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Two studies provide evidence that reconstructive memory contributes to the hindsight bias. In the first study, participants read identical scenarios that either had no ending or ended with a rape. Those receiving the rape ending reconstructed the story to be more stereotypically associated with rape than did those in the no-ending condition. In the second study, participants read an identical scenario that ended in a marriage proposal or a rape. Participants' memories of the events in the story were reconstructed to be stereotypically consistent with whichever ending they received. The hindsight bias was obtained in both studies; participants rated the ending they received as more likely than participants not receiving that ending. For both studies, regression analyses revealed causal paths in which the ending of the story predicted stereotypical memories, which predicted the hindsight bias. The hindsight bias predicted derogation of the characters in the stories.

When people are told the outcome of a series of events and then are asked to rate the probability of possible outcomes as if they did not know the actual one, they typically are unable to ignore their knowledge of the outcome and judge it to be as predictable in foresight as with the benefit of hindsight (Fischhoff, 1975; Fischhoff & Beyth, 1975). This phenomenon, called the hindsight bias, is a well-documented finding that occurs because people form causal links between the outcome and the events leading up to it (Hawkins & Hastie, 1990). In the present studies, I tested the possibility that hindsight is also a function of reconstructive memory, specifically, causal links that people form between the outcome and antecedents that did not actually occur but that are stereotypically associated with the outcome. I also examined the relation of the hindsight bias and memory reconstruction to reactions to victims and perpetrators.

Hindsight Bias

Much research has been published on the hindsight bias and the conditions under which it occurs (see Christensen-Szalanski & Willham, 1991; Hawkins & Hastie, 1990). In studies examining this effect, participants cannot ignore their knowledge of the outcome and rate it as relatively inevitable, often viewing the outcome to be as predictable in foresight as with the benefit of hindsight (Fischhoff, 1975). In fact, in hindsight, people overestimate how accurate their foresight predictions were, essentially judging themselves to have known the outcome all along (Fischhoff & Beyth, 1975).

According to Fischhoff (1975), the hindsight bias occurs because once people know about an outcome, they automatically form causal connections between the outcome and the events leading up to it, causing the outcome and its antecedents to then seem inextricably linked. Therefore, when participants are told to ignore the outcome, those antecedent events appear to lead inevitably to it and it continues to be seen as highly probable. In effect, the hindsight bias is the tendency to view an outcome as relatively inevitable, given particular antecedent events (Sherman & McConnell, 1995).

Subsequent research has supported Fischhoff's contention that the hindsight bias depends on causal con-

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nections between outcomes and antecedent events (Hawkins & Hastie, 1990). In hindsight, conditions leading to the outcome become relatively available to memory and therefore more difficult to ignore than with foresight (Agans & Shaffer, 1994). The hindsight bias increases when research participants are presented with an increased number of antecedents that appear to be causally linked to the outcome (Nario & Branscombe, 1995) and when participants imagine how changes in the antecedents could result in changes in the outcome (Roese & Olson, 1996). Similarly, the bias decreases when links between antecedents and outcomes are weakened (Arkes, Faust, Guilmette, & Hart, 1988; Carli & Leonard, 1989; Nario & Branscombe, 1995; Wasserman, Lempert, & Hastie, 1991).

Once research participants know an outcome, they attempt to explain and make sense of it (Fischhoff, 1975; Hawkins & Hastie, 1990). This sense-making involves coming up with causes of the outcome, typically by recalling antecedent conditions presented by the researcher that appear to lead to the outcome and ignoring or disregarding antecedents that do not. Selective memory for information consistent with outcomes has been found before. Participants given the same scenarios but different outcomes have better memory of scenario details that are consistent with the outcome they received than those that are inconsistent with the outcome (Dellarosa & Bourne, 1984).

An unexplored possibility is that the hindsight bias also may result from antecedents that were not actually presented to participants but that they themselves add when they hear about the outcome. That is, in addition to forming causal links between the outcome and antecedents presented to them by the researcher, participants may add antecedents that seem stereotypically causally connected to the outcome. These misremembered antecedents may further bolster the hindsight bias by elaborating and strengthening participants' memories of the outcome.

No study examining the hindsight bias has tested the possibility that receiving outcome information alters memory of antecedent events or that the reconstruction of memory leads to the hindsight bias. However, considerable research has revealed that memories are altered and embellished according to schemas. That is, when a schema is invoked, people systematically misremember information about events and people, adding information that is consistent with that schema. In one study, for example, college students were given a story about a young woman named Nancy; in some cases, the story contained the information that she might be pregnant. In recall tests, participants who read about Nancy's possible pregnancy added to the story to make it consistent with their stereotypical or schematic beliefs about pregnancies, whereas participants who were not given this information about Nancy did not (Owens, Bower, & Black, 1979). In general, people remember information that is consistent with schemas more than information that is inconsistent (Cohen, 1981; Cohen & Ebbesen, 1979), and their memory of inconsistent information is reduced when a schema is invoked (Bodenhausen & Wyer, 1985).

Explanations for the effects of schemas on memory parallel explanations for the effect of outcome information on the hindsight bias. Schematic effects on memory occur because people tend to think about the information conveyed by the schema, to process it, and to attempt to make sense of it. This leads to a strengthening of information that is consistent with the schema and bolsters memory for that information (Srull & Wyer, 1989). Research reveals that schemas affect both recall (Bodenhausen & Lichtenstein, 1987; Cantor & Mischel, 1977; Rothbart, Evans, & Fulero, 1979) and recognition memory (Anderson & Pichert, 1978; Howard & Rothbart, 1980; Rothbart, Sriram, & Davis-Stitt, 1996) and that they operate both when the schematic information is presented at encoding (Bodenhausen & Lichtenstein, 1987; Howard & Rothbart, 1980; Rothbart et al., 1996) or when it is presented later, when the memory is retrieved (Anderson & Pichert, 1978; Howard & Rothbart, 1980; Snyder & Uranowitz, 1978).[1]

Although hindsight has not been measured in studies examining the effect of schemas on memory, researchers claim that the hindsight bias involves cognitive reconstruction, a rewriting of the events leading up to the outcome to make the outcome seem more plausible (Fischhoff, 1975; Hawkins & Hastie, 1990). The major goal of the present research was to test whether this rewriting actually occurs and whether memory reconstruction, misremembering stereotypical antecedent event, strengthens the hindsight bias. A second goal was to determine whether the hindsight bias, in turn, affects derogation of a victim and a perpetrator after a negative outcome.

Victim Derogation

Research has repeatedly documented the tendency of observers to derogate victims (Bennett & Dunkel-Schetter, 1992; Finerman & Bennett, 1995; Janoff-Bulman & Frieze, 1983). One factor that has been found to contribute to victim derogation is the hindsight bias (Carli & Leonard, 1989; Janoff-Bulman, Timko, & Carli, 1985). In a study by Carli and Leonard (1989), participants read a story that ended with a woman being raped,

being taken home, or receiving a job promotion. The hindsight bias and victim derogation were obtained and regression analyses revealed that the hindsight bias predicted derogation; the more likely the rape outcome (and the less likely the promotion or take-home outcomes), the more participants derogated the woman, particularly the woman's behaviors.

One reason the hindsight bias predicts derogation is that the bias may lead observers to view the negative outcome as relatively foreseeable (Carli & Leonard, 1989). Observers may wonder, given the apparent foreseeability of the outcome, why the victims did not do something to prevent the misfortune. Indeed, perceived foreseeability has been found to mediate the extent to which observers derogate victims (McCaul, Veltum, Boyechko, & Crawford, 1990).

Another explanation for the link between derogation and hindsight is that observers may view the behaviors of the victim as causal antecedents to the outcome. In the studies linking blame to hindsight, participants were given scenarios that included behaviors of the victim that could be causally linked to the outcome. For example, in the Carli and Leonard (1989) study, the woman in the scenario hugged her boss, drank alcohol, and went to his house before he raped her. Because the strength of the hindsight bias depends on forming causal links between the outcome and antecedent events, participants who form these causal links, and therefore exhibit the hindsight bias, are likely to view the victim as engaging in behaviors that cause the negative outcome. Given the apparent causal link between the victim's behaviors and the hindsight bias, I would expect derogation to be more directly associated with hindsight than with memory of stereotypical antecedents. Nevertheless, although previous research has revealed that there is a relation between the hindsight bias and victim derogation, past research has not demonstrated whether this relation is directly due to hindsight, as my argument has suggested, or whether derogation depends more directly on the addition of stereotypical antecedents to memory.

STUDY 1

In the first study, participants read about a man and a woman in a story that either had no ending or ended with the man raping the woman. Later, participants completed questionnaires measuring the hindsight bias, their memory of actual events in the study, and their memory of events that were not present in the story but were stereotypically associated with rape.

Hypothesis 1: Participants receiving the rape outcome will report more stereotypical antecedents that are representative of rape than will participants receiving no ending to the story.

Hypothesis 2: The hindsight bias will be found. Participants receiving the rape outcome will rate that outcome as more likely than those receiving no outcome.

Hypothesis 3: The behaviors and characters of the woman in the story will be derogated to a greater extent in the rape condition than in the no-ending condition.

Hypothesis 4: Participants' memories of the antecedents will predict the hindsight bias and mediate the relation between the outcome condition and hindsight. The more participants misremember antecedents stereotypically associated with rape, the more they will rate the rape outcome as likely.

Hypothesis 5: The hindsight bias will predict participants' ratings of the behaviors and character of the woman in the story. The greater the likelihood of rape, the less positive the ratings will be.

METHOD

Pretest to Select Stereotypical Antecedents

I conducted a pretest to identify behaviors or characteristics that are stereotypically representative of rape. Four student judges came up with as many stereotypical beliefs as they could think of associated with rape and then reached consensus on what they considered the 15 beliefs most representative of rape. A 15-item multiple-choice questionnaire was then developed based on the measure used by Snyder and Uranowitz (1978). The pretest questionnaire asked participants to read each of the 15 items and indicate how consistent it was with cultural beliefs about a rape in which a man rapes a woman; they were told to give stereotypical beliefs, not their personal opinions. Each item had three possible answers: the one identified by judges to be associated with rape and two other filler items. For example, one item read, "They went on a date to a (a) restaurant, (b) movie, or (c) bar," with the bar answer representing the belief stereotypically representative of rape. Using 7-point scales, 24 introductory psychology students rated how stereotypical each item was of rape with scales ranging from 1 (*not at all stereotypical of rape*) to 7 (*very stereotypical of rape*). A repeated-measures ANOVA, treating the three answers for each item as a repeated measure, was conducted separately on each of the items. In all cases, the ANOVAs revealed significant effects for the answer to the item, with F statistics ranging from $F(2, 46) = 7.59$, $p < .001$ to $F(2, 46) = 153.30$, $p < .001$. Contrasts conducted on the items revealed that, in every case, the rape answer was judged to be more stereotypically associated with rape than the two filler answers, with t statistics ranging from $t(46) = 3.88$, $p < .001$ to $t(46) = 16.69$, $p < .001$. The items are presented in Table 1.

Scenario

A two-page scenario was written about a young woman named Pam and an encounter that she had with a man named Peter. The case history included background

TABLE 1: Rape Stereotypicality Judgments for Study 1

	Mean	
Belief Stereotypically Representative of Rape	*Rape Item*	*Filler Items*
The woman has a voluptuous figure	5.63	3.58
The man has a blue-collar job	5.96	2.98
They went on a date to a bar	6.33	3.46
The man has not had sexual relations in a while	6.00	2.90
They met at a bar	6.46	2.07
His family is working class	6.25	3.19
His income is below average	6.08	3.54
The woman's highest level of education is a high school degree	5.41	3.15
The woman has a blue-collar job, such as a waitress	5.54	3.06
On the date, the man had several alcoholic beverages	6.29	2.92
The man's highest level of education is a high school degree	6.13	2.98
On the date, the woman was dressed suggestively	6.17	2.94
On the date, the woman wore a dress	6.00	3.31
On the date, the woman had several alcoholic beverages	6.04	3.46

NOTE: Participants' ratings of each of these items are presented in the Rape Item column and their ratings of the two other filler items are presented in the Filler Item column. All ratings reflect how stereotypical items are of rape.

information about Pam and a description of her date with Peter. The scenario, which was a first-person account presumably taken from an interview with Pam, included information about Pam's family, hobbies, and living situation. While having drinks at a club one night with her roommates, she met an acquaintance named Peter. Pam and Peter danced and talked and Pam gave Peter her telephone number. When Peter asked her out, she accepted, suggesting that they go dancing at the club. On the night of the date, Pam wore a new outfit that she thought Peter might like. Peter picked Pam up and took her to the club. At the club, Peter kissed Pam, and they danced, talked, and had drinks at their table. Later, Peter walked Pam to the car with his arm around her waist. He said he wanted to stop at his apartment before taking Pam home. Although she was tired, Pam agreed and they both went to Peter's apartment. The scenario ended at this point for participants in the no-ending condition. For the rape condition, the scenario contained one more sentence, that Peter raped Pam while at his apartment.

Participants

Eighty-one female and 54 male undergraduate students from a small coeducational college volunteered to participate in the study.

Procedure

Participants worked in small groups. The purpose of the study was ostensibly to examine how people form impressions. The experimenter informed participants that they would be reading a case history of a young woman who had volunteered to be interviewed as part of a study about life experiences. Each participant read the scenario about Pam and Peter. They were assigned at random to one of the versions (i.e., the rape ending or no-ending conditions) and were instructed not to discuss the story with anyone. They were not informed about the memory test until 1 week later when they returned to complete the questionnaires.

Questionnaire. The questionnaire contained measures of memory, hindsight, and victim derogation. Half of the participants received the memory items first, and the others received the hindsight items first.

The memory test consisted of 30 multiple-choice items, including 15 items testing participants' memories of the case history and 15 items taken from the pretest testing the extent to which participants misremembered antecedents stereotypically representative of rape.[2] For each of the 30 items, there were 3 possible answers (i.e., 1 item stereotypically representative of rape and 2 filler items) and a fourth option: no information provided. Participants were told that the items tested their memory of the story they had read and that they should only select answers that they actually read in that story.

For the hindsight measure, participants were asked to rate the likelihood of three possible endings to the story as if they did not know the actual ending. One ending was the one used in the study, that Peter raped Pam. The two additional endings were that Peter took Pam home and that Peter proposed marriage to Pam. Ratings were made on 10-point scales ranging from 1 (*not at all likely*) to 10 (*extremely likely*).

Participants indicated how much they approved or disapproved of Pam's behaviors by rating each behavior on 10-point scales ranging from 1 (*extreme approval*) to 10 (*extreme disapproval*). Eleven behaviors were included: Pam (a) went to the club regularly with friends, (b) had drinks at the club with friends, (c) gave Peter her telephone number, (d) accepted a date with Peter, (e) dressed the way she did to please Peter, (f) suggested that she and Peter go to the club, (g) let Peter kiss her, (h) danced with Peter, (i) had drinks with Peter at the club, (j) let Peter put his arm around her waist, and (k) agreed to go with Peter to his apartment.

The evaluation of Pam's character was made on 10-point semantic differential scales. Ratings were made of how careful/careless, naive/sophisticated, decisive/indecisive, intelligent/unintelligent, dependent/independent, unaware/aware, submissive/assertive, sincere/

insincere, dependable/undependable, and passive/active she was.

RESULTS

Tests of Hypothesis 1: Measures of Memory and Stereotypical Antecedents

To test Hypothesis 1, that participants in the rape condition would misremember more rape antecedents than participants in the no-ending condition, I conducted a 2 (gender of participant) × 2 (rape or no-ending condition) × 2 (order of hindsight and memory items) ANOVA on the total number of correct answers to the memory items and the total number of stereotypical rape antecedents reported. Results revealed no significant effects for memory of the story; participants overall correctly answered a mean of 10.04 of the 15 memory items. However, main effects of condition were found for rape antecedents. In support of Hypothesis 1, participants in the rape condition reported more rape antecedents than did those in the no-ending condition (M = 4.89 vs. 4.27, respectively), $F(1, 127) = 7.32$, $p < .01$. No gender or order effects were found.

Tests of Hypothesis 2: Hindsight Measure

I found support for Hypothesis 2, that the hindsight bias would be found. A 2 (condition) × 2 (gender) × 2 (order) ANOVA revealed a main effect of condition for the likelihood of rape. Participants receiving the rape outcome judged rape to be more likely than did those in the no-ending condition (M = 5.10 vs. 4.08, respectively), $F(1, 127) = 5.36$, $p < .05$. The analysis also revealed a main effect of gender. Women thought the rape outcome was more likely than did the men (M = 4.93 vs. 3.98, respectively), $F(1, 127) = 4.36$, $p < .05$. No order effects were found.

Additional ANOVAs were conducted on the likelihood measures for the other two outcomes, that Peter drove Pam home and that Peter proposed marriage to Pam. A main effect of condition was found for the likelihood of Pam being taken home. Participants receiving the rape outcome judged being taken home to be less likely than did those in the no-ending condition (M = 4.60 vs. 5.63, respectively), $F(1,127) = 5.62$, $p < .05$. No effects were found for the likelihood of a marriage proposal; participants considered this outcome to be highly unlikely (M = .67).

Tests of Hypothesis 3: Evaluation of Pam's Behaviors and Character

I conducted 2 (gender) × 2 (condition) × 2 (order) ANOVAs to test Hypothesis 3, that derogation of Pam, particularly of her behaviors, would be more likely to occur in the rape condition than in the no-ending condition. ANOVAs were conducted on the mean of the 11 items evaluating Pam's behaviors (alpha reliability = .89) and the mean of the 10 items evaluating Pam's character (alpha reliability = .67). Ratings of the behavior and character items were coded so that, for each item, higher scores reflected more desirable personality characteristics. Results revealed that both Pam's behaviors (M = 5.97 vs. 6.64), $F(1, 127) = 6.83$, $p < .01$, and her character (M = 4.86 vs. 5.22), $F(1, 127) = 4.76$, $p < .05$, received lower scores in the rape condition, indicating that participants disapproved of her behaviors and character more when the outcome was a rape than when no outcome was specified. No gender or order effects were revealed.

Tests of Hypothesis 4: Stereotypical Antecedents Predict the Hindsight Bias

I conducted a series of regression analyses (presented in Table 2) to determine whether memory of the rape antecedents would mediate the relation between the outcome condition and the measure of the hindsight bias, the likelihood of rape (see Baron & Kenny, 1986). The results revealed, first, that condition did predict the hindsight bias; participants in the rape condition considered rape more likely than did those in the no-ending condition (see Table 2, Regression 1). Second, memory of rape antecedents predicted the hindsight bias; the more rape antecedents misremembered, the more likely the rape outcome was seen to be (see Table 2, Regression 2). Finally, in the third regression, the predictor variables, condition and rape antecedents, were entered into the regression equation simultaneously to predict the dependent variable, the likelihood of rape. Results revealed support for the hypothesis that memory of rape antecedents mediated the relation of condition and the hindsight bias; the rape antecedents continued to predict the hindsight bias, but condition was no longer a significant predictor (see Table 2, Regression 3).[3]

I also tested the reverse model to determine whether hindsight might be mediating the effect of condition on memory of rape antecedents. Although condition was predictive of the rape antecedent measure when it was the sole predictor ($\beta = .73$, $r = .24$, $p < .01$), when the effect of the likelihood of rape was included with condition to predict the rape antecedent measure, condition continued to be predictive ($\beta = .54$, $r = .18$, $p < .05$). These results, therefore, suggest that memory for rape antecedents mediates the effect of condition on the hindsight bias rather than hindsight mediating the effect of condition on memory.

Tests of Hypothesis 5: Hindsight Bias Predicts Derogation

I computed correlations to test Hypothesis 5, that the hindsight bias would predict participants' perception of

TABLE 2: Beta Weights and Standardized Regression Coefficients From Path Models for Study 1

	Likelihood of Rape	
Predictors		r
Regression 1		
Condition	1.02***	.20***
Regression 2		
Rape antecedents	.55*****	.34*****
Regression 3		
Condition	.65	.13
Rape antecedents	.50*****	.31*****

NOTE: Higher scores for rape antecedents reflect more memories of rape. The higher score for condition was assigned to the rape outcome and the lower score was assigned to the proposal outcome. For the third regression, both predictors were entered simultaneously.
***$p < .05$. *****$p < .001$.

Pam. As predicted, positive ratings of Pam's behaviors ($r = –.20$, $p < .05$) and character ($r = –.22$, $p < .05$) were negatively associated with the likelihood of rape. Pam's behaviors and character were not related to the number of rape antecedents that participants misremembered ($r = –.11$ and .02, respectively).

STUDY 2

The first study provided support for all of the hypotheses. In particular, it demonstrated that participants reading a story ending in a rape outcome do add stereotypical antecedents to their memories of the story and these antecedents are associated with a strengthening of the hindsight bias. The hindsight bias, in turn, contributes to victim derogation. The extent to which participants misremembered rape antecedents predicted their estimates of the likelihood of rape and their estimate of the likelihood of rape predicted derogation of Pam. In addition, compared with those in the rape condition, participants who received no ending to the story reported higher likelihood estimates that Pam would be taken home by Peter. This suggests that participants who received no ending concluded that a reasonable ending to the story would be that Peter took Pam home after stopping at his apartment.

I conducted a second study to replicate the findings of Study 1 and to determine whether the addition of stereotypical antecedents and the relation of these antecedents to the hindsight bias would occur when the outcome was positive rather than negative. That is, would the same pattern of effects occur if the woman had received an award or a proposal of marriage instead of being raped? If outcome information leads to memory reconstruction, which in turn affects the hindsight bias, then participants hearing about a positive outcome should reconstruct events in the story, adding stereotypical antecedents that are consistent with that outcome. These antecedents should make the positive outcome seem more likely and the negative outcome seem less likely. For participants receiving either positive or negative outcomes, then, memory reconstruction should be more consistent with the outcome they receive than with the other outcome, and this reconstruction should predict the hindsight bias.

A second purpose of Study 2 was to determine whether participants' reactions to perpetrators would be similar to their reactions to victims. That is, are participants' reactions to perpetrators directly predicted by the hindsight bias and not by their reconstructed memories of antecedents? Previous research indicates that the hindsight bias may contribute to perpetrator blame. In a study of reactions to an environmental disaster, participants read a scenario in which a company legally used a landfill to dispose of toxic chemicals; later, residents living near the landfill either did or did not experience an increase in their cancer rates (Brown, Williams, & Lees-Haley, 1994). The hindsight bias was found, and it predicted derogation of the company. In this study, the actions of the company could be viewed as causal antecedents to the outcome. Given the causal connection between the hindsight bias and perpetrators' behaviors, perpetrator derogation, particularly derogation of perpetrators' behaviors, should be associated with the hindsight bias rather than with participants' memory of stereotypical antecedents to the story. In the second study, I examined reactions to both victims and perpetrators to determine whether derogation is directly due to hindsight or whether it depends more directly on the addition of stereotypical antecedents. Moreover, if participants view the victim's and perpetrator's behaviors as causal antecedents to the outcome, and if this contributes to the hindsight bias, then participants' judgments of how causal these behaviors are should be correlated with the hindsight bias.

In the second study, participants read a story about a man and a woman that ended with either a negative or a positive outcome, the man raping the woman or the man making a proposal of marriage to the woman. Participants subsequently received a memory test for items in the story. Included in the memory test were items that were not present in the story but were stereotypically associated with either rape or a proposal of marriage. After completing the memory test, participants gave likelihood estimates for the outcomes as well as their perceptions of the characters in the story.

Hypothesis 1: Participants will add stereotypical antecedents to the story that are consistent with the outcome they received. Specifically, they will add more antecedents associated with rape after receiving the rape outcome and more antecedents associated with a marriage proposal in the proposal condition.

Hypothesis 2: The hindsight bias will be obtained. Participants receiving the rape outcome will rate that outcome as more likely than will those receiving the marriage proposal outcome, and participants receiving the proposal outcome will rate that outcome as more likely than will those receiving the rape outcome.

Hypothesis 3: The behaviors and characters of both the man and the woman will be derogated to a greater extent in the rape condition than in the marriage proposal condition.

Hypothesis 4: Participants' memories of the antecedents will predict the hindsight bias and mediate the relation between the outcome condition and hindsight. The more participants misremember antecedents stereotypically associated with rape and the less they misremember antecedents associated with the proposal, the more they will rate the rape outcome as likely. The more they misremember antecedents stereotypically associated with a marriage proposal and the less they misremember antecedents associated with rape, the more they will rate the proposal outcome as likely.

Hypothesis 5: The hindsight bias will predict participants' ratings of the behaviors and characters of the man and woman in the story. The greater the likelihood of rape, the more negative the ratings will be, and the greater the likelihood of the marriage proposal, the less negative the ratings will be. Moreover, the more causal the victim's behaviors are seen to be, the more her behaviors will be derogated. The more causal the perpetrator's behaviors are seen to be, the more the perpetrator will be derogated.

METHOD

Pretests

Pretest 1: Selecting the story outcomes. I conducted a pretest to identify possible positive and negative endings for the story. The endings to be selected had to be about equal in vividness and had to be plausible endings to the same story. In addition, one ending had to be perceived as positive and the other had to be perceived as negative.

Twenty-five students enrolled in an introductory psychology class participated in the pretest. Participants rated each of 27 events and indicated how vivid each event was on 9-point scales ranging from 1 (*not at all vivid*) to 9 (*extremely vivid*); participants also rated how positive and negative each event was on 9-point scales ranging from 1 (*extremely negative*) to 9 (*extremely positive*). Items included a variety of positive and negative events, for example, receiving a proposal of marriage, winning the lottery, receiving a raise, getting into graduate school, losing a job, being raped, and failing an important course. I eliminated items that were low in vividness (with mean ratings of 7 or lower) or that were neutral in affect (4 through 7 on the negative-positive scale). Finally, *t* tests were performed on the remaining items to select only those that revealed no sex differences ($p > .25$). Of the remaining items, two were selected that fulfilled the requirements for the study, a man proposing marriage to a woman and a man raping a woman. These items were equally vivid, $p > .25$, and equally probable, $p > .25$; the rape item was rated to be more negative than the proposal item.

Pretest 2: Selecting stereotypical antecedents. A second pretest was conducted to identify beliefs stereotypically representative of rape or of marriage proposals. Five student judges were asked to come up with as many beliefs as they could think of associated with rape and as many as they could think of associated with marriage proposals. The judges reached consensus on what they considered the 20 beliefs most stereotypically representative of rape and the 20 most stereotypically representative of marriage proposals. A sample of 28 male and 45 female college students was asked to rate the items as to how stereotypical they were. About half of the participants, selected at random, were asked to indicate the extent to which each of the items was consistent with a story in which a man named Jack rapes a woman named Barbara. The other half of the participants indicated how consistent each item was with a story in which a man named Jack proposes marriage to a woman named Barbara. In each condition, participants were explicitly instructed to give responses that reflect stereotypical beliefs about rape or marriage proposals, respectively, and not their personal opinions. Ratings were made on 9-point scales ranging from 1 (*not at all stereotypical of rape [or marriage proposals]*) to 9 (*very stereotypical of rape [or marriage proposals]*). A 2 (gender of participant) × 2 (rape or marriage proposal condition) ANOVA was conducted on the items. Based on the results, 14 rape and 14 proposal items were selected. The rape items were judged to be more stereotypical of rape than of marriage proposals, with *F* statistics ranging from $F(1, 69) = 11.98$, $p < .001$ to $F(1, 69) = 357.90$, $p < .001$ (see Table 3). The marriage proposal items were judged to be more stereotypical of marriage proposals than of rape, with *F* statistics ranging from $F(1, 69) = 21.34$, $p < .001$ to $F(1, 69) = 468.89$, $p < .001$ (see Table 4).

Pretest 3: Assessing the endings to the story. A three-page, single-spaced case history was written about a young woman named Barbara and her relationship with Jack, a man she met while attending graduate school in business. The case history included a one-page description of Barbara and a two-page story about her relationship with Jack. The story was written so that it could lead to either a rape or a marriage proposal. Two versions of the story were created, one ending with Jack proposing marriage to Barbara and one ending with Jack raping Barbara. The description of Barbara and the story of her relationship with Jack were identical except for the endings to the account.

A pretest was conducted to test whether the endings were equally plausible. In it, 46 participants read the

TABLE 3: Stereotypicality Judgments for Rape Items Used in Study 2

Beliefs Stereotypically Representative of Rape	*Means for Each Condition*	
	Rape	*Proposal*
Barbara met many men at parties	5.92	3.46
Jack liked to drink	7.25	3.24
Barbara and Jack met at a bar	6.75	4.08
Barbara wore sexy clothing when she saw Jack	7.31	5.16
Barbara was sexually indiscriminate	6.31	2.65
Barbara wanted Jack to come onto her	6.81	4.89
Barbara was a tease	8.00	3.14
Jack was unpopular with women	5.81	3.19
Barbara turned Jack on	7.81	5.97
Jack had a violent temper	8.22	2.35
Barbara had sexual fantasies about Jack	5.42	4.22
Barbara wore lots of makeup	6.14	3.22
Jack and Barbara often went out drinking after work	6.61	5.08
Jack was aggressive	8.36	3.73

NOTE: Ratings in the rape condition reflect how stereotypical each item is of rape. Ratings in the proposal condition reflect how stereotypical each item is of a proposal.

TABLE 4: Stereotypicality Judgments for Proposal Items Used in Study 2

Beliefs Stereotypically Representative of Marriage Proposals	*Means for Each Condition*	
	Rape	*Proposal*
Jack and Barbara met through a mutual friend	3.75	6.76
Jack gave Barbara a dozen roses	2.64	8.11
Barbara wanted a family very much	2.03	7.32
Jack was very religious	1.42	4.38
Barbara and Jack dined at a table with a beautiful view of the mountains	1.78	6.84
Barbara and Jack dined by candlelight	3.17	7.84
Jack was very well mannered	2.61	6.62
Jack wanted Barbara to meet his parents	1.72	8.16
Barbara and Jack had been dating for awhile	3.83	8.22
Jack gave Barbara a ring	3.17	8.70
Barbara and Jack dined with soft music in the background	3.19	7.49
Jack loved children	1.42	6.43
Jack lit a fire at the lodge	3.50	5.81
Barbara and Jack gazed at each other often	3.83	7.43

NOTE: Ratings in the rape condition reflect how stereotypical each item is of rape. Ratings in the proposal condition reflect how stereotypical each item is of a proposal.

story and indicated how likely each ending was on a scale ranging from 1 (*not at all likely*) to 9 (*extremely likely*). Results revealed no differences in likelihood of either outcome ($p > .25$).

The case history described Barbara as a 24-year-old single woman living alone in a New England city. The description of Barbara included information about her job in an accounting firm, parents and siblings, hobbies and leisure activities, and college experiences. The two-page story of her relationship with Jack was written in the first person and was presumably taken from transcripts of interviews with Barbara. In it, she described first seeing Jack in her graduate school business class. According to Barbara, Jack was outgoing and intelligent. As part of a requirement for the course, she and Jack were assigned to work together on a project. After doing their work on the project, they would go out for coffee and socialize, talking about the class, their jobs, and other things, including their shared interest in skiing. The account included two instances in which Jack lost his temper, once when he snapped at their professor and once when he argued with a waiter and yelled at Barbara. In the latter instance, Barbara walked home alone and cried. Jack apologized the next day. At the end of the semester, Jack and Barbara went out for drinks to celebrate completing their class project. They stayed out all night and Jack invited Barbara on a ski weekend to his parent's ski lodge in Vermont. While on the trip, Barbara drank wine with dinner and kissed Jack on their first night in Vermont. They spent the next day skiing. Jack took Barbara out to a special restaurant for dinner, Barbara wore a new outfit to dinner, they drank wine at the restaurant, Jack held Barbara's hand, Jack and Barbara returned to the lodge, Jack told Barbara she was sexy, Jack told Barbara that he loved her, and Barbara told Jack she cared for him. In the rape condition, Jack then raped Barbara. In the proposal condition, he proposed marriage.

Participants

Thirty-five female and 34 male undergraduate students from a small coeducational college volunteered to participate in the study.

Procedure

The study was conducted in the participants' classrooms. The purpose of the study was ostensibly to examine how people process information about social interactions. The experimenter informed participants that they would be reading a case history of a young woman who had volunteered to be interviewed as part of a study about important life experiences. Each participant was given a copy of the description of Barbara and one version of the story of her relationship with Jack. Participants were assigned at random to one of the versions (i.e., with either the rape or proposal ending). They were instructed not to discuss the story with anyone and were not informed about the memory test until 2 weeks after reading the account when the experimenter returned to the classrooms to administer the memory test and questionnaire.

Measures of memory and of stereotypical antecedents. The memory test consisted of 52 true-false items, with 24

items specifically testing participants' memory of the case history; 14 items tested the extent to which participants misremembered antecedents stereotypical of rape and 14 items tested the extent to which participants misremembered antecedents stereotypical of marriage proposals. The items testing stereotypical antecedents were taken from the second pretest. Participants were told that their memory of the case history would be tested using a true-false test. Each item would be presented to them individually and they were to read each item, decide whether it was true of the case history, and mark whether it was true or false on their answer sheet. They were instructed to only indicate that an item was true if they had read it in the story. In addition, participants indicated how confident they were of each true-false response, with ratings ranging from 50% (just guessing), 60%, 70%, 80%, 90%, or 100% (absolute certainty). Participants were given an answer sheet, numbered 1 to 52, on which they indicated whether items were true or false and how confident they were in their answers. Each item for the memory test was presented to participants using a slide projector. Each slide contained a single item, was projected for about 10 seconds to the entire class, and was numbered so that participants would be sure to mark the correct item on the answer sheet. After all the slides had been presented, participants were given the questionnaire.

Questionnaire. The questionnaire included items measuring hindsight, evaluations of Barbara's and Jack's behaviors, and evaluations of Barbara's and Jack's characters. For the hindsight measure, participants were asked to rate the likelihood of several possible endings to the story as if they did not know the actual ending. Four endings were rated, the two that were used in the study, that Jack proposed marriage to Barbara and that Jack raped Barbara, and two additional endings, that Jack and Barbara began dating and that Jack and Barbara had a one-night stand. Ratings were made on 9-point scales with endpoints ranging from 1 (*not at all likely*) to 9 (*extremely likely*).

Participants indicated how much they approved or disapproved of Barbara's and Jack's behaviors. For each behavior, ratings were made on 9-point scales with endpoints ranging from 1 (*extreme disapproval*) to 9 (*extreme approval*). Twelve behaviors were included for Barbara, that she (a) had a crush on Jack, (b) worked with Jack in the evenings, (c) spent time socializing with Jack after they had finished their class work, (d) argued with Jack, (e) walked home alone at night, (f) forgave Jack for making her cry, (g) stayed out all night with Jack, (h) went with Jack to the ski lodge, (i) drank wine with Jack on their first night in Vermont, (j) kissed Jack, (k) said nothing when Jack told her she was sexy, and (l) told Jack she cared for him. Eleven behaviors were evaluated for Jack, that he (a) snapped at his professor, (b) worked with Barbara in the evenings, (c) spent time socializing with Barbara after they had finished their work, (d) argued with the waiter at the restaurant, (e) yelled at Barbara, (f) let Barbara walk home alone at night, (g) stayed out all night with Barbara, (h) took Barbara alone to the ski lodge, (i) called Barbara sexy, (j) bought Barbara dinner, and (k) told Barbara that he loved her. Participants completed an item separately for Barbara and Jack, indicating to what extent his or her behaviors had caused the outcome. Ratings were made on 9-point scales ranging from 1 (*not at all*) to 9 (*completely*).

The evaluations of Barbara's and Jack's characters were made on 9-point semantic differential scales. For both Barbara and Jack, ratings were made of how unintelligent/intelligent, sincere/insincere, reliable/unreliable, irresponsible/responsible, cold-hearted/warm-hearted, and domineering/submissive each person was. For Jack, additional ratings were made of how direct/manipulative, aggressive/unaggressive, selfish/unselfish, and average in sex drive/oversexed he was. For Barbara, additional ratings were made of how careful/careless, unaware/aware, independent/dependent, skeptical/trusting, assertive/passive, and confident/insecure she was.

RESULTS

Tests of Hypothesis 1: Measures of Memory and Stereotypical Antecedents

A 2 (gender of participant) × 2 (rape or marriage proposal condition) ANOVA was conducted on the total number of correct answers to the 24 memory items. Results revealed no significant effects for memory of the story; participants overall correctly answered a mean of 14.50 of the 24 memory items.

To test Hypothesis 1, that participants in the rape condition would misremember more rape antecedents and participants in the proposal condition would misremember more proposal antecedents, a 2 (gender of participant) × 2 (rape or marriage proposal condition) × 2 (rape or proposal antecedents) ANOVA was conducted on the total number of stereotypical rape antecedents reported and the total number of stereotypical proposal antecedents reported. The type of antecedent was treated as a repeated measure. Results revealed a main effect of type of antecedent, $F(1,52) = 9.98$, $p < .01$, with more proposal items reported than rape items ($M = 6.29$ vs. 5.07, respectively) and an interaction between condition and type of antecedent, $F(1,52) = 24.96$, $p < .001$. Contrasts were conducted to further examine the interaction. In support of Hypothesis 1, participants in the rape condition reported more rape antecedents than did those in the proposal condition ($M = 6.12$ vs. 4.17,

respectively), $F(1, 52) = 15.67$, $p < .001$, and participants in the proposal condition reported more proposal antecedents than did those in the rape condition ($M = 7.07$ vs. 5.38, respectively), $F(1, 52) = 11.77$, $p = .001$. No gender effects or interactions with gender were found.

I conducted a second analysis to assess the strength of participants' memories of the stereotypical rape and proposal antecedents. For this analysis, participants' confidence ratings were recoded so that participants received a score ranging between 1 and 6 when they indicated that a stereotypical item had not occurred, receiving a 1 when they were 100% sure that a stereotypical item had not occurred, a 2 when they were 90% sure, a 3 when they were 80% sure, a 4 when they were 70% sure, a 5 when they were 60% sure, and a 6 when they were 50% sure. They received a score ranging between 7 and 12 when they indicated that a stereotypical item had occurred, receiving a 7 when they were 50% sure that it had occurred, an 8 when they were 60% sure, a 9 when they were 70% sure, a 10 when they were 80% sure, an 11 when they were 90% sure, and a 12 when they were 100% sure. The result was a 12-point scale on which a score of 1 showed the least confidence in a stereotypical memory and a score of 12 showed the most confidence in a stereotypical memory. Scores of 12, therefore, indicated that participants were totally convinced that the antecedent had occurred and a score of 1 indicated that they were totally convinced that the antecedent had not occurred. A 2 (gender of participant) × 2 (rape or marriage proposal condition) × 2 (rape or proposal antecedents) repeated-measure ANOVA on these memory scales revealed a marginal main effect of type of antecedent, $F(1, 52) = 3.90$, $p < .06$, with more proposal items being reported than rape items ($M = 5.98$ vs. 5.57, respectively) and an interaction between condition and type of antecedent, $F(1, 52) = 28.70$, $p < .001$. Contrasts were conducted to further examine the interaction. In support of Hypothesis 1, participants' memories of the rape antecedents were stronger in the rape condition than in the proposal condition ($M = 6.07$ vs. 5.19, respectively), $F(1, 52) = 12.83$, $p < .001$, and their memories of the proposal antecedents were stronger in the proposal condition than in the rape condition, ($M = 6.51$ vs. 5.40, respectively), $F(1, 52) = 20.41$, $p < .001$.[4]

Tests of Hypothesis 2: Hindsight Measures

I found support for Hypothesis 2, that the hindsight bias would be found for each outcome. Again, 2 (gender) × 2 (condition) ANOVAs were conducted. Main effects of condition were found for the likelihood of rape, $F(1,52) = 12.97$, $p < .001$, and for the likelihood of a marriage proposal, $F(1,52) = 22.40$, $p < .001$. Participants receiving the rape outcome judged rape to be more likely than did those receiving the proposal outcome ($M = 5.31$ vs. 2.63, respectively), and participants receiving the proposal outcome judged it to be more likely than did those receiving the rape outcome ($M = 6.23$ vs. 3.23, respectively). In addition, ANOVAs on the two other outcomes, that Jack and Barbara began dating and that Jack and Barbara had a one-night stand, also revealed effects of condition. Participants receiving the rape outcome judged the one-night stand to be more likely than did those receiving the other condition ($M = 4.92$ vs. 3.53, respectively), $F(1, 52) = 5.19$, $p < .05$. Participants receiving the proposal outcome judged the dating outcome as more likely than did those receiving the other condition ($M = 7.70$ vs. 5.65, respectively), $F(1, 52) = 11.11$, $p < .001$.

Tests of Hypothesis 3: Evaluation of Jack and Barbara's Behaviors and Characters

To test Hypothesis 3, that derogation of Barbara and Jack, particularly of their behaviors, would be more likely to occur in the rape condition than in the proposal condition, 2 (gender) × 2 (condition) ANOVAs were conducted on the mean of the 12 items evaluating Barbara's behaviors (alpha reliability = .84) and the mean of the 11 items evaluating Jack's behaviors (alpha reliability = .76). Results revealed that both Barbara's behaviors ($M = 6.38$ vs. 5.68), $F(1, 52) = 5.09$, $p < .05$, and Jack's behaviors ($M = 5.41$ vs. 4.86), $F(1, 52) = 4.44$, $p < .05$, received higher scores in the proposal condition, indicating that participants approved of their behaviors more when the outcome was a proposal than a rape. Ratings of the character items were coded so that, for each item, higher scores reflected more desirable personality characteristics. ANOVAs conducted on the mean character ratings of Barbara (alpha reliability = .73) revealed no effect of condition ($M = 5.89$). However, ratings of Jack's character (alpha reliability = .82) received more favorable ratings in the proposal condition than in the rape condition ($M = 5.20$ vs. 4.45, respectively), $F(1, 52) = 7.56$, $p < .01$. There were no gender effects except for a tendency for women to rate Barbara's character more favorably than did men ($M = 6.04$ vs. 5.64, respectively), $F(1, 52) = 3.57$, $p < .10$.

Tests of Hypothesis 4: Stereotypical Antecedents Predict the Hindsight Bias

I conducted a series of regression analyses to determine whether memory of the stereotypical antecedents would mediate the relation between the outcome condition (i.e., rape or proposal) and the two measures of the hindsight bias, the likelihood of rape and the likelihood of a proposal. The results for all of the regression analyses are presented in Table 5. The results revealed, first, that condition predicted each of the two hindsight measures (see Table 5, Regression 1). Second, I conducted regressions with the hindsight measures as the depend-

TABLE 5: Beta Weights and Standardized Regression Coefficients From Path Models of the Likelihood of Rape and the Likelihood of a Proposal for Study 2

	Dependent Variables			
	Likelihood of Rape		*Likelihood of a Proposal*	
Predictors		r		r
Regression 1				
Condition	2.67*****	.45*****	–3.00*****	–.55*****
Regression 2				
Rape antecedents	.97*****	.41*****	–.82****	–.38****
Proposal antecedents	–.97*****	–.41*****	1.05*****	.48*****
Regression 3				
Condition	1.22	.20	–1.81***	–.33***
Rape antecedents	.76***	.32***	–.50**	–.23**
Proposal antecedents	–.71***	–.30***	.67***	.31***

NOTE: Higher scores for each type of antecedent reflect more memories of those antecedents. The higher score for condition was assigned to the rape outcome and the lower score was assigned to the proposal outcome. For each regression, all predictors were entered simultaneously.
**$p < .08$. ***$p < .05$. ****$p < .01$. *****$p < .001$.

TABLE 6: Beta Weights and Standardized Regression Coefficients From Path Models of the Rape and Proposal Antecedents for Study 2

	Dependent Variables			
	Rape Antecedents		*Proposal Antecedents*	
Predictors		r		r
Regression 1				
Condition	.88****	.35****	–1.11****	–.45***
Regression 2				
Likelihood of rape	.11*	.26*	–.07	–.17
Likelihood of a proposal	–.07	–.17	.15***	.33***
Regression 3				
Condition	.55	.22	–.72***	–.29*
Likelihood of rape	.09	.20	–.04	–.10
Likelihood of a proposal	–.03	–.07	.09	.20

NOTE: Higher scores for each likelihood measure reflect a greater likelihood of that outcome. The higher score for condition was assigned to the rape outcome and the lower score was assigned to the proposal outcome. For each regression, all predictors were entered simultaneously.
*$p < .10$. ***$p < .05$. ****$p < .01$.

ent variables, simultaneously entering the scores of the two stereotypical memory scales as predictors. The results revealed that the likelihood of rape increased as the stereotypical memories of rape increased and stereotypical memories of marriage proposals decreased. The likelihood of a proposal increased as the stereotypical memories of rape decreased and stereotypical memories of marriage proposals increased (see Table 5, Regression 2). Finally, I conducted regressions in which the predictor variables—condition, rape antecedents, and proposal antecedents—were entered into the regression equations simultaneously to predict the dependent variables, the likelihood of rape and the likelihood of a proposal (see Table 5, Regression 3). Because the effect of condition was not eliminated for the likelihood of a proposal, but only reduced, additional tests were conducted to determine whether the drops in the beta weights for condition were significant (see Baron & Kenny, 1986). For the likelihood of rape, when holding proposal antecedents constant, the beta weight for condition was reduced when rape antecedents were added to the equation ($Z = 2.05$, $p < .05$); when holding rape antecedents constant, the beta weight for condition was reduced when proposal antecedents were added ($Z = 2.06$, $p < .05$). For the likelihood of a proposal, when holding rape antecedents constant, the beta weight for condition was reduced when proposal antecedents were added to the equation ($Z = 2.01$, $p < .05$); however, when holding proposal antecedents constant, the beta weight for condition was not reduced when the rape antecedents were added ($Z = 1.61$, $p = .11$).[5] Results were consistent with the hypothesis that memory of the stereotypical antecedents mediated the relation between the outcome condition and the hindsight bias.

To provide additional evidence that stereotypical memories predict hindsight rather than the reverse, that hindsight predicts stereotyped memories, I tested the reverse path model. In these analyses, the predictor variables were condition, the likelihood of rape, and the likelihood of a proposal; the rape antecedents and proposal antecedents were treated as the dependent variables. Table 6 presents the results.

Again, as indicated previously by the ANOVAs, when entered alone, condition was predictive (see Table 6, Regression 1). The second set of regressions tested whether the likelihood of rape and the likelihood of a proposal predicted memory of the rape and proposal antecedents. The two likelihood measures were entered simultaneously. The results were weaker than the results of the regressions predicting the likelihood measures from antecedents. As shown in Table 6 (see Regression 2), rape antecedents were only marginally predicted by the likelihood of rape and not by the likelihood of a proposal; proposal antecedents were predicted by the likelihood of a proposal but not by the likelihood of rape. Finally, in the third set of regressions, the predictor variables—condition, the likelihood of rape, and the likelihood of a proposal—were entered into the regression equation simultaneously to predict the dependent variables, memory of rape antecedents and proposal antecedents (see Table 6, Regression 3). The analyses revealed that none of the predictors was predictive of rape antece-

dents and only condition was predictive of proposal antecedents. Moreover, when I tested whether condition was less predictive of the antecedents when controlling for the likelihood measures than when condition was the sole predictor variable, no significant change in the beta weights of condition was revealed (all *Z*s < 1.20, *ns*). These results indicate that the model treating participants' memories of stereotypical rape and proposal antecedents as mediators of the relation between the outcome condition and the hindsight bias provides a better fit of the data than does the reverse path.

Tests of Hypothesis 5: Hindsight Bias Predicts Derogation

I computed correlations to test Hypothesis 5, that the hindsight bias would predict participants' perception of the characters in the story. The results are presented in Table 7. As predicted, positive ratings of Barbara's behaviors, Jack's behaviors, and Jack's character were negatively associated with the likelihood of rape and positively associated with the likelihood of a proposal. However, Barbara's character was unrelated to either likelihood measure. There were no specific predictions regarding the relation of participants' stereotypical memories of rape and proposal antecedents and their ratings of Barbara and Jack; in fact, only one significant correlation was found, showing that the more participants misremembered proposal antecedents, the more favorably they evaluated Jack's behaviors. Overall, it is the hindsight bias, rather than stereotypical memories, that best predict ratings of Barbara and Jack.[6]

Additional correlations were conducted to test whether derogation was greater when Barbara's behaviors and Jack's behaviors were seen as causing the outcome. Results supported the hypothesis. For the rape condition, the more causal Barbara's behaviors were seen to be, the more they were derogated, $r(24) = -.47$, $p < .05$, and the more causal Jack's behaviors were seen to be, the more they were derogated, $r(24) = -.54$, $p < .01$. For the proposal condition, the more causal Barbara's behaviors were seen to be, the less they were derogated, $r(28) = .42$, $p < .05$, and the more causal Jack's behaviors were seen to be, the less they were derogated, $r(28) = .38$, $p < .05$. Although the causal direction for these relations is unknown, these findings are consistent with my argument that the relation of derogation to the hindsight bias may occur because observers may view the behaviors of the victim as causal antecedents to the outcome.

TABLE 7: Correlation Coefficients of Likelihood Ratings and Stereotypical Antecedents With Ratings of Barbara and Jack for Study 2

	Ratings of Barbara and Jack			
Predictor	*Barbara's Behaviors*	*Barbara's Character*	*Jack's Behaviors*	*Jack's Character*
Likelihood of rape	–.37****	–.14	–.41****	–.41****
Likelihood of proposal	.31***	.14	.36****	.36****
Rape antecedents	–.18	.03	.04	–.19
Proposal antecedents	.23	.02	.33***	.20

NOTE: Higher scores for each likelihood measure reflect a greater likelihood of that outcome. Higher scores for each antecedent measure reflect more memories of those stereotypes. Higher ratings of Barbara's and Jack's characters and behaviors reflected more favorable evaluations.
***$p < .05$. ****$p < .01$.

DISCUSSION

The results of the two studies suggest that the hindsight bias does involve cognitive reconstruction, a rewriting of the events leading up to the outcome to make the outcome seem more plausible. After receiving the rape outcome in the first study or either the rape or proposal outcome in the second study, participants' memories of antecedent events in the story were altered to be more stereotypically consistent with the outcome they received. That is, they added antecedents that had not actually occurred in the story but that were stereotypically associated with the outcome. Participants receiving a rape outcome misremembered more antecedents that are stereotypically associated with rape. Participants receiving a proposal outcome misremembered more antecedents that are stereotypically associated with a marriage proposal. Moreover, regression analyses indicated that cognitive reconstruction contributed to the hindsight bias rather than the reverse. Consequently, adding stereotypical antecedent events resulted in a strengthening of the hindsight bias. As a result of the causal links between the outcome and antecedent events, and the addition of stereotypical antecedents, the outcome appeared relatively inevitable.

Compared with no ending or a positive outcome, for negative outcomes, the hindsight bias can lead to a more negative perception of the actors in the story. In the first study, participants gave less favorable ratings to Pam's character and behaviors when Peter raped Pam than when they were not told the ending to the story. In the second study, when Jack raped Barbara, Jack's behaviors and character and Barbara's behaviors were perceived less favorably than when he proposed marriage. These effects occurred even though participants rated the same behaviors in the two conditions. Previously, researchers have argued that victim derogation occurs because the hindsight bias makes the negative outcome appear foreseeable, which, in turn, would make the victim appear quite foolish not to have acted to prevent the outcome. The present study suggests that derogation also occurs because the victim's behaviors can be causally linked to the outcome in the mind of the observer.

The more Pam's or Barbara's behaviors were causally linked to the outcome, the more negatively they were perceived. In effect, the behaviors of the victim became causal antecedents to the negative outcome. A similar phenomenon occurred with observers' perceptions of the perpetrator. The more Jack's behaviors were causally linked to the negative outcome, the more they were perceived by observers as causal antecedents to the negative outcome, and therefore less acceptable.

Past research examining the extent to which participants derogate the victim's character and behavior has sometimes revealed character derogation (Carli & Leonard, 1989) and sometimes not (Janoff-Bulman et al., 1985). I found derogation of Pam's character in Study 1 but not of Barbara's character in Study 2. Even when derogation of the victim's character has been found, it has been less clearly associated with hindsight bias than behavior derogation (Carli & Leonard, 1989). But both past and present research has consistently reported derogation of the victim's behavior and a link between behavior derogation and the hindsight bias. Why would this be?

The victim's character, unlike the victim's behaviors, may not be seen by participants as proximal causal antecedents to the negative outcome. Participants read what Pam and Barbara did before the rape. The behaviors were explicitly presented in the story: Barbara went on a ski trip with Jack and Pam went to Peter's apartment. But participants did not explicitly read that Pam or Barbara had particular character traits, that they were careless, for instance. Participants had to infer character traits from behaviors in the story. This may be more difficult to do for victims than for perpetrators. A perpetrator who commits rape would probably be seen as having a faulty character. A victim who goes on a ski trip with the perpetrator may or may not be seen as having a faulty character. As a result, character derogation of victims may not always occur. Moreover, if character derogation does occur, the victim's character would still be a more distal and less immediate cause of the outcome than the victim's behaviors. Therefore, hindsight should be more strongly related to victims' behaviors than characters.

It appears, then, that observers' reconstruction of events leading up to an outcome involves both adding new antecedents that are stereotypically associated with the outcome and reinterpreting the actors' behaviors as causal antecedents to the outcome. If the hindsight bias occurs when observers form causal links between outcomes and antecedents, then these additional reconstructive processes then combine to reinforce and strengthen the hindsight bias, leading to an even greater belief in the outcome's inevitability. The hindsight bias can, in turn, lead observers to fault the behaviors of both the perpetrator and, unfortunately, the victim.

Knowledge of the outcome alters observers' perceptions of antecedent events, leading them to view these events, including the victim's behavior, as causally linked to the outcome. To the observer, the victim engaged in behaviors that caused the victimization, and the victimization was preceded by numerous antecedents that forewarned of its occurrence. But victims, without the benefit of hindsight, would not be expected to view their behaviors or other antecedents as leading to a victimization. In fact, as was clearly the case in the present study, the same antecedents can lead to either positive or negative outcomes. Therefore, behaviors that may seem inappropriate, foolish, or risky to observers may appear to victims to be entirely appropriate and without risk. Furthermore, many of the antecedents perceived by observers as leading to a victimization may never actually have occurred. They may, instead, be a fabrication, a result of the reconstructive nature of observers' memories.

The tendency to causally link behaviors to outcomes is not unique to negative outcomes. The same pattern of effects were found for the proposal condition in the second study. In that condition, however, forming causal connections between the outcome and Jack's and Barbara's behaviors led to more favorable perceptions of those behaviors. The more causal those behaviors were seen to be, the more favorably they were perceived. Hence, when outcomes are positive and observers exaggerate the extent to which actors contribute to the outcome, they also exaggerate the desirability of actors' behaviors. In hindsight, behaviors leading to positive outcomes are valued, whereas those leading to negative outcomes are faulted.

The robustness of the hindsight bias and its apparent ubiquity can be attributed to the connections formed in the minds of observers between the outcome and its possible causes. Fischhoff (1975) has argued that knowing about an outcome leads to creeping determinism, the unconscious assimilation of that outcome information into beliefs about the events that led up to it. Apparently, knowledge of the outcome not only creeps into beliefs about antecedent events but also recreates those events, profoundly affecting observer's judgments.

NOTES

1. There is some debate as to whether schematic information that is presented at retrieval actually alters the original memory. Some researchers claim that the presentation of the new information only at the time when participants are tested may encourage guessing on their part (Bellezza & Bower, 1981). Some research has provided support for this biased-guessing interpretation for both recall and recognition tests of memory (McCloskey & Zaragoza, 1985; Zaragoza, McCloskey, & Jamis, 1987), suggesting that when new information is introduced at testing, participants create totally new memories based on this new information rather than altering or reconstructing existing memories.

2. Pretests using recall measures were unsuccessful in revealing stereotypical reactions to rape. For example, in one pretest, participants were told to imagine a situation in which a man raped a woman after a date. Participants were then asked to write a description of the man, woman, and situation. Many participants did not respond, writing, for example, "There is no typical rapist or rape victim" or "Are you looking for biases? I'm not biased." Because participants were able to report stereotypical beliefs about rape held by other people but they were often unwilling to admit to these beliefs themselves, I decided to use a recall measure to capture stereotypical beliefs about rape.

3. Although the regression analysis using simultaneous entry of predictors reveals the unique contribution of each predictor to the outcome, at the request of a reviewer, I also conducted a hierarchical regression analysis on the likelihood of rape. In this analysis, I entered condition first and then entered the memory of rape antecedents. The memory of rape antecedents were predictive, $F(2, 133) = 13.76$, $p < .001$.

4. Although participants were asked to check as true only those items that they had actually read in the story and the story did not state that Jack was aggressive or that he had a violent temper, those in the rape condition may have checked them because they felt that only a violent and aggressive person could commit rape. It was possible that the differences between the two conditions in the number and strength of rape antecedents might be due to these two items. Consequently, the analyses were repeated eliminating these two items. The results were unchanged; the number and strength of rape antecedents were higher in the rape condition than in the proposal condition ($p < .001$).

5. Again a hierarchical regression, in which I entered condition first and then entered the memory of rape antecedents and the memory of proposal antecedents in a block, revealed that the memory of rape and proposal antecedents were predictive, $F(2, 52) = 3.36$, $p < .05$.

6. To determine whether items specifically about Barbara would be correlated with derogation of Barbara and items specifically about Jack would be correlated with derogation of Jack, I separated those items and conducted additional correlations on them. The results showed that behavior and character derogation of Jack and Barbara was unrelated to specific rape and proposal antecedents about Jack and Barbara.

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