSION: EXPERIMENT 3

A 2 X 2 between-subjects ANOVA was conducted in which participants' regret response was the dependent variable. The design included the between-subjects variables of counterfactual salience and of decision-type: to act (go out) or not to

act. As predicted, the ANOVA revealed a significant main effect of decision-type on regret,  $F(1, 236) = 19.22, p < .01$ , in which participants in the inaction condition expressed more regret about their decision ( $M = 60.3$ ) than did those in the action condition ( $M = 47.6$ ). In addition, a significant main effect of counterfactual salience was obtained,  $f(1, 236) = 4.34, p < .05$ ; participants reported feeling more regret after generating counterfactuals (counterfactuals salient) ( $M = 57.0$ ) than when they did not generate counterfactuals before making their judgments ( $M = 50.9$ ). This result indicates that making counterfactuals salient by explicitly asking participants to list alternatives augments their feelings of regret. The interaction between counterfactual salience and decision-type did not approach significance,  $F < 1$  (see Table 1 for the cell means).

### Mediation Analyses

We performed a series of regression analyses to assess the role of consistency and counterfactuals in mediating action/inaction regret. The first regression revealed that decision-type (dummy-coded in terms of the action/ inaction condition) was a significant predictor of regret,  $\beta = .271, p < .001$ , fulfilling step one of Baron and Kenny's (1986) mediation analysis procedure. Following step two, we then assessed whether consistency, the hypothesized mediator, was significantly related to the decision-type regret effect which was the case,  $\beta = -.691, p < .001$ . Finally, we assessed whether the decision-type effect was reduced to a nonsignificant level when consistency scores were entered in to the regression equation, following Baron and Kenny's filial procedural steps. The outcome of this analysis revealed that the action/inaction effect (decision-type) was reduced to a nonsignificant level,  $\beta = .013, p < .874$ , while consistency ratings remained significant,  $\beta = -.373, p < .001$ . Using the Sobel test, we found that the addition of consistency as a mediator was significantly better than the manipulated variable of act/no act alone, Sobel statistic = 2.47,  $p < .02$ . Thus, these analyses suggest that the consistency of the decision mediated the effect of decision-type(action/inaction)on regret.[4]

We performed a similar set of regression analyses assessing the role that counterfactuals played in predicting regret-levels. Because only half of our sample generated counterfactuals prior to making regret judgments, we included only these participants in these regressions,  $n = 115$ . For this sample, decision-type (dummy-coded in terms of the act/ inaction condition) did influence regret,  $\beta = .239, p = .01$ ; therefore, there was a significant effect to explore, fulfilling step one of Baron and Kenny's (1986) procedure.

Decision-type was significantly related to the number of counterfactuals generated,  $\beta = -.220, p < .05$ , establishing counterfactuals as a potential mediator of this effect. We then tested whether counterfactuals mediated the effects of the decision-type effect on levels of regret by performing a simultaneous regression analysis including decision type (dummy coded) and the number of counterfactuals generated as predictor variables with regret levels as the dependent variable. In this regression, the decision-type variable remained a significant predictor of regret,  $\beta = .289, p < .01$ , suggesting that counterfactuals did not mediate the effect of decision-type on regret levels. Importantly, however, counterfactuals did not drop-out as a significant predictor in this equation; the number of counterfactuals generated remained a significant predictor of overall levels of regret,  $\beta = .126, p < .05$ . So, even though the number of counterfactuals did not mediate the effect of decision-type (action/inaction) per se, counterfactuals were associated with and predicted

regret levels. The positive beta value indicates that regret levels increased as the number of counterfactuals generated increased. This finding adds further support for the idea that the production of counterfactuals can function as an affective cue influencing feelings of regret.

## STUDY 4

From the consistency-fit perspective, regret follows from the relationship between salient characteristics or states of an individual and the nature of the decision the individual makes. The same decisions can be consistent for some persons and not others. The aim of Study 4 was to assess the role of the consistency between personalities and types of decisions in producing feelings of regret. Specifically, we investigated the relationship between the personality dimension of extraversion/introversion and the types of decisions that would produce regret.

**TABLE 1. Means and Standard Deviations of Regret Ratings as a Function of Type of Decision (Action/Inaction) and Whether Regret Ratings Were Taken Before (Pre) or After (Post) Generating Counterfactuals (Experiment 3)**

Type	Means		SDs	
	Pre	Post	Pre	Post
Action	43.61	53.02	21.35	19.78
Inaction	58.03	62.46	23.01	24.61

*Note.* Regret ratings could range from 0 to 100 with higher numbers indicative of higher levels of regret.

Perhaps the most widely-used measure of individual differences in personality is the Big Five personality inventory (Goldberg, 1992). The "Big Five" is a five-factor model of the structure of personality that was developed via factor analysis of 1600 trait-descriptive adjectives (see Wiggins & Trapnell, 1997) and includes the dimensions of agreeableness, conscientiousness, neuroticism, openness to experience, and sociability (extroversion/introversion). Researchers have demonstrated these five traits to be relatively stable across situations (e.g., Mischel & Shoda, 1995), across cultures (e.g., Costa, Terracciano, & McOae, 2001) and over time (e.g., Caspi et al., 2003; McCrae et al., 2000).

One trait that may be especially relevant to experiences of regret in the context of decisions to act or not to act is the personality domain of extroversion/introversion. Extroversion/introversion is the social domain of personality and is characterized by sociability and assertiveness (Costil & McCrae, 1980). Extroverts are more active than introverts across different contexts. In an investigation of approach/avoidance tendencies in conjunction with the Big Five traits, Carver, Sutton, and Scheier (2000) found extroversion to be positively correlated with "approach" behaviors, which indicates an orientation towards action. This research suggests that extroverts may find poor decisions related to inaction (e.g., staying home) more inconsistent and regrettable than decisions related to action (e.g., going out). Similarly, introverts may find poor decisions related to going out (action) more inconsistent and regrettable than those related to staying home (inaction).

In the following study, we asked participants to retrospect on their past decisions to go out or to stay home similar to the procedures of Experiment 3. Additionally, participants were classified as introverts or extroverts based on their responses to a Big Five trait measure. We expected this personality variable to interact with the decision-type variable. In addition, we included a within-subjects factor of the salience of counterfactuals (pre- and post-counterfactual generation). Our expectation was that the generation of counterfactuals would magnify regret for both introverts and extroverts in the context of both decisions to act or not act.

## METHOD: STUDY 4

### **Participants and Design**

Participants were 149 undergraduates enrolled in introductory psychology at Wake Forest University. Students earned partial course credit toward the research option in introductory psychology in exchange for their participation in the study. Prior to their participation in the study, the students took part in a large mass testing sessions in which the "Big Five" inventory was administered. Participants were not selected for the study on the basis of their scores on this inventory, but only students who had been in mass-testing were eligible to enroll in this study.

A quasi-experimental 2 x 2 x 2 design was employed including the between-subjects factors of decision-type (action/inaction) and introversion/extroversion. Counterfactual salience (generation pre- or post-regret measurement) was manipulated within-subjects as was the case in Experiment 2. Measured variables were decision consistency, regret levels, and the numbers of counterfactuals generated.

### **Materials and Procedure**

Following informed consent, participants completed a modified version of Goldberg's (1992) Big Five personality inventory identical to that used in mass testing. This inventory consists of 60 words, 12 words pertaining to each of the Big Five personality traits (extroversion, neuroticism, conscientiousness, openness, and agreeableness). Participants read instructions telling them to rate how accurately each word describes them, with 1 being "extremely inaccurate" and 9 being "extremely accurate." The full version of this inventory has been demonstrated to be reliable on all five measures, with a test-retest reliability of .90-.92 for extraversion (Goldberg, 1992).

Participants were given written packets containing instructions so that all manipulated variables could be represented within each session. Each question/instruction was located on a separate page of the packet. First, participants were asked to think about a situation in which they were at home and contemplated going out for the evening. The decision-type manipulation was realized by directing participants to recall making the choice to either go out (action) or to stay home (inaction). In both cases, they would have had a better time if they had made the opposite decision. These instructions were similar to those used in Experiment 3 with the exception that there was no manipulation of mood and no mention of mood maintenance as a goal in the setting. In addition, this study used a within-subjects manipulation of counterfactual generation, similar to that used in Experiment 2.

Following retrospections, all participants were asked to rate their decision's consistency with respect to their general personality characteristics. This rating was made on an anchored "0—very inconsistent" to "100—very consistent" scale. Next, all participants were asked to give a regret rating concerning how much regret they felt about their decision. This rating was made on an anchored "0—none at all" to "100—very much" scale. Following these responses, participants turned the page, and were asked to generate counterfactuals by completing as many "if only" statements as they found possible. Following this task, another regret rating was obtained (on a different page) using the scale described above.

## RESULTS

### **Descriptive Analyses**

We assessed the test/retest reliability of the extraversion dimension of Goldberg's (1992) Big Five inventory by obtaining two scores from each participant: One was acquired during mass testing sessions at the beginning of the semester and the other was acquired during the experiment that took place several weeks later. The correlation between participants' extraversion scores obtained at each of these times was significant,  $r = .87$ ,  $p < .001$ , showing good test-retest reliability for this scale.

### **Primary Analyses**

One participant was excluded from this analysis because of missing data and two other participants were excluded because their regret scores were 2 SDs from the mean; they reported zero levels of regret. A regression analysis was performed to assess the relationships between extraversion levels, decision-type (dummy-coded) and pre-post counterfactual generation scores (outcome variables). This analysis revealed a significant effect of decision-type on regret levels  $F = 3.88$ ,  $p = .05$ , a significant effect of extraversion level on regret,  $F = 7.35$ , but more importantly indicated an interaction between these predictor variables,  $F = 4.29$ ,  $p < .04$ . (When the two participants whose regret levels were reported as zero were included in the analysis, the interaction effect was  $p < .08$ .) As can be seen in Table 2, introverts regretted poor decisions to go out more than decisions to stay home whereas extraverts regretted poor decisions to stay home more than to go out. This finding supports the view that the consistency of a decision in relation to personality orientations determines what kinds of poor decisions produce more or less regret.[5]

We also analyzed pre- and post-counterfactual generation regret scores as a repeated measure (ANOVA) and found a significant main effect of counterfactual salience,  $F(1, 144) = 6.10$ ,  $p = .015$ : regret ratings given after counterfactual generation ( $M = 57.2$ ) were higher than those given before counterfactual generation ( $M = 54.0$ ). This finding conceptually replicates the results of the prior two studies and suggests that generating counterfactuals can augment regret levels.

### **Subsidiary Analyses**

Our hypothesis suggests that regret following a negative outcome occurs as the result of personality-behavior inconsistency. Thus, we conducted a Pearson correlation analysis on participants' self-rated consistency and initial regret level. As predicted, this analysis revealed a significant negative correlation,  $r = -.268$ ,  $p < .001$ , indicating that, as predicted, regret increased as consistency ratings decreased.

We also performed an analysis of the number of participants who scored at or above the median or below the median number of counterfactuals that were generated (Median = 5) and whether these participants increased or decreased their regret ratings following generating these counterfactuals. As would be expected if the number of counterfactuals generated served as an affective cue for regret, there tended to be more participants who decreased versus increased their regret ratings after generating below median numbers of counterfactuals than was the case for participants who generated above or median value counterfactual numbers, Chi-square = 3.51 (1),  $p = .061$ . Although not significant, participants who generated more counterfactuals tended to increase their regret ratings. This pattern duplicates that seen in Experiment 2 and suggests that the number of counterfactuals generated can serve as affective cues that influence feelings of regret.

**TABLE 2. Study 4: Regret Levels Reported by Introverts and Extraverts as a Function of Decisions to Act (Go Out) or Not Act (Stay Home)**

	Mean regret rating		Standard deviation	
	Act	No Act	Act	No Act
Introverts	63.9	55.3	3.9	3.8
Extraverts	45.7	57.7	3.8	3.8

Note. Regret ratings could range from 0 to 100 with higher numbers indicative of higher levels of regret.

We also analyzed regret levels in the identical design as described, with the exception that we substituted participants' level of "agreeableness" for the dimension of "sociability." There were no effects of this personality factor. Thus, the consistency relationship operative in this study was indeed due to the relationship between participants' level of sociability and their decisions to go out or stay home.

#### DISCUSSION: STUDY 4

Study 4 examined the consistency-fit model of regret in conjunction with the Big Five personality traits of extraversion/introversion and in the context of a decision related to sociability. We found that the consistency of the decision (to stay home or to go out) with respect to participants' sociability orientation affected regret levels in a manner expected from the view that consistency-fit is an important determinant of feelings of regret. Higher levels of regret were associated with lower ratings of consistency. Regret levels following both decisions to act (go out) or to refrain from acting (stay home) differed depending upon whether that decision was consistent or inconsistent with the participants' sociability orientation. Thus, an important determinant of regret following a negative outcome is not simply whether or not an action occurred, but whether or not individuals' decisions are consistent with their personality orientation—in this case, sociability orientations. In addition, the finding that regret levels given after counterfactual generation were higher than those given before counterfactual generation provides evidence that the salience of counterfactuals influenced regret. In doing so, these results provide further evidence for the idea that counterfactuals can serve as affective cues affecting regret levels.

It also is important to note that the domain of the decision explored in this study was related directly to the individual differences measured. So, for example, we would not necessarily expect decisions to act or not act that are unrelated to sociability to be affected by the personality dimension measured in this study. The domains of action that are differentially regrettable for extraverts versus introverts are an interesting research topic but are beyond the scope of the present paper.

## **GENERAL DISCUSSION**

The present research supported the idea that consistency-driven processes and counterfactual generation are both important for understanding the level of regret experienced following poor choices and extends previous work in several ways. Prior studies testing the idea that consistency-fit influences levels of regret (e.g., Seta et al., 2001) did not implicate motives to change from a person's normal state. Experiment 1 extended the consistency-fit analysis into the domain of goal-related motives to change normative behaviors. In this study, decision makers had a goal to change their eating habits and then made a decision to order a meal that either was consistent or inconsistent with their goal. In all cases, the meal turned out to be undesirable and thus the decision was a poor one. As predicted, the target person whose decision was typical but inconsistent with her goal was judged to have an especially high level of regret. Thus, this finding provided support for the idea that feelings of regret derive from the consistency of decisions in relation to decision-makers' goals.

As discussed in the Introduction section and seen in Experiment 1, the role of consistency in determining regret may be functional in a self-regulation system, providing information about whether one's decisions are in line with desired goals or standards. The consistency-fit of a decision and resulting levels of regret may serve as cues operating within the monitoring or "test" phase of regulatory feedback loops (e.g., Baumeister & Heatherton, 1996; Carver & Scheier, 1981). Test phases necessarily involve comparisons of the actual state of the self to standards; therefore, comparisons indicating that poor decisions were at least of a type that were commensurate with these standards (i.e., were consistent) should be less regrettable than those that were incongruent with these goal states. If regret operates within a self-regulation system, feelings of regret may provide direction for our behaviors by moving us away from choices that do not fit our goals and towards those that do, regardless of whether the decision is to change or to maintain current or typical state of being.

In addition to providing evidence for the consistency fit perspective, the results of Experiments 2-4 provided evidence that the production of counterfactuals influenced regret levels. One way to understand this influence of counterfactuals is to conceptualize them as affective cues intensifying (or minimizing) feelings of regret. Assuming that counterfactuals can be affective cues places them under the umbrella of Sanna and Schwarz's (2004) theoretical analysis of several judgment biases (Sanna, Schwarz, & Small, 2002; Sarma, Schwarz, & Stocker, 2002), in which they highlight the common mechanisms underlying confidence changes, planning fallacies, impact bias, and hindsight biases. They suggest that the interaction between thoughts about focal events and alternative events, as well as the ease or difficulty

with which such thoughts come to mind, are responsible for the emergence of these biases.

It may be the case that consistency-driven processes are especially influential in determining the *kinds* of decisions that are regretted (e.g., actions vs. inactions) whereas, when they are salient, counterfactuals may increase the overall level of regret. We did not find evidence in these studies that consistency influenced the number of counterfactuals that were generated. That is, people did not generate more counterfactuals when decisions were inconsistent versus consistent. And regression analyses revealed that consistency and the number of counterfactuals generated were independent predictors of regret—consistency manipulations mediated the kinds of decisions that were most regrettable whereas the number of counterfactuals generated influenced the overall levels of regret. Further research can be directed toward further exploration of these roles. For example, focal attention to the decision-making process may increase the weighing of consistency factors in determining regret whereas focal attention directed at the outcomes of the decision per se may increase the weighing of counterfactuals in determining the intensity of regret. Furthermore, other dimensions of counterfactual generation, (e.g., the ease with which they come to mind) may also play a role in regret.

*Comparisons to Alternative Approaches.* This consistency-fit analysis of regret differs from previous conceptualizations in several important ways. In contrast to economic or rationale perspectives, the amount of negative affect experienced from poor decisions is *not* determined solely by the loss (e.g., Bell, 1982). Rather, the relationship between the nature of the decision and the nature of the decision-maker also must be taken into consideration (e.g., a conservative investor should feel more regret than a risk-taker when his investments in volatile stocks plunge). Our analysis follows in the tradition of classic consistency models (e.g., Festinger, 1957) that highlight the important role those relationships between characteristics of a person (e.g., her attitudes, etc.) and behavior (e.g., decisions) play in determining affective reactions.

According to a consistency-fit perspective, the relationship between the decision and a standard—decision-makers' goals, moods, or personality characteristics—can determine the normativeness of a decision. Thus, when it is important for individuals to change their normal way of being, the consistency of a decision would be determined in relation to goals to change, rather than what is normal or typical for that person. The goal of changing would be the accessible and important dimension of comparison, as was seen in Experiment 1. In this case, what is "normal" is not what is "typical" but what should follow from decision-makers' goals. In providing insight into what is normal, the consistency-fit perspective helps to refine our understanding of normality, which is of course a key concept within norm theory (e.g., Kahneman & Miller, 1986). Normality can be seen as a contextually determined dimension affecting judgments and emotions, such as regret.

## NOTES

1. We intended to include a measure of participants' perceptions of how consistent the target's decision was with her goal of changing her eating habits as a manipulation check. However, there were errors in the wording of this question that prevented a meaningful interpretation of this measure. We presented a separate group of 36 participants with similar scenarios as used in Experiment 1, manipulating whether the target's meal choice was consistent or inconsistent with her goal of losing weight. Measures of the consistency of her decision with respect to her goal were taken and revealed a significant correlation with the goal consistency manipulation,  $r = .82$ ,  $p < .01$ , such that participants thought that the choice to order a high caloric meal was more inconsistent with the target's goal to lose weight than the choice to order a low caloric meal.

2. Participants were given a measure of decision desirability after their consistency ratings. They were asked how sad or happy they believed Mr. Paul felt after his decision, using a 101 point scale anchored with "0" "very sad" to "100" "very happy."

3. A conceptually identical mediation analysis with action/inaction and desirability serving as predictor variables and judgments of regret as the dependent variable was conducted to determine whether desirability ratings were also a significant mediator of action/inaction effects. Desirability was expected to mediate this relationship because affective quality should be related to the consistency of the decision (see Seta et al., 2001). As expected, desirability predicted regret judgments,  $\beta = -.33$ ,  $p < .01$ , and reduced the action/inaction predictor variable to a nonsignificant level,  $\beta = .22$ ,  $p < .10$ . As desirability increased, judgments of regret decreased. Thus, both consistency and desirability mediated judgments of regret.

4. Participants also were asked to rate how desirable their decision was in terms of their goal to have a good time on that occasion. Similar procedures were applied to assess whether desirability ratings also mediated decision-type effects. Desirability was a significant predictor of regret levels in decisions to act or not act,  $\beta = -.514$ ,  $p < .001$ , and, as revealed in the first analysis, decision-type significantly predicted regret,  $\beta = .271$ ,  $p < .001$ . When desirability was entered into a regression analysis with decision-type, action/no action dropped out as a significant predictor,  $\beta = .048$ ,  $p = .476$ , while desirability remained significant,  $\beta = -.434$ ,  $p < .001$ . This suggests that desirability of the decision also mediates the effects of decision-type.

5. To be certain that these results were not an artifact, and that the personality dimension of extraversion/introversion was the critical dimension defining the behavioral consistency, we performed the analysis described above using the dimension of "agreeableness" on the Big Five inventory. No significant main effects or interactions involving this variable were found,  $F < 1$ , supporting the conclusion that consistency in relation to participants' degree of sociability was the critical factor in this study.

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