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journal homepage: [www.elsevier.com/locate/jesp](http://www.elsevier.com/locate/jesp)The effects of justice motivation on memory for self- and other-relevant events <sup>☆</sup>Mitchell J. Callan <sup>a,\*</sup>, Aaron C. Kay <sup>b</sup>, Nicolas Davidenko <sup>c</sup>, John H. Ellard <sup>d</sup><sup>a</sup> Department of Psychology, University of Western Ontario, London, ON, Canada N6A 5C2<sup>b</sup> Department of Psychology, University of Waterloo, Waterloo, ON, Canada N2L 3G1<sup>c</sup> Psychology Department, Stanford University, Stanford, CA 94107, United States<sup>d</sup> Department of Psychology, University of Calgary, Calgary, AB, Canada T2N 1N4

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## ABSTRACT

We examined whether people might distort and selectively remember the past in ways that enable them to sustain a belief in a just world (BJW; Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York: Plenum Press). In Study 1, recall of a lottery prize reflected participants' justice concerns, such that the average lottery amount recalled was lowest when a "bad" versus "good" person won. In Study 2, an unrelated experience of just world threat (versus affirmation) enhanced biased recall of the lottery prize when the winner was undeserving. In Study 3, participants who experienced a fortuitous bad break selectively remembered more bad deeds from their recent past, whereas participants who experienced a good break selectively remembered more good deeds. Study 4 demonstrates that such selective memory biases specifically serve to portray chance outcomes as more fair. Taken together, these findings offer support for the notion that reconstructing and selectively recalling the past can serve to sustain a BJW.

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Scholars interested in the psychology of justice have long noted that people are sensitive to and concerned with the relation between the value of people and the value of their outcomes. For instance, when bad things happen to good people, such as the suffering of young children, people are rarely indifferent, and it matters little whether the suffering is their own or others'. The kinds of responses people have in such situations, such as engaging in self-sacrificial acts of altruism (Batson, 1998; Meindl & Lerner, 1983) or, alternatively, derogating the victim (Lerner & Simmons, 1966), have been taken as evidence for a fundamental motivational commitment to justice that manifests itself and is commonly referred to as the "belief in a just world" (BJW; Lerner, 1977, 1980; Lerner & Miller, 1978; Lerner, Miller, & Holmes, 1976).

According to just world theory, episodes of injustice threaten the viability of the BJW and motivate compensatory reactions aimed at restoring a sense of justice (Hafer & Begue, 2005; Lerner, 1980). Victim derogation and blame are perhaps the most researched examples of this process (see Callan & Ellard, *in press*; Hafer & Begue, 2005), but a number of alternate compensatory

reactions to injustice have been documented, including, but not limited to, punishing and demonizing harm doers (Callan, Powell, & Ellard, 2007; Ellard, Miller, Baumle, & Olson, 2002), victim enhancement and complementary stereotyping (Kay, Jost, & Young, 2005; Kay et al., 2007), psychological and physical distancing from victims (Hafer, 2000a, 2000b; Pancer, 1988), immanent justice reasoning (Callan, Ellard, & Nicol, 2006), and illusory perceptions of personal control (Kay, Gaucher, Napier, Callan, & Laurin, 2008).

As the foregoing discussion highlights, extant just world research has focused on observers' altered *perceptions* of people and events as means to maintaining a BJW. In the case of victim derogation, people reinterpret their perceptions of a victim's character to more appropriately fit a negative outcome. In the current research, we examined whether people—both for themselves and others—might selectively remember and reconstruct *details of the past* as means of maintaining a sense of justice. To our knowledge, researchers have yet to examine whether peoples' justice concerns can influence specifically: (a) memory reconstruction of another person's outcome, and (b) selective retrieval of one's autobiographical memories. Drawing on research demonstrating that motivational factors can influence what people remember about the past (e.g., McDonald & Hirt, 1997; Sanitioso, Kunda, & Fong, 1990; Sedikides, Green, & Pinter, 2004), across four studies we tested the general hypothesis that people will selectively remember and reconstruct details of the past in ways that render events in the present more consistent with the belief that people deserve their fortunes and misfortunes.

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\* Corresponding author.

E-mail address: [mcallan2@uwo.ca](mailto:mcallan2@uwo.ca) (M.J. Callan).

## Outcome motivation and memory bias

A large body of research demonstrates that peoples' memories for events are often distorted and reconstructed in ways incongruent with the original "facts" (for reviews, see Davis & Loftus, 2007; Hirt, Lynn, Payne, Krackow, & McCrear, 1999; Hirt, McDonald, & Markman, 1998; Kunda, 1999; Roediger, 1996). Indeed, research on memory bias has shown that, among other things, misinformation (Loftus, 1975; Pickrell, Bernstein, & Loftus, 2004), beliefs and expectancies (Bartlett, 1932; Ross, 1989; Ross & Conway, 1986), moral concerns (Pizarro, Laney, Morris, & Loftus, 2006) and stereotypes (Macrae, Milne, & Bodenhausen, 1994; Snyder & Uranowitz, 1978) affect the selection, construction, and reconstruction of memory.

Most relevant to the current research is evidence demonstrating that motivation can influence memory reconstruction and biased autobiographical searches of evidence consistent with one's current concerns (e.g., McDonald & Hirt, 1997; Sanitioso et al., 1990). For example, researchers have shown that self-enhancement and self-protection (Sanitioso et al., 1990; Sedikides et al., 2004; Wilson & Ross, 2003), relational and belongingness needs (Gardner, Pickett, & Brewer, 2000; Karney and Coombs, 2000), communication goals (Echteroff, Higgins, Kopietz, & Groll, 2008), and agency and communion motivation (Woike, Lavezzary, & Barsky, 2001) can lead to memory reconstruction and selective memory biases. Sanitioso et al. (1990), for example, found that participants who learned that introversion was related to academic success subsequently recalled more autobiographical instances of introverted behaviors than extroverted behaviors. Sanitioso et al.'s findings suggest that people may selectively recall past events to support their desired beliefs (in this case, the desire to maintain a positive view of themselves).

Hirt and his colleagues (Hirt et al., 1998, 1999) demonstrated that, as with the recall of autobiographical memory, people use their expectancies and current concerns to guide their recall of others' pasts. Hirt (1990) found that participants who expected a fellow student to improve his academic performance from midterm to final grades recalled the student's midterm grades as being lower than did participants with no such expectancy. More recently, McDonald and Hirt (1997) extended these findings by showing that people can reconstruct the pasts of others to justify their desired beliefs. They found that the manipulated likeability of a fellow student affected participants' recall of the student's grades, such that participants recalled higher grades for a likeable versus unlikable student. Relevant to the current research, these findings point to the apparent importance people attach to having an understanding of the past that fits justice expectations. Indeed, McDonald and Hirt's participants appear to have been motivated enough to find congruence between the outcomes for likeable and unlikable persons that they were willing to ignore entirely incongruent information suggesting, for instance, that a disliked person's prospects for a good outcome might be improving. These findings are thus consistent with idea that justice motivation may influence memory reconstruction of outcomes.

The foregoing discussion indicates that beliefs and motivations influence memory retrieval. In the current research, we propose that the need to believe in a just world may influence biased recall of the past, such that people may adjust and selectively bias their recall of past events (including their own prior behaviors) as a compensatory means of maintaining a sense of justice in the present. Indeed, just as people may bias their recollections of the past to preserve their self-esteem and identity (see Ross & Wilson, 2003; Sedikides & Gregg, 2008; Sedikides et al., 2004), we propose that peoples' memories may be biased in ways that enable them to maintain the belief that people, including themselves, get what

they deserve, even if the objective facts of their experiences suggest otherwise. To that end, misremembering and selectively recalling details of the past as a function of one's concern for justice may serve the same motivational end as other known compensatory responses to just world threat (e.g., victim derogation), insofar as biased memories of the past serve to reduce the discrepancy between a perceived injustice and the need to believe in a just world (cf. Moscovitz, Li, & Kirk, 2004; see Hafer & Begue, 2005).

## Overview of present research

Across four studies, we examined whether people might rely on their justice concerns when remembering details of their personal past and the pasts of others. In Study 1, we sought initial evidence of justice motivated recall by asking participants to recall the value of a lottery prize given to a "bad" or "good" person. On the basis of Hirt et al.'s (1999) model and research, we expected that participants would remember a smaller lottery prize for the "bad" versus "good" winner, presumably because a smaller prize is more congruent with people's justice expectations (i.e., that people get what they deserve). Using a "carryover" paradigm, participants in Study 2 responded to the same lottery scenario after they were exposed to a manipulation of just world threat. If memory reconstruction of outcomes is a compensatory mechanism people employ in response to just world threat, then threatening the BJW should lead to an increased reliance on memory reconstruction of a person's undeserved outcome.

Our justice motivation approach to memory biases is not limited to memory for others' outcomes and should theoretically also apply to memory for self-relevant outcomes (see Lerner, 1977, 1980). Accordingly, in Study 3 we extend these findings to the domain of self-relevant memory biases by examining whether people will respond to their own good or bad random outcomes by selectively recalling their own prior good and bad deeds in ways consistent with the belief that people get what they deserve. Here, we propose that recalling more personal good deeds after experiencing a favorable outcome, and more personal bad deeds after experiencing an unfavorable outcome, reflects the motivated use of stored autobiographical knowledge in memory to maintain an appropriate deservingness relation between the value of one's outcome (good or bad) and the value of one's prior behavior (good or bad deeds). In Study 3, then, we aimed to extend our first two studies by focusing on selective memory of one's own personal past rather than on memory reconstruction. Research examining the effects of self-enhancement on memory bias has shown that different memory processes can serve the same motivational end, including memory reconstruction of ego-threatening feedback (Rhodewalt & Eddings, 2002) and selective recall of one's own past behaviors (Sanitioso et al., 1990). That is, both memory distortion and biased autobiographical recall can serve the enhancement and protection of self-esteem. Similarly, we suggest that both memory reconstruction of another person's outcomes and selective recall of one's own past can serve the need to believe in a just world. In either case, the past (either reconstructed or selectively recalled) may be rendered more congruent with the need to believe that people get what they deserve. In Study 4, we examined directly whether the memory biases we examined in Study 3 serve to justify the perceived unfairness of chance events.

Two features of our research strategy are designed to highlight the memorial consequences of justice motivation. The first is an explicit reliance on fortuitous outcomes occurring for both the self and others. In each study, participants were asked to reflect on circumstances that preceded a fortuitous outcome experienced either by someone else (Studies 1 and 2) or themselves (Studies 3 and 4). This strategy extends a long tradition in the just world literature of

inferring that people are motivated by justice when they construe random outcomes to fit deservingness expectations (e.g., bad things happen to bad people). For example, people are presumably guided by a desire to reach a specific deservingness conclusion if moved to evaluate oneself (Ellard & Bates, 1990) or someone else (Lerner, 1965) positively when fortuitously experiencing a “good” outcome; or derogate oneself or someone else who by the luck of the draw suffers (Lerner & Simmons, 1966; Rubin & Peplau, 1973). The second strategy we employed for inferring justice motivated recall relied on creating the opportunity for participants to engage in compensatory memory strategies where the recall contexts were totally unrelated to the circumstance that activated justice concerns (cf. Moscovitz et al., 2004; see also Callan, Shead, & Olson, 2009; Callan et al., 2006; Kay et al., 2005). We reasoned that if participants’ recall in unrelated contexts was consistent with BJW expectations, then the justice motivation activated in the initial context could be assumed to be exerting continuing influence on memory processes.

## Study 1

In Study 1 we asked participants to recall the value of a lottery prize won by either a “good” or “bad” person. We predicted that recall of the lottery prize would be affected by the recipient’s moral worth, such that participants exposed to the “bad,” less deserving recipient would remember a smaller lottery value than those exposed to the “good,” more deserving recipient. Here, we expected memory distortions to occur primarily when a “bad” person wins the lottery, given that such an outcome is inconsistent with BJW assumption that good people deserve good outcomes and bad people, bad outcomes.

### Method

#### Participants

Thirty-five university undergraduates participated for bonus course credit. One participants’ data were not included in analyses because of suspiciousness. The resulting sample consisted of 12 males and 20 females (two unreported) with an average age of 22 years ( $SD = 5.41$ ).

#### Materials and procedure

Participants were informed that the study was concerned with examining how information presented on the Web versus traditional media (e.g., magazines) affects people’s judgments. This rationale created a context for participants to read one fictitious and one real magazine article ostensibly printed from the Web. The target justice-relevant article reported the good fortune of a man named Roger Wilson who had recently won an \$18.42 million lottery prize. The article reported the value of the lottery prize in the title only. The second article served as a filler and reported recent health information related to coffee consumption. All participants first read the lottery article and then the coffee article. Each article appeared like it was printed directly from the Web (e.g., with advertisements, hyperlinks, images).

Participants were randomly assigned one of two versions of the lottery article that were designed to create different impressions of Roger as a person and his deservingness of winning the lottery (see Callan et al., 2006). In the “good,” deserving person condition, Roger was characterized as a person who, according to the waitress at the local diner, always left big tips, smiled at everyone, and never complained about the food or service. His work supervisor also reported that Roger works hard, has a pleasant personality, and provides a positive work environment. In a second “bad,” undeserving

person portrayal, Roger never smiles, never leaves tips, and always complains about the food and service. His supervisor also says that he does not work hard, has an unpleasant personality, and contributes to a negative working environment.

After reading the articles, participants completed two questionnaires, one for each of the coffee and lottery articles. The questions asked about the coffee article were primarily related to the cover story (e.g., “how informative was this article,” “how did this article make you feel”). The questionnaire associated with the lottery article included the critical measure of lottery recall and a number of filler items serving to facilitate the credibility of the cover story. Within the lottery questionnaire, participants were asked to recall how much money Roger Wilson won using a quasi-open-ended measure of recall that asked them to recall the correct lottery amount within a hinted range (17.49 and 20.49 million dollars).

### Results & discussion

As predicted, participants exposed to the “bad” Roger recalled him winning less money on average ( $M = \$18.18$  million,  $SD = .34$ ) than participants exposed to the “good” Roger ( $M = \$18.46$  million,  $SD = .18$ ),  $t(32) = 2.97$ ,  $p = .006$ ,  $d = 1.02$  ( $M$  difference = \$280,000). From a just world theory perspective, this finding is consistent with the notion that participants in the bad condition were inclined to recall the “facts” of Roger’s winnings in a way that reflected their deservingness concerns.<sup>1</sup>

That is, the discrepancy between the value of Roger’s outcome (good) and the value of his person (bad) produced reconstructions of the lottery more consistent with what a bad person deserves (less of a positive outcome). These results are also consistent with Hirt, Erickson, and McDonald’s (1993) research showing that accurate recall tends to occur when a particular outcome matches one’s expectancy for the outcome. In the current study, knowledge that a “good” person received a good outcome is congruent with the BJW, and thus did not result in biased recall relative to the “bad” winner condition.

## Study 2

One important alternative explanation of the Study 1 finding is that presenting participants with a “bad” person after the to-be-remembered good outcome might have more simply primed a negative mood state (but see footnote 1) that resulted in the recall of a smaller lottery prize. In Study 2, then, we aimed to enhance our just motivation interpretation of the Study 1 findings by examining whether justice motivation aroused in a context unrelated to the lottery scenario might further impact memory for the lottery prize. That is, we explored the possibility that justice motivation may be

<sup>1</sup> We also conducted another study using a similar manipulation of the lottery winner’s moral worth that produced results consistent with those reported here. In this study, the lottery prize was \$46 million dollars, and participants were later asked to recognize the lottery amount among these options: \$6 million, \$16 million, \$26 million, \$36 million, \$46 million, \$56 million, and \$106 million. For purpose of analyses, the possible selections were coded 1 (*smaller value*) to 7 (*larger value*). Consistent with the Study 1 results, analyses revealed that participants in a “bad” winner condition recognized a significantly smaller lottery prize on average ( $M = 4.11$ ;  $SD = 1.28$ ) than did participants in a “good” winner condition ( $M = 4.90$ ;  $SD = .70$ ),  $t(37) = 2.45$ ,  $p = .02$ ,  $d = .77$ . In this study, we also included a modified version of the Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Although participants in the “good” winner condition experienced more positive affect than did participants in the “bad” winner condition ( $p = .001$ ,  $d = 1.11$ ), the effect of the winner’s moral worth on lottery recognition remained significant when controlling for affect,  $F(1,36) = 4.37$ ,  $p = .04$ , and affect did not exert a significant influence on lottery recognition over and above the manipulation effect ( $p = .94$ ). Thus, affect elicited by the knowledge that a bad person won a lottery does not appear to account for these memory distortion effects (see also Study 2).

important enough that it influences memory reconstruction in a context other than the one that activated the concern.

We propose that if motivated remembering of outcomes sustains observers' BJW, then threatening (versus affirming) the BJW should lead to heightened memory distortions of an unrelated, undeserved outcome. Accordingly, after reviewing the same lottery materials employed in Study 1, participants were presented with a scenario that either threatened or affirmed their BJW. We expected that an experience of just world threat would "carry back" and influence participants' recall of the lottery prize, such that the greatest memory distortions under just world threatening conditions would occur when the lottery winner is undeserving. This prediction is consistent with research demonstrating that justice concerns provoked in one context can influence subsequent compensatory reactions in unrelated contexts (e.g., Callan et al., 2006, 2009; Correia & Vala, 2003; Kay et al., 2005, 2008; Lerner, Goldberg, & Tetlock, 1998; Wyer, Bodenhausen, & Gorman, 1985).

## Method

### Participants & procedure

Sixty-nine undergraduates participated for bonus course credit. Two participants' data were not included in analyses because of suspiciousness. The resulting sample of 67 participants consisted of 51 females and 16 males with a mean age of 22.21 years ( $SD = 6.00$ ).

Participants were led to believe that the study concerned whether different types of media influence how people process and perceive emotional cues. To facilitate the credibility of the cover story, participants first completed a bogus questionnaire entitled "Emotions and Feelings of Others Scale." Next, participants were presented with one of the two lottery winner articles (i.e., "good" or "bad") employed in Study 1. They were then told that they would watch a short video clip depicting a young woman named Kerry discussing her emotionally trying experiences living with HIV (Fisher & Fisher, 1992; see also Hafer, Begue, Choma, & Dempsey, 2005). Prior to viewing the video presentation, participants were provided with background information about Kerry, including how she ostensibly contracted the virus when a condom broke during sexual intercourse with a person she knew. Participants then watched the video.

In the video, Kerry discusses how her life has been affected by her HIV status. She also discusses what medications she is taking and how they are affecting her physically and mentally. After the video, the experimenter informed participants about an ostensible follow-up interview with Kerry where she discusses how she has been responding to her medications and feeling more generally. This provided a context to manipulate justice threat by varying whether the effectiveness of Kerry's medications resulted in her prolonged or ended suffering. Specifically, crossed with the manipulation of the lottery winner's moral worth, justice threat was manipulated by varying the effectiveness of the woman's antiviral medications to alleviate her unjust suffering. Half the participants learned that Kerry's antiviral medications were completely effective in reducing her suffering and her HIV was in remission. The remaining participants learned that Kerry had difficulties with her antiviral medications, both from their side effects and failure to suppress the virus. They also learned that she experienced a number of ailments (e.g., headaches, skin conditions, pneumonia), and that she was expected to continue to suffer.

Using this scenario, Callan et al. (2006) found that participants who learned that Kerry's medications were ineffective (versus effective) in ending her suffering demonstrated selective attention towards justice versus neutral words in a modified Stroop task. Similar effects were not observed for death words, suggesting that observers' motivational concerns in this context are specific to jus-

tice. Moreover, Kay et al. (2008), using the same manipulation, found that participants perceived the progression of the young woman's suffering as a more unfair when her medications were ineffective versus effective in eliminating her suffering. Also, the ineffectiveness of her medications did not influence state self-esteem or self-enhancement processes. These findings are consistent with a growing body of evidence suggesting that episodes of injustice produce an implicit activation of justice motivation (Aguilar, Vala, Correia, & Pereira, 2008; Correia, Vala, & Aguiar, 2007; Hafer, 2000a; Kay & Jost, 2003), and that the prolonged suffering of an innocent victim produces concern with justice (e.g., Callan et al., 2007; Hafer, 2000a; Lerner & Simmons, 1966; Starzyk & Ross, 2008).

Finally, participants completed the lottery article questionnaire employed in Study 1, which included our critical measure of lottery recall. To provide the opportunity for a greater range of recalled values and to anchor the correct value within the center of the range, in the current study the hinted range given to participants was expanded to \$15.09 million and \$21.75 million. Two "filler" questions included in the lottery scenario questionnaire allowed us to test mood priming as an alternative explanation. Specifically, it is possible that learning about both an innocent victim's prolonged suffering and a bad person winning a lottery primed a negative mood state that was absent in the other conditions and that led to recall judgments more consistent with a negative mood (i.e., smaller dollar amount). Although recent research has generally shown that negative mood states may lead to improved memory accuracy rather than impairment or distortion (e.g., Forgas, Laham, & Vargas, 2005; Kensinger, 2007; Storbeck & Clore, 2005; but see Levine & Pizarro, 2004, for important qualifiers), we nonetheless examined whether participants' reported affect would specifically account for our predicted results. In the questionnaire, participants were asked to report: (a) how happy the lottery article made them feel on a scale ranging from 1 (*not at all happy*) to 7 (*a great deal happy*), and (b) how the article made them feel on a scale ranging from 1 (*good*) to 7 (*bad*). These two items were correlated significantly ( $r = .43, p < .001$ ) and were combined into a single measure of the participants' reported affect (with the happy item reversed scored).

### Results & discussion

Recall of the lottery prize was analyzed using a moral worth (good versus bad winner)  $\times$  suffering status (prolonged versus ended) ANOVA. Shown in Fig. 1, results revealed the predicted

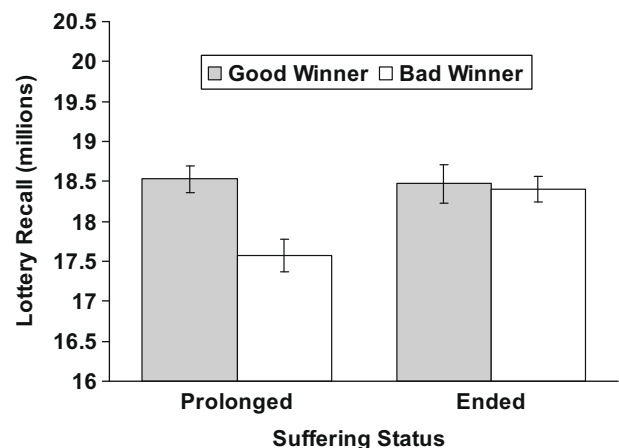


Fig. 1. Mean lottery recall as a function of the lottery winner's moral worth and the young woman's suffering status. The correct lottery value was \$18.42 million. Error bars show standard errors. The range of values on the y-axis reflects the range of observed recalled values.



interaction effect on lottery recall,  $F(1,63) = 5.23$ ,  $p = .03$ ,  $\omega^2 = .05$ . Follow-up analyses demonstrated the predicted lottery recall differences between the prolonged and ended suffering conditions when Roger was a “bad” person,  $t(63) = 3.04$ ,  $p = .003$ ,  $d = 1.09$  ( $M$  difference = \$831,200). Suffering status did not significantly influence lottery recall when Roger was a “good” person,  $t(63) = .22$ ,  $p = .83$ ,  $d = .07$  ( $M$  difference = \$59,000). That is, justice threat influenced biased recall of the lottery prize only when the prize was undeserved. Consistent with the Study 1 results, a significant main effect of the winner’s moral worth demonstrated that participants who learned Roger was a bad person recalled a smaller lottery value than participants who learned Roger was a good person,  $F(1,63) = 6.99$ ,  $p = .01$ ,  $\omega^2 = .07$ . There was also a main effect of suffering status,  $F(1,63) = 3.92$ ,  $p = .05$ ,  $\omega^2 = .04$ .

Although participants reported feeling less happy when the “bad” versus “good” winner won the lottery ( $M_s = 4.43$  versus 3.35, respectively),  $t(65) = 5.75$ ,  $p < .001$ ,  $d = 1.41$ , inclusion of self-reported affect as a covariate did not alter the significant moral worth  $\times$  suffering status interaction effect on recall,  $F(1,62) = 5.51$ ,  $p = .02$ , and affect did not exert a significant effect on lottery recall over and above the main and interaction effects,  $F(1,62) = 1.45$ ,  $p = .23$ . Thus, negative affect reported in the same context as the to-be-remembered outcome does not appear to account for the predicted interaction effect observed for lottery recall.

The findings of Study 2 extend the Study 1 findings by offering evidence that enhanced memory distortions of an undeserved outcome occurs under just world threatening versus affirming conditions: the suffering status of the young woman affected participants’ recall of the lottery prize when the lottery winner was “bad” but not when he was “good.” Consistent with the Study 1 findings, regardless of their experience of justice threat, participants exposed to the “good” winner did not bias their recall of the lottery prize, presumably because of the existing congruence between the value of the winner and the value of his outcome (cf. Hirt et al., 1993).

The use of just world threat manipulation unrelated to the context of the to-be-remembered outcome yields stronger evidence of justice motivated recall than previously existed. Participants presumably managed their justice concerns elicited by the young woman’s prolonged suffering by reconstructing their memories for another person’s undeserved outcome. Nevertheless, despite the consistent recognition and recall findings from Study 1, an effect of the recipient’s moral worth on recall was not observed for participants who learned that the woman’s suffering had ended ( $p = .80$ ,  $d = .08$ ). One interesting possibility for this difference between the prolonged and ended suffering conditions is that learning about a young woman emancipated from her suffering might have reaffirmed participants’ BJW and consequently led to a decreased desire to restore justice through memory distortion. In other words, participants might have felt sanguine about the “bad” person winning the lottery if their BJW was subsequently affirmed by the knowledge that an innocent victim’s suffering was ultimately taken care of. Thus, it would be interesting for future research to examine whether affirmations of a just world can specifically lead to a mitigation of just world defenses, including memory reconstruction effects.

### Study 3

Justice motivation affects reactions to the fates of others and the self, and theoretically one can generate predictions for the self that are conceptually analogous to those for other (Lerner, 1977, 1980). For instance, in a manner akin to derogating innocent victims, people may, at times, devalue themselves or their group to see their fate as just and fair (e.g., Comer & Laird, 1975; Janoff-Bulman,

1979; Jost & Burgess, 2000; Rubin & Peplau, 1973; see also Lerner, 1998), or self-enhance when fortune provides a fortuitous positive fate (Dion & Dion, 1987; Ellard & Bates, 1990). Rubin and Peplau (1973), for instance, demonstrated that participants who learned that they would be drafted to serve in Vietnam lowered their self-esteem relative to participants who learned that they would not be drafted. More recently, researchers have similarly demonstrated that people’s personal deservingness concerns can also serve to justify feelings of sadness among individuals with low self-esteem (Wood, Heimpel, Manwell, & Wittington, 2009) and lead to potentially costly behaviors, such as gambling (Callan, Ellard, Shead, & Hodgins, 2008).

In Study 3, then, we aimed to extend our previous two studies into the domain of self-relevant memory biases by examining whether a *personally* experienced fortuitous good or bad outcome can subsequently affect whether people selectively remember their *own* good or bad prior deeds. We tested the hypothesis that, following the experience of a chance bad break, people will selectively recall more bad deeds from their past, and following the experience of a chance good break, people will selectively recall more good deeds from their past. It is important to note that although conceptually similar to existing demonstrations of outcome-generated judgment of moral value (e.g., Apsler & Friedman, 1975; Ellard & Bates, 1990; Lerner, 1965; Rubin & Peplau, 1973), this process differs in two important ways: (a) the deeds being recalled are not, in a literal sense, causally related to the prior good or bad experiences (see Kay et al., 2005); and (b) the effects are not attributional per se, but involve memory biases of one’s own *specific past behaviors* (good or bad) that, we argue, nonetheless serve to sustain one’s sense of justice.

### Procedure

Participants were 156 Introductory Psychology students. During class, participants were given a package of questionnaires to complete and were told that the purpose of this packet was to pre-select participants for various experiments—a subset of which all students were required to complete for course credit. Embedded within this packet was our manipulation of random good and bad fortune. Specifically, participants read that later in the quarter, the researchers will be running a unique experiment that, because of its nature and rewards, has traditionally resulted in more sign-ups than we can accommodate. Participants then learned that if the last three digits of their personal identification number summed to an even number, they were eligible for the unique experiment. If the last three digits summed to an odd number, they were not eligible. Participants were asked to check in the appropriate box whether they were or were not eligible. This served as our manipulation of random good and bad fortune. Indeed, a manipulation check asking participants “To what extent did you feel fortunate or unfortunate with your outcome” (1 = *very fortunate* to 9 = *very unfortunate*) verified that participants who were ineligible felt significantly more unfortunate ( $M = 5.35$ ,  $SD = 1.77$ ) than those who were eligible ( $M = 3.54$ ,  $SD = 1.84$ ),  $t(153) = 6.22$ ,  $p < .001$ ,  $d = 1.00$ .

Next, on the following page, which was designed to look like an unrelated set of pre-testing criteria, participants were asked to recall either minor good or bad deeds from their recent past (e.g., not calling a friend back versus giving money to a homeless person). Here, participants were given ten lines to list their good or bad deeds. The total number of good and bad deeds was then tallied for each condition and served as our dependent measure of deeds recalled. Finally, to control for any potential mood-congruency effects on deeds recalled, immediately after the eligibility manipulation, participants were asked to rate how satisfied being eligible, or

satisfied being ineligible, made them feel (1 = very dissatisfied to 9 = very satisfied).

### Results & discussion

To examine the effects of experiencing good and bad fortune on memory for good and bad deeds, a 2 (break: good break versus bad break)  $\times$  2 (deeds: memory for good deeds versus memory for bad deeds) ANOVA was conducted on the number of deeds recalled. No main effects of type of fortune or deeds to-be-remembered achieved statistical significance ( $ps > .29$ ). However, the analysis revealed the critical predicted interaction between type of fortune and memory,  $F(1,152) = 11.28$ ,  $p = .001$ ,  $\omega^2 = .06$ . Although additional analyses demonstrated that participants who were ineligible for the experiment felt significantly more dissatisfied ( $M = 5.10$ ,  $SD = 1.81$ ) than did participants who were eligible ( $M = 3.35$ ,  $SD = 1.58$ ),  $t(153) = 6.32$ ,  $p < .001$ ,  $d = 1.03$ , the interaction effect on deeds recalled remained statistically significant when felt dissatisfaction was included as a covariate,  $F(1,150) = 11.60$ ,  $p = .001$ . Moreover, felt dissatisfaction did not exert a significant influence on the number of deeds recalled ( $F < 1$ ,  $p = .38$ ).

Shown in Fig. 2, participants who experienced the good break (i.e., were eligible for the experiment) recalled more good deeds from the past month than participants asked to report bad deeds,  $t(152) = 1.96$ ,  $p = .05$ ,  $d = .51$ . Participants who experienced the bad break recalled more bad deeds from the past month than good deeds,  $t(152) = 2.86$ ,  $p < .01$ ,  $d = .58$ . Moreover, for those participants asked to recall good deeds, those who also experienced the good break (i.e., were eligible for the experiment) remembered significantly more good deeds than those who experienced the bad break (i.e., were not eligible for the experiment),  $t(152) = 3.03$ ,  $p < .01$ ,  $d = .62$ . Finally, for those participants asked to recall bad deeds, those who experienced the bad break recalled marginally more bad deeds than those who experienced the good break,  $t(152) = 1.69$ ,  $p = .09$ ,  $d = .46$ .

The results of this study extend those of our first two studies in at least two ways. First, the concern for justice influenced selective memory biases such that participants differentially recalled existing good or bad deeds as a function of their own fortunes or misfortunes (cf. Sanitioso et al., 1990). Second, as just world theory would predict, we found that biased recollections of the past can result from experiences of *self-relevant* good and bad fortune, and are thus not limited to peoples' concerns associated with others' fortuitous outcomes (as in Studies 1 and 2).



Fig. 2. Effects of an experienced good or bad break on the number of good or bad deeds recalled. Error bars show standard errors.

Interestingly, participants recalled more bad deeds after experiencing a chance bad outcome, which seems inconsistent with the previously noted research demonstrating self-enhancement biases in autobiographical memory (for reviews, see Ross & Wilson, 2003; Sedikides & Gregg, 2008; Sedikides et al., 2004). That is, given that people generally desire to maintain a positive self-concept, why did our participants focus their retrospective spotlight on the bad deeds they committed instead of engaging in compensatory self-enhancement? Although research has found that negative information about the self is generally recalled worse than positive information (Sedikides & Green, 2000), and that people bias their memories of prior negative behaviors to maintain a positive view of themselves (Klein & Kunda, 1993), memory biases guided by self-enhancement are not inevitable and depend upon, among other things, whether feedback given about the self is: (a) central to one's self-conception (Sedikides & Green, 2000), (b) perceived as modifiable (Green, Pinter, & Sedikides, 2005), and (c) highly diagnostic of self-aspects (Green & Sedikides, 2004). In this study, participants experienced a mundane, chance event (i.e., losing a coin flip) that was likely neither central to their self-conception nor diagnostic of their self-aspect. Thus, we are not suggesting that justice motivation overshadows self-enhancement. Instead, the results of Study 3 are consistent with our justice motivation view of biased memory processes in that people were selectively remembering a past that was more consistent with the value of their present chance outcome—good or bad.

Our justice motive analysis suggests that people will differentially recall the past as a compensatory means of maintaining an appropriate deservingness relation between the value of one's outcome (fortune or misfortune) and the value of one's prior behavior (good or bad deeds). It is, however, not clear whether the autobiographical memory biases we observed in Study 3 were guided by people's concerns about justice and fairness per se. Indeed, the fact that our participant's recalled more bad deeds or good deeds as a result of a bad or good break could more simply be due to priming negative or positive cognitions. For example, priming a negative outcome (losing a coin flip) could increase the accessibility of negative thoughts, which could, in turn, result in greater recall of prior bad deeds. The primary objective of Study 4, then, was to examine directly whether the memory effects we observed in Study 3 were occurring for the reasons we believed—that is, whether selectively recalling more bad deeds does make a bad break seem *less unfair*.

### Study 4

Study 3 demonstrated that people remembered more bad deeds following bad breaks and good deeds following good breaks. We suggested that people rely upon these biased memory searches because of the perceived unfairness associated with experiencing good and bad chance events. Study 4 tests this process directly. In this study, participants were first asked to remember bad deeds they themselves committed or bad deeds someone else committed. Later in the experimental session, all participants experienced a good or bad break by virtue of winning or losing a coin flip that was allegedly used to determine whether they would have to continue with a very boring task or could leave immediately. Our dependent measure of interest was the extent to which participants deemed the coin flip methodology to be a fair tool with which to assign participants to condition.

Given our theoretical position, and research suggesting that assigning deservingness to outcomes can reduce their perceived unfairness (Ellard & Skarlicki, 2002), regardless of how unrealistic or irrational this causal connection may be (Callan et al., 2006; Dion & Dion, 1987), we expected two main results: First, among those participants who lost the coin flip, we hypothesized that par-

Participants who remembered their own bad deeds would judge the coin flip methodology as more fair than those in the control condition. Second, among those who remembered their own bad deeds, we hypothesized they would judge the coin flip methodology to be more fair when they lost the coin flip rather than won the coin flip.

### Materials and procedure

Participants were 32 Introductory Psychology students (nine male). Two participants were scheduled per time slot. Upon arrival at the testing session, participants were told that we were interested in several social cognitive processes, including memory and face perception. They were then given a packet of questionnaires and told to complete them in order. After completing filler items, participants were asked to recall three bad deeds from the past month that they themselves committed (the wording was the same as in Study 3) or three bad deeds from the past month that someone else committed. The next three pages involved rating the “distinctiveness” of face silhouettes. Each page had approximately 20 silhouettes of face profiles, and participants were asked to rate each on distinctiveness.

After both participants finished this task, they were told that we were interested in how performance on this distinctiveness rating task changes with practice, and so one participant was going to have to do this same task for the remaining 25 min (at this point, the participants were shown a stack of paper about an inch thick that they would have to work until time expired), and the other would only have to complete five more pages of the task and then would be free to leave (in addition, the participants were told that a few questions designed “to help us with the design of the experiment” would also be interspersed throughout the packet).

A coin was flipped to determine who would be in the “long” condition. “Heads,” the participants were told, would result in one participant being placed in the short condition, and “tails” would result in the other participants being placed in the short condition (and vice-versa for the long condition). After the coin was flipped, the participants were given their respective packets (i.e., either a very thick, long packet or a thin, short packet) and asked to work until completion.

The fourth page of each packet included our dependent measures of interest. Instructions at the top of the page informed participants that before continuing the perception task, we were hoping that they would answer the following questions to “help us with future study designs.” They were asked four questions: (1) “How unfair do you find it that you ended up having to fill out this packet (rather than the one the other participant had to fill out)?” (1 = *very unfair* to 9 = *very fair*), (2) “Given your experience, do you think it is reasonable to use coin flips to assign participants to different conditions?” (1 = *No, not at all* to 9 = *Yes, definitely*), (3) “To what extent are you happy or upset with the results of the coin flip?” (1 = *very happy* to 9 = *very upset*), and (4) “How satisfied are you with the fact that you were assigned to this packet?” (1 = *Very unsatisfied* to 9 = *Very satisfied*). As in Studies 2 and 3, we included the level of upset and dissatisfaction measures to test whether mood per se accounts for our predicted effects. All the remaining pages of the packet required participants to continue with the face perception task. Once the participant in the short packet condition finished with his/her package, s/he was taken to a separate room and was excused. Once the participant in the long packet condition was passed the crucial dependent variable page, s/he was told they could stop and was excused.

### Results & discussion

The “fairness” and “reasonableness” measures correlated significantly with one another ( $r = .44$ ,  $p = .01$ ) and were averaged

to form one dependent measure of perceived fairness. The satisfaction (reverse scored) and level of upset items were also significantly correlated ( $r = .80$ ,  $p < .001$ ) and were similarly combined into a single measure of level of upset. A two-way ANOVA was conducted with the memory manipulation (own bad deeds or other’s bad deeds) and coin flip results (won or lost) on the perceived fairness of the coin toss. Although no main effects were statistically significant ( $ps > .47$ ), the predicted two-way interaction achieved significance,  $F(1,28) = 19.68$ ,  $p < .001$ ,  $\omega^2 = .38$ . As expected, participants who lost the coin flip were more upset ( $M = 5.63$ ,  $SD = 1.42$ ) than those who won the coin flip ( $M = 2.12$ ,  $SD = 1.28$ ),  $t(30) = 7.36$ ,  $p < .001$ ,  $d = 2.60$ . However, the memory manipulation by coin flip interaction effect on perceived fairness persisted when controlling for level of upset,  $F(1,27) = 18.38$ ,  $p < .001$ .

Shown in Fig. 3, the data pattern for the memory manipulation by coin flip interaction on perceived fairness was in the predicted direction. First, among participants who lost the coin flip, the coin flip methodology was rated as more fair by those who first remembered personal bad deeds than by those who remembered someone else’s bad deeds,  $t(28) = 3.36$ ,  $p = .002$ ,  $d = 1.84$ . Second, among those participants who won the coin flip, the coin flip methodology was rated *less* fair by those who first remembered personal bad deeds compared to those in the control condition,  $t(28) = 2.91$ ,  $p = .007$ ,  $d = 1.36$ . Third, among those participants who first remembered personal bad deeds, the coin flip methodology was rated as more fair by those who *lost* the coin flip than those who *won* the coin flip,  $t(28) = 2.72$ ,  $p = .01$ ,  $d = 1.28$ . Finally, in the control condition, those who *won* the coin flip rated the coin flip methodology as *more* fair than those who lost the coin flip,  $t(28) = 3.53$ ,  $p = .002$ ,  $d = 1.91$ .

We believe that these findings, although not directly assessing memory biases, complement the results of our first three studies by showing that the memory effects we observed in Study 3 are linked to people’s justice concerns in ways predicted from just world theory. Of particular importance to our analysis, we observed that among those participants who remembered bad deeds they had recently committed, those who lost the coin flip deemed the coin flip methodology to be fairer than those who won the coin flip. This finding, we believe, is particularly telling: In the context of remembering one’s own bad deeds, people are actually reporting a random event to be *more fair* if they fared poorly than if they fared favorably. Importantly, this pattern did not replicate among those participants who first remembered someone else’s bad deeds.

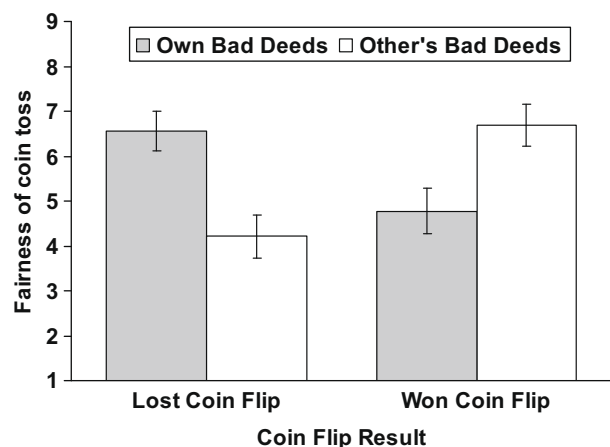


Fig. 3. Reported fairness of the coin toss as a function of coin toss results and deeds recalled. Error bars show standard errors.

## General discussion

It is well-established that knowledge of fortuitous good or bad outcomes can influence people's perceptions of others and themselves in ways consistent with the BJW. Indeed, much research has demonstrated that "bad" outcomes (e.g., undeserved suffering) can lead observers to reinterpret their experiences of a person's fate as deserved (Hafer & Begue, 2005; Lerner, 1980). Less research, however, has examined whether justice concerns can similarly impact memory biases for specific details of events, including one's own prior good and bad behaviors. The present findings offer support for our predictions that the perceived moral value of a person and the value of one's own outcomes can influence reactions in the form of motivated remembering serving to sustain a BJW.

In Study 1, participants reconstructed the value of a person's lottery outcome in a manner consistent with what that person deserved (i.e., less of a good outcome for a "bad" person; cf. McDonald & Hirt, 1997). In Study 2, the introduction of a just world threat manipulation moderated the Study 1 effect in a manner predictable from just world theory (Lerner, 1980) and prior research (Callan et al., 2006). In Studies 3 and 4, we extended these findings to the domain of self-relevant memory biases. In Study 3, participants who experienced a good break subsequently remembered more good deeds and less bad deeds in an unrelated memory task than participants who experienced a bad break. Although not directly assessing autobiographical memory biases, the results of Study 4 offer evidence supporting the notion that selectively recalling more bad deeds does make a bad break seem more fair. Indeed, participants who first thought about their own bad deeds deemed the loss of the coin flip as more fair than control participants.

Taken together, the results of these four studies demonstrate that justice motivation exerts important effects on memory biases at retrieval that are distinguishable empirically from other sources, including mood-congruity effects. Across each of our studies, we demonstrated that although affect (e.g., PANAS scores, level of upset, dissatisfaction) varied as a function of our manipulations in expected ways (e.g., feeling less satisfied with a bad break), affective experiences, when statistically controlled for, did not specifically account for our predicted effects. The fact that mood did not account for the observed memory biases is understandable given recent research showing that negative emotional experiences generally lead to enhanced memory accuracy (for a review, see Kensinger, 2007). Although research has also revealed mood-congruity effects in autobiographical recall (such as those examined in Study 3), such mood effects are neither consistent nor straightforward (see Levine & Pizarro, 2004). For example, Sakaki (2007) recently found that mood-congruity effects on autobiographical memory depended upon whether participants recalled their experiences from a self-aspect that was relevant to the elicitor of the mood state (e.g., being a student and failing an examination).

Beyond the potential for mood-congruity effects, it is also important to highlight the related alternative explanation that our effects could be more simply due to priming good or bad cognitions than justice motivation. That is, presenting participants with the negative behaviors of someone else (Study 1) or a negative or positive event occurring to oneself (Study 3) could have rendered accessible similarly valenced cognitions that resulted in the recall of a less positive lottery prize or bad or good deeds. Importantly, though, Studies 2 and 4 were explicitly designed to show that the memory biases we observed in Studies 1 and 3 were being guided by participants' justice concerns. In these studies, we demonstrated that the reconstruction of a lottery prize awarded to an undeserving recipient is enhanced by a prior just world threat (Study 2) and that thinking about one's own prior bad deeds following an experience of a chance bad outcome is related to peo-

ple's fairness concerns (Study 4). That is, regardless of the potential for mood-congruity or priming effects in Study 3, Study 4 showed that selectively remembering one's own bad deeds as a function of a fortuitous bad outcome is related specifically to people's fairness concerns. Thus, although priming and mood congruity remain as viable explanations for at least some of the observed effects, we argue that the results of Studies 2 and 4 offer stronger evidence for the idea that the concern for justice can influence what people remember about the past than existed previously.

## Limitations and future directions

Although we obtained differences in lottery recall between the good and bad lottery winner conditions, the actual behaviors of the "bad" lottery winner seem benign in comparison to, for example, a mass murderer winning the lottery. Similarly, the good or bad break experienced by participants in Study 3 was rather mundane in comparison to, for example, losing one's job due to downsizing. Thus, it is important to know whether similar differences in memory biases would be observed in more "extreme" circumstances, or if participants might alternatively feel impelled to seek justice through other means. Nevertheless, the current research highlights the fact that motivated memory biases serving to sustain one's BJW can be instigated even in more mundane, everyday circumstances (e.g., by simply losing a coin flip).

Another limitation of this research is that we used relatively short retention intervals between our justice threat manipulations and recall. The extent to which similar memory distortions would occur over longer retention intervals is unknown. Indeed, people in their everyday lives rarely attempt to explicitly remember details of events immediately after their occurrence. However, research does suggest that people tend to rely more on their expectancies and motivational concerns when episodic information becomes more inaccessible as time passes (see Hirt et al., 1998). This might suggest that the effects of justice motivation on memory reconstruction and selective recall might increase as specific episodic information is lost over time. On the other hand, the autobiographical memory biases we observed might be short-lived. Even though we demonstrated, for example, that participants recalled more bad deeds after experiencing a negative outcome and construed a negative outcome as more fair if they first remembered their own bad deeds, much research has shown that memory biases can also serve self-enhancement concerns. Whether people in the long-run might be more given to self-enhancing or restoring justice through biased recall is certainly unknown and requires further research. Our results are nonetheless consistent with our theoretical approach in that people, at least "in the moment," will reconstruct and selectively remember the past as a function of random good or bad outcomes in ways consistent with the notion that people get what they deserve and deserve what they get. Future research that examines whether people will be more given to draw upon their justice concerns, memory trace of an event, or self-concerns as time passes might help further elucidate the processes investigated in the current research, including how people's memory for the past might serve justice in the present over both time and circumstance.

The findings reported here also suggest intriguing possibilities for future research, given the variety of "outcomes" justice researchers have examined. In Studies 1 and 2, we focused solely on participants' recollections of another person's *outcome*. From a just world theory standpoint, one should also be able to demonstrate memory reconstruction effects related to aspects of the *person* experiencing the outcome. For instance, memory bias may also be implicated in victim derogation processes, such that observers might selectively remember a victim's attributes and/or behaviors



to be more congruent with the victim's fate (e.g., selectively remembering that a rape victim was scantily dressed). An interesting direction for future research will be to explicate the interplay between peoples' memories for outcomes and persons, which could reveal tendencies to distort memories of outcomes, persons, or both as means to maintaining a BJW. Whether such memory distortions facilitating victim derogation may have implications for eyewitness memory and jury decision making are possibilities that are beginning to draw the attention of researchers (Callan et al., 2007; Marsh & Greenberg, 2006). Nonetheless, the current findings add to the literature by showing that people's justice concerns can play a significant role in their memories for specific details of events in ways that render the past more consistent with the need to believe in a just world.

A number of other interesting and potentially useful avenues for future research can be drawn from the present findings that cut across various domains of justice research. For instance, to the extent that social roles are "outcomes," knowing that someone occupies a social role of high status could bias one's memory of their behavior in the direction of making the role they occupy more deserved (cf. Ellard & Bates, 1990). Similarly, threats to the legitimacy of socio-political systems could motivate people to reconstruct or selectively recall events that would enable them to reestablish their faith in the status quo (Jost, Banaji, & Nosek, 2004)—for example, by misremembering stereotypical information about a person who did or did not embody sexist ideals (Jost & Kay, 2005; Lau, Kay, & Spencer, 2008; cf. Snyder & Uranowitz, 1978). Continued research in these areas could thus expand our understanding of how and to what extent people's justice concerns influence memory processes.

### General conclusions

In sum, we believe the present research advances our understanding of how people maintain a commitment to justice in their lives. Our findings also contribute to research highlighting motivational influences on memory. Indeed, the present research contributes to the growing body of research demonstrating that people's current concerns can lead to biased recall of the past in motive-consistent ways. Justice, then, provides another general motivational framework for understanding memory biases because it informs how people distort and selectively remember details of the past in ways that enable them to sustain an important, functional belief. The novel findings reported here open the door to examining how concerns about justice may have implications for how we consider the past, including how reconstructing and selectively remembering the past serves achieving justice in the present.

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