

Emotion Priming and Attributions for Terrorism: Americans' Reactions in a National Field Experiment

Deborah A. Small

University of Pennsylvania

Jennifer S. Lerner

Carnegie Mellon University

Baruch Fischhoff

Carnegie Mellon University

The terrorist attacks of September 11 elicited many forms of negative affect, including anger and sadness. They also elicited a search for explanations. A national field study that experimentally primed emotion evaluated how priming anger and sadness differentially evoked causal judgments about the attacks. It found that priming anger triggered more causal attributions than did priming sadness. Thus, specific emotions, rather than general negativity, shaped citizens' attributions regarding September 11. In addition to its theoretical implications, the study demonstrates a method for studying ecologically valid emotions, under conditions of experimental control, with a nationally representative sample.

KEY WORDS: Emotion, terrorism, attribution, sadness, anger, September 11

On September 11, 2001, an extraordinary, tragic event occurred, challenging many Americans' notions about others' behavior and about their own vulnerability. Since then, social scientists have examined the consequences of this unique national trauma on citizens' values, beliefs, attitudes, and psychological well-being. For instance, studies have considered perceptions of risk (Fischhoff, Gonzalez, Lerner, & Small, 2005; Lerner, Gonzalez, Small, & Fischhoff, 2003), social dynamics in communities (Mehl & Pennebaker, 2003; Putnam, 2002; Traugott et al., 2002), political tolerance and the desire for revenge (Cohn, Mehl, Matthias, & Pennebaker, 2004; Skitka, Bauman, & Mullen, 2004), support for political leadership (Landau et al., 2004), and citizens' mental health (e.g.,

Fredrickson, Tugade, Waugh, & Larkin, 2003; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002).

Here, we focus on causal attributions for the terrorist attacks. Citizens' attributions for the terrorist attacks merit systematic study not only for what they may reveal about basic cognitive–emotional processes but also for what they may reveal about policy preferences. Causal attributions can implicitly inform views on how one should respond toward terrorists and how one should prevent future attacks. Blaming individuals or governments might drive preferences for retaliatory responses, whereas blaming situational factors might drive preferences toward less hostile approaches.

Causal attributions after an aggressive and tragic event may be shaped by emotions. Despite speculations regarding the effects of emotions in shaping citizens' judgments regarding political events (e.g., Krugman, 2001), there are relatively few directly relevant studies. Previous research on political judgment and affect has focused on two issues: the persuasive appeal of emotion on political support (Brader, 2005; Marcus, 2000) and the effects of emotion on political tolerance (Marcus, Sullivan, Theiss-Morse, & Wood, 1995; Skitka et al., 2004).

The present study examines the respective roles of sadness and anger on causal attributions. Sadness and anger merit systematic study in this context for two reasons. First, the attacks evoked significant levels of these emotions (Lerner et al., 2003). Second, sadness and anger have both been shown to affect attributional judgments in a lab context (Keltner, Ellsworth, & Edwards, 1993). Specifically, in hypothetical judgments, sadness triggered greater situational attributions whereas anger triggered greater individual attributions.

Apart from the above mentioned Keltner et al. studies, relatively little is known about the effects of these specific emotions on causal attribution. Sadness and anger have been studied, however, in other relevant aspects of social information processing. For example, sadness triggers active, deliberative thought (Alloy & Abramson, 1979; Ambady & Gray, 2002; Bodenhausen, Gabriel, & Lineberger, 2000; Gleicher & Weary, 1991; Wenzlaff, Wegner, & Roper, 1988), whereas anger triggers relatively heuristic thought (Lerner, Goldberg, & Tetlock, 1998; Tiedens & Linton, 2001). In a direct comparison of these two negative emotions, sad people used more systematic, detail-oriented strategies than did angry people, including relying less on stereotypes and other heuristic cues (Bodenhausen, Sheppard, & Kramer, 1994).

Anger and sadness differentially affect not only the systematicity of thought but also the *content* of thought. For example, anger drives and is driven by thoughts of blame and punishment (Averill, 1983; Lazarus, 1991; Quigley & Tedeschi, 1996; Solomon, 1990; Weiner, 1980). The implicit association between anger and blame cognitions could increase the search for causes of September 11. In contrast, sadness revolves around thoughts of loss (Lazarus, 1991). This loss focus could make causal judgments less relevant for sad people, if the loss preoccupies them more than its cause.

Synthesis of Present Study and Hypotheses

The present study experimentally induces anger and sadness regarding the terrorist attacks. It looks for evidence of three possible response patterns. The first is that sadness triggers more causal attributions than does anger, due to the heightened level of active, deliberate processing associated with sadness (Alloy & Abramson, 1979; Ambady & Gray, 2002; Bodenhausen, 2000; Bodenhausen et al., 1994; Gleicher & Weary, 1991; Wenzlaff et al., 1988). The second, and contradictory, pattern is that sadness creates fewer causal attributions than anger, because anger arises from and gives rise to appraisals of justice and blame (Lazarus, 1991; Lerner et al., 1998). Finally, sadness and anger may trigger similar levels of causal attribution, if valence alone determines the effect of emotion on thought processes (e.g., Isen, Shalcker, Clark, & Karp, 1978; Mayer, Gaschke, Braverman, & Evans, 1992). That is, they may trigger a globally negative response, with undifferentiated attributional patterns.

Method*Overview*

Our study subjected a nationally representative U.S. sample to experimental manipulations with unusual ecological validity. Participants' attributions were assessed in their own open-ended written responses to a question regarding their feelings about the terrorist attacks.

Sample

Our sample was drawn from Knowledge Networks' nationally representative panel, originally recruited through random-digit dialing. Those individuals who agreed to participate in the panel received a WebTV and free interactive Internet access, in return for completing three to four surveys per month. Characteristics of the panel's 75,000 households closely match the U.S. Census on key demographic dimensions (see <http://www.knowledgenetworks.com/ganp/>).

Notice of survey was sent on November 10, 2001, to a national random sample of 1,786 individuals ages 13–88 (886 males and 900 females), asking if they could spend 20 uninterrupted minutes alone. Of those individuals, 57.7% (502 males and 528 females) provided informed consent and completed the survey. We removed 57 individuals because (a) they answered less than 25% of the questions ($n = 13$), (b) skipped all the emotion manipulation check questions ($n = 14$), or (c) gave zeros to all of the emotion manipulation-check (see below) questions ($n = 30$). The final sample had 973 respondents (472 males and 501 females). Data were collected between November 10, 2001, and November 29, 2001.

Sample demographics roughly matched Census figures: 49% were male. The mean age was 42.9 ($SD = 18.1$, range = 13–88). Self-reports indicated 10% African-American/non-Hispanic, 10% Hispanic, 5% Other/non-Hispanic, and 71% White/non-Hispanic. Among adults, 14% reported not finishing high school, 31% graduating high school or receiving a GED, 23% having some college but no degree, 23% graduating from a two- or four-year college, and 9% having advanced degrees. Of the 78% of participants who provided their political party identification, 27.3% were self-identified Republicans, 47.9% Democrats, and 24.8% other.

Experimental Manipulation

Those who agreed to participate were randomly assigned to an emotion condition: 312 received the anger manipulation and 334 the sadness manipulation. There was also a fear condition, responses to which are analyzed in a separate article on risk perceptions (see Lerner et al., 2003). Because our hypotheses concerning attribution include no predictions for the fear condition, it is ignored here. Participants answered questions about their current mood, followed by the emotion induction. Participants were presented with the following text, followed by a text box for typing their response:

The terrorist attacks evoked a lot of emotion in Americans. We are particularly interested in what makes you most *angry* about the attacks. Please describe in detail the one thing that makes you most *angry* about the attacks. Write as detailed a description of that thing as possible. If you can, write your description so that someone reading it might even get *angry* from learning about the situation.

- What aspect of the terrorist attacks makes you the most *angry*?
- Why does it make you so *angry*?

The other condition replaced *angry* with *sad*.

Manipulation Checks

At the end of the study, participants reported how they felt while writing about their feelings. They rated five-item scales for each focal emotion. Response scales ranged from 0 (*do not feel the emotion the slightest bit*) to 8 (*feel the emotion even more strongly than ever before*). The anger-scale items were wrathful, enraged, mad, furious, and angry. The sadness-scale items were depressed, mournful, sad, downhearted, and grief stricken. Given the high interitem correlations, we averaged responses on each scale for subsequent analyses ($\alpha_{\text{anger}} = .94$; $\alpha_{\text{sadness}} = .89$).

Coding of Causal Attributions

Five research assistants, blind to emotion condition and research hypotheses, were trained to code responses to the open-ended questions. In order to reduce coder bias, the authors removed all emotion terms from the responses.

Coders evaluated each statement. First, for the presence of attributions for terrorism, then for whether it described people or situations (as causes), providing a separate code (0 = *not present*; 1 = *partially present*; 2 = *completely present*) for each type of attribution. Typical people (or dispositional) causes included Osama Bin Laden, Al-Qaeda, Bill Clinton, and “the terrorists.” Typical situational causes included world fanaticism and violence, religious entities, and weak foreign governments. Because “partially present” codes were infrequent (6% of all statements), they were combined with “completely present.” Therefore, each statement was coded dichotomously, as having or lacking each kind of attribution. The five coders reliably coded statements in terms of whether they included a situational attribution and a dispositional one, $\alpha = .95$ and $\alpha = .82$, respectively.

Results

Preliminary Analysis

Manipulation checks confirmed that participants (a) reported more anger in the anger condition ($M_{\text{anger}} = 5.40$) than in the sadness condition ($M_{\text{sadness}} = 4.82$), $F(1, 639) = 9.37$, $p < .01$, and (b) reported more sadness ($M_{\text{sadness}} = 4.65$) in the sadness condition than in the anger condition ($M_{\text{anger}} = 4.31$), $F(1, 639) = 5.71$, $p < .02$.

Across the two emotion conditions, 57.5% of participants made at least one attribution, while reflecting on their feelings about the attacks. More females than males made at least one attribution (61.0% vs. 53.7%), $\chi^2(1) = 3.40$, $p < .05$. The frequency of making an attribution was not significantly related to any other demographic category (race, age, income, and educational attainment).

Hypothesis Testing

Results supported the second hypothesis that anger evoked causal judgments more frequently than did sadness. In the anger condition, 73.1% of participants made at least one causal attribution, compared to only 33.3% in the sadness condition, $\chi^2(1) = 63.58$, $p < .001$.¹ On average, participants in the anger condition made more causal attributions than did sad-condition participants, $F(1, 639) = 74.13$, $p < .001$ (see Table 1). This difference occurred despite participants in the two conditions writing the same number of words per response ($M_{\text{anger}} = 48$;

¹ Only 36.6% of participants in the fear condition made a causal attribution.

Table 1. Frequency of making causal statements

Number of causal statements	Anger Condition N = 312	Sadness Condition N = 334	All Participants
0	26.9%	66.6%	42.5%
1	52.7	24.8	40.9
2	15.8	7.8	14.0
3	4.6	.8	2.6
Mean Number	0.98	0.43	0.77

$M_{\text{sadness}} = 50$), $F(1, 639) = .42, p = .63$. Thus, anger increased how often participants produced causal attributions without increasing how much they wrote.

Although we had no a priori hypotheses concerning the specific causes that people would list, we conducted a content analysis, identifying seven categories: (1) Terrorists/Attackers (76% of all mentioned causes), (2) the U.S. government, including individuals in the government (7%), (3) foreign leaders/regimes/nations (4%), (4) lax security in the United States (4%), (5) conflicting beliefs and religious motivation (3%), (6) spiritual causes (God/Satan) (1%), and (7) weak foreign relations (<1%). Each specific cause type was more prevalent in the angry than in the sad condition.

This pattern emerged for both dispositional and situational attributions. More anger- than sad-condition participants produced at least one dispositional attribution (58.0% vs. 29.0%; $\chi^2(1) = 50.59, p < .001$), at least one situational attribution (31.1% vs. 10.6%, $\chi^2(1) = 42.15, p < .001$), and at least one attribution of each type (17.9% vs. 7.4%; $p < .01$). Thus sadness and anger did not differentially evoke these two general subtypes of attribution. Anger evoked more of both types.

Discussion

The events of September 11 tragically provided an opportunity to examine how emotions shape attributions. Results revealed that participants reflecting on their anger generated more causal attributions than did those reflecting on their sadness, even though angry and sad participants wrote equally long responses. These findings support the hypothesis that activation of anger evokes more attributional thought than does activation of sadness, consistent with anger's core appraisal themes of justice and blame (Lazarus, 1991). Whereas sadness has been shown in other judgment contexts (e.g., Bodenhausen et al., 1994) to trigger more systematic thought than anger, it did not do so for these causal judgments. A question for future research is whether this will be true for attributions in other domains.

It is unclear from the present results whether anger augments the tendency to make causal attributions or sadness inhibits it. A neutral condition could answer

this question; none was included because of the impossibility of evoking neutral sentiments about the terrorist attacks. Future research, using more malleable subject matter, should address this question.

Although sadness and anger involve different levels of attributional thought, the two emotion primes shared an important similarity. In both the anger and the sadness conditions, dispositional attributions were far more common than were situational attributions. This pattern, too, may reflect the subject matter, because the media devoted so much attention to the perpetrators. It may also reflect the dispositional bias demonstrated in studies of the fundamental attribution error and correspondence bias (for review, see Gilbert & Malone, 1995).

The attributional pattern observed here differs from that found in Keltner et al.'s (1993) lab-based studies, where anger increased the likelihood of seeing individuals as causal and sadness increased the likelihood of seeing situations as causal. Many differences between the respective studies might explain this difference. For example, their studies examined *incidental emotions* (i.e., feelings arising from events with no relation with the event being judged), whereas the present study examined *integral emotions* (i.e., feelings arising from the event being judged). A related difference is that Keltner et al. concentrated on attributions for routine, hypothetical events (e.g., missing a cab), whereas this study concentrated on one unique, real event (i.e., September 11 attacks). The present complex, real-world stimuli may have provided more fodder for dispositional attributions. Research is needed to determine the situational conditions under which sadness and anger exert divergent effects on attributions of causality.

Apart from theoretical implications, this study also extends two streams of research in political psychology and political science: one examining the role of emotion in political judgments (Brader, 2004; Glaser & Salovey, 1998; Marcus, 2000; Skitka et al., 2004) and one examining citizens' reactions to the terrorist attacks (Cohn et al., 2004; Fischhoff, Gonzalez, Small, & Lerner, 2003, 2004, 2005; Fredrickson et al., 2003; Launda et al., 2004; Lerner et al., 2003; Mehl & Pennebaker, 2003; Putnam, 2002; Silver et al., 2002; Traugott et al., 2002). To the former, we introduce sadness and anger as relevant and contrasting emotions for the study of political judgment. To the latter we introduce causal attributions as a dependent variable in the context of reactions to terrorism. We demonstrate that activation of anger and sadness differentially affects attributions made about the attacks.

People clearly felt and still may feel many emotions about the attacks, whose salience may vary when the time comes to make a judgment. For example, anger may be primed as a result of an angry political speech; sadness may be primed when reading a newspaper obituary. Furthermore, specific emotions may be mitigated by certain political actions, such as suppressing images of dead and wounded soldiers. Our results suggest that their attributions will depend on the specific emotion that dominates. Namely, evoking sadness may reduce the number of causal factors people blame, relative to evoking anger.

Conclusion

The findings imply that media coverage of terrorism-related news can differentially activate sadness or anger depending on the content of the media. Activating anger over the terrorist attacks increases the number of causal factors people blame, relative to sadness. These findings highlight the value of distinguishing specific kinds of negative emotional reactions. In addition to elucidating basic cognitive-emotional processes, the findings also provide clues to citizens' policy preferences for handling terrorism. A focus on causes might prompt a desire for actions targeting offenders, such as retaliation. Alternatively, a focus on the loss might prompt actions targeting victims, such as healing.

ACKNOWLEDGMENTS

We gratefully acknowledge research funding from the National Science Foundation (SES-0201525, CAREER Award SES-0239637); the National Institute of Mental Health (MH62376); and the American Psychological Association (Division 9). We thank Phoebe Ellsworth for valuable comments and Christopher Barley, Jennifer Cerully, Colin Holloway, Larissa Schyrokyj, Veena Vesudevan, and Shou-Chin You for research assistance. Correspondence concerning this article should be addressed to Deborah Small (Wharton School, 760 Jon M. Huntsman Hall, University of Pennsylvania, Philadelphia, PA 19104). E-mail: deborahs@wharton.upenn.edu

REFERENCES

- Alloy, L. B., & Abramson, L. Y. (1979). Judgment of contingency in depressed and nondepressed students: Sadder but wiser? *Journal of Experimental Psychology: General*, *108*(4), 441–485.
- Ambady, N., & Gray, H. M. (2002). On being sad and mistaken: Mood effects on the accuracy of thin-slice judgments. *Journal of Personality & Social Psychology*, *83*(4), 947–961.
- Averill, J. R. (1983). Studies on anger and aggression. *American Psychologist*, *38*, 1145–1160.
- Bodenhausen, G., Sheppard, L., & Kramer, G. (1994). Negative affect and social judgment: The different impact of anger and sadness. *European Journal of Social Psychology*, *24*, 45–62.
- Bodenhausen, G., Gabriel, S., & Lineberger, M. (2000). Sadness and susceptibility to judgmental bias: The case of anchoring. *Psychological Science*, *11*(4), 320–323.
- Brader, T. (2005). Striking a responsive chord: How political ads motivate and persuade voters by appealing to emotions. *American Journal of Political Science*, *49*(2), 388–405.
- Cohn, M. A., Mehl, M. R., Matthias, R., & Pennebaker, J. W. (2004). Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science*, *15*(10), 687–693.
- Fischhoff, B., Gonzalez, R. M., Lerner, J. S., & Small, D. A. (2005). Evolving judgments of terrorism's risks: Foresight and hindsight. *Journal of Experimental Psychology: Applied*, *11*(2), 124–139.
- Fischhoff, B., Gonzalez, R. M., Small, D. A., & Lerner, J. S. (2004). Evaluating the success of terror risk communications. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, *1*(4), 255–258.

- Fischhoff, B., Gonzalez, R. M., Small, D. A., & Lerner, J. S. (2003). Judged terror risk and proximity to the World Trade Center. *Journal of Risk and Uncertainty*, 26(2–3), 137–151.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11, 2001. *Journal of Personality and Social Psychology*, 84(2), 365–376.
- Gilbert, D. T. & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, 117(1), 21–38.
- Glaser, J. & Salovey, P. (1998). Affect in electoral politics. *Personality and social psychology review*, 2(3), 156–172.
- Gleicher, F., & Weary, G. (1991). The effect of depression on the quantity and quality of social inferences. *Journal of Personality and Social Psychology*, 61, 105–114.
- Isen, A. M., Shalker, T. E., Clark, M., & Karp, L. (1978). Affect, accessibility of material in memory, and behavior: A cognitive loop? *Journal of Personality and Social Psychology*, 36, 1–12.
- Keltner, D., Ellsworth, P. C., & Edwards, K. (1993). Beyond simple pessimism: Effects of sadness and anger on social perception. *Journal of Personality and Social Psychology*, 64, 740–752.
- Krugman, P. (September 30, 2001). Fear itself. *New York Times*, pp. 36–40.
- Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.
- Laundau, M. J., Solomon, S., Greenberg, J., Cohen, F., Pyszczynski, T., & Arndt, J., et al. (2004). Deliver us from evil: The effects of mortality salience and reminders of 9/11 on support for president George W. Bush. *Personality and Social Psychology Bulletin*, 30(9), 1136–1150.
- Lerner, J. S., Goldberg, J. H., & Tetlock, P. E. (1998). Sober second thought: The effects of accountability, anger, and authoritarianism on attributions of responsibility. *Personality and Social Psychology Bulletin*, 24(6), 563–574.
- Lerner, J. S., Gonzalez, R. M., Small, D. A., & Fischhoff, B. (2003). Emotion and perceived risks of terrorism: A national field experiment. *Psychological Science*, 14(2), 144–150.
- Marcus, G. E. (2000). Emotions in politics. *Annual Review of Political Science*, 3, 221–250.
- Marcus, G. E., Sullivan, J. L., Theiss-Morse, E., & Wood, S. (1995). *With malice toward some: How people make civil liberties judgments*. Cambridge: Cambridge University Press.
- Mayer, J. D., Gaschke, Y. N., Braverman, D. L., & Evans, T. W. (1992). Mood-congruent judgment is a general effect. *Journal of Personality and Social Psychology*, 63, 119–132.
- Mehl, M. R., & Pennebaker, J. W. (2003). The social dynamics of a cultural upheaval: Social interactions surrounding September 11, 2001. *Psychological Science*, 14(6), 579–585.
- Quigley, B. M., & Tedeschi, J. T. (1996). Mediating effects of blame attributions on feelings of anger. *Personality and Social Psychology Bulletin*, 101, 632–652.
- Putnam, R. D. (2002, February 11). Bowling together. *American Prospect*, 13(3), 20–22.
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA: Journal of the American Medical Association*, 288, 1235–1244.
- Skitka, L. J., Bauman, C. W., & Mullen, E. (2004). Political tolerance and coming to psychological closure following the September 11, 2001, Terrorist Attacks: An integrative approach. *Personality and Social Psychology Bulletin*, 30(6), 743–756.
- Solomon, R. C. (1990). *A passion for justice*. Reading: Addison-Wesley Publishing Company.
- Tiedens, L. Z., & Linton, S. (2001). Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, 81(6), 973–988.
- Traugott, M., Brader, T., Coral, D., Curtin, R., Featherman, D., & Groves, R., et al. (2002). How Americans responded: A study of public reactions to 9/11/01. *P.S.: Political Science and Politics*, 35(3), 511–516.

- Weiner, B. (1980). A cognitive (attribution)-emotion-action model of motivated behavior: An analysis of judgments of help-giving. *Journal of Personality and Social Psychology*, *39*, 186–200.
- Wenzlaff, R. M., Wegner, D. M., & Roper, D. W. (1988). Depression and mental control: The resurgence of unwanted negative thoughts. *Journal of Personality and Social Psychology*, *55*, 882–892.