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Angry (or Disgusted), but Adjusting? The Effect of Specific Emotions on Adjustment From Self-Generated Anchors

Yoel Inbar[1] and Thomas Gilovich[2]

Abstract

Many numerical judgments are made by adjusting from a salient anchor value. This research examines the effect of high-certainty emotions—emotions associated with feelings of confidence about what is happening, what will happen, and how to respond—on the adjustment process. The authors examined whether such emotions would induce people to engage in adjustment more confidently and thoroughly, leading to greater adjustment. In two studies, the authors found that people feeling anger (Study 1) and disgust (Study 2)—emotions associated with appraisals of certainty—adjusted more from self-generated anchors than did people feeling fear (Study 1) and sadness (Study 2)—emotions associated with appraisals of uncertainty. Study 2 found that this effect does not occur for experimenter-provided anchors, from which adjustment tends to be less consistently observed.

Keywords

decision making, emotion, judgment and decision making, mood, motivation and performance

We now know a great deal about how both diffuse moods (Bless et al., 1996; Forgas, 1998; Isen, 1987; Schwarz & Clore, 1983) and specific emotions (Lerner & Keltner, 2000, 2001; Lerner & Tiedens, 2006; Oveis, Horberg, & Keltner, 2010) influence cognition. One especially fruitful area of research on this topic derives from *appraisal theory*: the idea that emotions are associated with systematic patterns of cognitions—appraisals—that conform to an underlying dimensional structure. For example, anger is associated with appraisals of harm and certainty about its cause (Roseman, 1991; Smith & Ellsworth, 1985).

Researchers have viewed the appraisal dimension of *certainty* as particularly important. Most appraisal theorists hold that emotions differ along a dimension of certainty or confidence (e.g., Roseman, 1991; Smith & Ellsworth, 1985; Smith & Kirby, 2001). Emotions associated with certainty—for example, anger, disgust, and happiness—are characterized by a sense of confidence about what is happening in the situation, how to respond, and what will happen next, whereas emotions associated with uncertainty—for example, fear, sadness, and hope—are characterized by less confidence in these areas (Lerner & Keltner, 2001; Roseman, Spindel, & Jose, 1990; Smith & Ellsworth, 1985). Past research has demonstrated that emotions associated with certainty (*high-certainty emotions*) evoke a sense of confidence and personal control which can "spill over" and affect how people process new information unrelated to the source of the emotion. The sense of confidence evoked by high-certainty emotions is thought to lead to a reduced motivation to process new information carefully and thoroughly, and thus to a cognitive style characterized by greater use of well-learned scripts and heuristics (Tiedens & Linton, 2001).

Here, we examine the effects of high- and low-certainty emotions on adjustment from initial anchor values. Tversky and Kahneman (1974) first proposed that people often estimate unknown values by starting with a salient anchor value and adjusting from that anchor until a satisfactory value is reached, and a great deal of subsequent research has shown that people who first entertain a high anchor-value give higher final answers than do people who first consider a low anchor-value. For example, on average people estimate that New York is 4,000 miles from San Francisco if they are first asked to decide whether the distance is more or less than 6,000 miles, but estimate that the distance is only 2,600 miles if they are first asked whether it is more or less than 1,500 miles (Jacowitz & Kahneman, 1995).

Researchers have since distinguished between two classes of anchoring effects: those resulting from anchor values that are provided by an external source, such as an experimenter

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(*experimenter-provided anchors*); and those derived from anchor values that are generated by the participant (*self-generated anchors*; Epley & Gilovich, 2001). Both types typically have a powerful influence on people's estimates. But because people generate the latter anchors themselves, they tend to know the proper direction in which to adjust, and so manipulations that affect the intensity and vigor of adjustment tend to have clear, reliable effects on participants' final estimates (Epley & Gilovich, 2001, 2004, 2006). Adjustment from experimenter-provided anchors, on the other hand, has proven harder to document, possibly because people's adjustments from such anchors are often indecisive and inconsistent, with some respondents believing they should adjust in one direction and others believing they should adjust in the other (Simmons, LeBoeuf, & Nelson, 2010). This results in the adjustment efforts of some respondents canceling out those of others, making it difficult for manipulations of the intensity of adjustment to have clear, consistent effects on respondents' final estimates. Thus, any effects of high- and low-certainty emotions on adjustment are likely to "show up" most clearly for self-generated anchor values.

How might the experience of high- and low-certainty emotions influence the amount people adjust from self-generated anchors? Past research has linked high-certainty emotions with a shallower processing style (Tiedens & Linton, 2001), and thus one might expect high-certainty emotions to lead to less adjustment from self-generated anchors. This prediction is reinforced by the finding that participants tend to adjust less when making their estimates while nodding their heads than when shaking them (Epley & Gilovich, 2001). Head-nodding serves as an internal cue of affirmation—that one agrees with contents of one's conscious thoughts (Forster & Strack, 1996; Priester, Cacioppo, & Petty, 1996). As a result, values considered early in a process of adjustment are more likely to be accepted, leading to less adjustment. High-certainty emotions may have the same effect by engendering confidence about values considered early in the adjustment process and thus leading to less adjustment.

But in light of more recent work showing that high-certainty emotions do not always elicit less extensive processing, the opposite prediction is equally plausible. Lerner and Tiedens (2006), for example, argue that rather than engendering cognitive laziness, experiencing anger can produce an eagerness to act and a conception of oneself as powerful and in control. People feeling high-certainty emotions often describe themselves as feeling "energized" and "stronger" (Frijda, Kuipers, & ter Schure, 1989; Shaver, Schwartz, Kirson, & O'Connor, 1987)—a mindset that can lead to a more confident and thorough exercise of whatever mental processes one is inclined to engage. This line of reasoning is buttressed by research showing that people who underwent a stressful experience (giving a public talk) subsequently adjusted more from self-generated anchors if they were led to experience the stressor as a challenge rather than a threat (Kassam, Koslov, & Mendes, 2009). Just as high-certainty emotions can evoke a sense of subjective power and control, challenge states are characterized by a sense of personal efficacy when confronted by a stressful situation, as well as a readiness for action (Blascovich & Tomaka, 1996). If high-certainty emotions, like challenge states, generally lead people to engage in ongoing mental operations more confidently and thoroughly, they should lead people to engage in the process of adjustment more confidently and thoroughly. By this account, then, high-certainty emotions should cause *more* adjustment from self-generated anchors.

Although this prediction might seem to run afoul of the findings regarding the effects of head-nodding on adjustment, closer inspection reveals that there may not be much of a conflict at all. Head-nodding is taken as a cue that one agrees with the contents of one's conscious thoughts, leading to more agreement with initial values and hence less adjustment. But, the sense of confidence and control brought on by high-certainty emotions need not induce the sense that an initially considered value is correct. It may instead induce the sense that one is on the right track—that adjustment is exactly what one should be doing. If so, then high-certainty emotions ought to engender more adjustment, not less. We nod and shake our heads at specific stimuli and propositions, and so it stands to reason that the experience of head-nodding and -shaking would influence one's sense of agreement with the *content* of one's conscious thoughts. But the very notion of an emotional spillover effect—of incidental emotion influencing one's reaction to an unrelated stimulus—is of a *generalized* effect. Thus, the sense of certainty brought on by a particular emotional state may influence one's confidence with the *process* with which one is engaged. People experiencing high-certainty emotions—like those experiencing challenge states—may therefore be relatively confident that they are on the right track, and pursue that track more energetically.

The existing literature thus seems to permit two diametrically opposed predictions about the effect of high- and low-certainty emotions on adjustment. We conducted the following studies to resolve this intriguing conflict and determine which prediction is correct.

Study 1

To test of the effect of high- and low-certainty emotions on adjustment from self-generated anchors, we first examined the emotions of fear and anger. Fear and anger are negatively valenced but have been shown to differ greatly on the appraisal dimension of certainty, with anger associated with high certainty and fear with low certainty (Lerner, Small, & Loewenstein, 2004; Smith & Ellsworth, 1985).

We used previously validated film clips to induce the desired emotion—participants in the fear condition viewed a clip from *The Shining* and participants in the anger condition viewed a clip from *Cry Freedom* (cf. Gross & Levenson, 1995). As a manipulation check, we used a previously validated questionnaire (Rottenberg, Ray, & Gross, 2007) that asked participants to report how much (from 0 [*not at all/none*] to 8 [*extremely/a great deal*]) they had felt each of 18 emotions, including anger and fear, while watching the film.

Table 1. Mean Responses to the Anchoring Questions in Study 1.

Question	*n*	Anchor	Fear	Anger	Difference
The year that the second European explorer, after Columbus, landed in the West Indies	73	1492	1505.64	1518.27	12.63
The boiling point of water on Mt. Everest	72	212	178.58	176.15	2.43
The number of U.S. states in 1840	65	50	32.57	31.43	1.14
The number of days it takes Mars to orbit the Sun	93	365	532.04	558.31	26.27
The year that the last of Jesus' apostles died	46	0	70.38	68.16	–2.22
The freezing point (in °F) of vodka[a]	85	32	30.10	25.70	–4.4
The year that George Washington was first elected President[a]	57	1776	12.60	8.69	–3.91

Note: Difference scores are computed such that positive differences indicate more adjustment by angry participants.
[a] The data presented for these items are adjustment scores (the absolute difference between the participant's answer and his or her reported anchor) because a number of people adjusted in each direction from the self-generated anchors on these items. Lower numbers indicate a smaller discrepancy between the final answer and the original anchor (i.e., less adjustment).

To assess adjustment from self-generated anchors, we used seven questions that have been used in past anchoring and adjustment research (Epley & Gilovich, 2001, 2004, 2006). These questions ask participants to make estimates of values they are unlikely to know (e.g., "The date the second European explorer, after Columbus, landed in the West Indies"), but for which they are likely to generate the same salient starting value, or anchor (in this case, 1492, the date Columbus landed in the West Indies), and from which they are likely to know the proper direction in which to adjust (the second European explorer to reach the West Indies could not, by definition, precede Columbus).

Method

A total of 113 undergraduates at a large private university (69 female) completed the study as part of a half-hour session during which they also completed several other unrelated studies. Participants were told that the study involved "people's evaluations of film," and that they should pay close attention to the film they were about to see because they would evaluate it later. Participants viewed either the fear or anger clip individually on a large television set in a darkened room.

After viewing the clip, participants were told that we were interested in how a delay between viewing and evaluation would affect film evaluations, and that during the "delay" they were to complete a brief, unrelated computer task[1] and to answer seven (anchoring) questions. To ensure that the participants gave this task their full attention, the questions were read to them by an experimenter who was unaware of our hypotheses (see Table 1 for a list of the questions). Following the anchoring questions, the experimenter asked whether: (a) the participant knew the intended anchor value for each question, and (b) the participant thought of that anchor value when answering the question. Finally, participants completed the emotion manipulation check, were probed for suspicion, and debriefed.

Results

Gender produced no main effects or interactions on the dependent measures in this study or in Study 2, so all analyses were collapsed across gender in both studies.

Manipulation check. As expected, participants in the anger condition felt more anger ($M = 6.28$) than did participants in the fear condition ($M = .50$), $t(110) = 19.75$, $p < .001$, and participants in the fear condition felt more fear ($M = 4.62$) than did participants in the anger condition ($M = 3.43$), $t(110) = 2.54$, $p = .01$.[2] Thus, the manipulations of emotional state were effective.

Anchoring data. An answer to each self-generated anchor question was considered a valid test of the hypothesis if the participant knew the anchor value and reported using it in generating his or her answer (Epley & Gilovich, 2001, 2004, 2006). Responses that did not meet these criteria were eliminated on an item-by-item basis. For each question, we created an absolute difference score between participants' answers and the anchor value. These scores were standardized, and the standard scores were then averaged across items for each participant to form a composite measure of adjustment, with higher scores indicating greater adjustment.[3]

The data support the hypothesis that the experience of a high-certainty emotion leads to greater adjustment than the experience of a low-certainty emotion. That is, participants in the anger condition adjusted more ($M = .13$) than did participants in the fear condition ($M = –.08$), $t(109) = 2.06$, $p = .04$, $d = .39$. Participants' mean unstandardized answers for each of the seven questions are reported in Table 1. To examine the effect of emotional state on adjustment more closely, we subtracted fear scores from anger scores to form a composite measure of emotional state. The more participants felt anger as opposed to fear, the more they adjusted, $r(110) = .22$, $p = .02$.

Study 2

Having obtained support for the hypothesis that feeling a high-certainty emotion leads people to adjust more from self-generated anchor values, we designed Study 2 to expand on this result in several important respects. First, because existing theory could lead to the prediction that high-certainty emotions should induce more or less adjustment, it seemed especially important to replicate this effect. Second, we wanted to determine whether our results generalize beyond fear and anger, and so Study 2 employed two different emotions—sadness and disgust. Like fear and anger, sadness and disgust are negatively valenced but differ on the appraisal dimension of certainty, with disgust associated with more certainty than sadness (Smith & Ellsworth, 1985). Past work has shown that sadness and disgust produce divergent effects in a variety of judgment domains (Lerner et al., 2004; Tiedens & Linton, 2001). We used previously validated clips from *Trainspotting* and *The Champ* to induce disgust and sadness, respectively; these clips have previously been shown to induce the desired emotions (Gross & Levenson, 1995; Lerner et al., 2004).

Third, we wanted to determine whether high- and low-certainty emotions also influence answers to traditional anchoring questions—that is, questions with experimenter-provided anchors. We did not expect them to, given past research indicating that unless special steps are taken (see Simmons et al., 2010), manipulations designed to influence the magnitude of adjustment have not had reliable effects on estimates. We therefore subjected our overall thesis to the more refined test of whether participants experiencing the high-certainty emotion of disgust would adjust more from self-generated anchors, but not experimenter-provided anchors, than participants experiencing the low-certainty emotion of sadness.

Finally, we introduced changes to the emotion induction and to the manipulation check. Immediately after participants viewed the film, we asked them to complete a brief writing task that asked them to imagine how they would feel if they were in the protagonist's position. This task has been used in past research to induce emotion (Lerner et al., 2004), and we used it here in the expectation that it would strengthen the induction. Second, we replaced the manipulation check from Study 1 with a longer list of 27 emotional states (Lerner et al., 2004). Participants were asked to report the greatest amount they had experienced each emotion while watching the film, on a scale from 0 (*Not at all*) to 8 (*More strongly than ever*).

Method

To generate a set of experimenter-provided anchors, we selected eight questions used in previous work (Jacowitz & Kahneman, 1995), and asked 30 participants from the same subject pool used for our main study to estimate the answers. We selected the responses that fell at the 15th and 85th percentiles as the low and high anchors. We then generated two sets of experimenter-provided anchors: In one version, half the questions had high-anchor values and the other half had low-anchor values; in the other version, the subset of questions with high- and low-anchor values was reversed.

The procedure and cover story were similar to that of Study 1. A total of 90 undergraduates and staff members at a large private university participated. The data from six participants who reported having previously seen *Trainspotting* were discarded,[4] which left 84 participants (62 female). Participants viewed the film clip and completed the writing task, and then answered the eight experimenter-provided anchor questions and the seven self-generated anchor questions; the set of questions that was asked first (self-generated or experimenter-provided) as well as which version of the experimenter-provided anchor questions the participant received was counterbalanced across participants. Finally, participants completed the emotion manipulation check, were probed for suspicion, and debriefed.

Results

Manipulation check. Responses to the three disgust items (disgusted, repulsed, and turned off) were highly correlated ($\alpha = .91$) and were therefore averaged to form a composite disgust measure; responses to the three sadness items (sad, downhearted, and blue) were also highly correlated ($\alpha = .91$) and were averaged to form a composite sadness measure. Participants in the sadness condition reported more sadness ($M = 4.47$) than did participants in the disgust condition ($M = 1.65$), $t(82) = 7.89$, $p < .001$, and participants in the disgust condition reported more disgust ($M = 6.43$) than did participants in the sadness condition ($M = 1.72$), $t(82) = 15.19$, $p < .001$. Thus, the manipulations of emotional state were effective.

Self-generated anchors. Mean adjustment scores were computed as in Study 1.[5] Participants in the disgust condition adjusted significantly more ($M = .18$) than did participants in the sadness condition ($M = -.15$), $t(76) = 2.87$, $p = .005$, $d = .66$. Participants' mean unstandardized answers for each of the seven questions are reported in Table 2. To examine the relationship between emotional state and adjustment more closely, we subtracted sadness scores from disgust scores to form a composite measure of emotional state. The more participants felt disgust as opposed to sadness, the more they adjusted, $r(78) = .36$, $p = .001$.

Experimenter-provided anchors. Answers to each question were standardized, and for each participant the standard scores were averaged separately for high- and low-anchor questions, such that each participant had a mean standard score for high-anchor questions and a mean standard score for low-anchor questions. These scores were submitted to a 2 (emotion: sadness vs. disgust) $\times$ 2 (anchor: high vs. low) repeated-measures analysis of variance, which yielded only a main effect of anchor: Answers to high-anchor questions were significantly higher ($M = .40$) than answers to low-anchor questions ($M = -.37$), $F(1, 82) = 104.59$, $p < .001$, partial $\eta^2 = .56$. Participants' emotional state had no effect on their responses to the experimenter-provided anchoring questions ($p > .10$ and $\eta^2 < .03$ for all effects).

To verify that high- and low-certainty emotions influenced participants' responses to self-generated and experimenter-provided anchors differentially, we averaged each participant's mean standard scores for both low- and high-anchor questions after reverse scoring participants' estimates for the high-anchor questions. Higher average scores thus indicate more adjustment (i.e., higher values for low-anchor questions and lower values for high-anchor questions). We then submitted these scores, as well as the adjustment scores from the self-generated

Table 2. Mean Responses to the Self-Generated Anchoring Questions in Study 2.

Question	*n*	Anchor	Sadness	Disgust	Difference
The year that the second European explorer, after Columbus, landed in the West Indies	45	1492	1511.4	1550.22	38.82
The boiling point of water on Mt. Everest	45	212	161.18	162.65	−1.47
The number of U.S. states in 1840	45	50	35.00	26.62	8.38
The number of days it takes Mars to orbit the Sun	66	365	507.54	525.41	17.87
The year that the last of Jesus' apostles died	27	0	43.00	52.56	9.56
The freezing point (in °F) of vodka	57	32	9.88	1.15	8.73
The year that George Washington was first elected President[a]	44	1776	5.33	7.76	2.43

Note: Difference scores are computed such that positive differences indicate more adjustment by disgusted participants.
[a] The data presented for this item are adjustment scores (the absolute difference between the participant's answer and his or her reported anchor) because a number of people adjusted in each direction from the self-generated anchor on this item. Lower numbers indicate a smaller discrepancy between the final answer and the original anchor (i.e., less adjustment).

anchors discussed earlier, to a 2 (anchor type: self- vs. experimenter-generated) × 2 (emotion: sadness vs. disgust) mixed-model analysis of variance. This analysis yielded the expected interaction, Wilks's $\lambda = .938$, $F(1, 75) = 4.94$, $p = .03$: Type of emotion influenced participants' responses to the self-generated anchoring questions but not the experimenter-provided anchoring questions.[6]

Thus, as anticipated, emotions that vary in their accompanying appraisal of certainty appear to have a significant influence on participants' responses to self-generated anchoring questions but not on responses to experimenter-provided anchoring questions.

General Discussion

The results of these experiments demonstrate the influence of high- and low-certainty emotions on anchoring and adjustment specifically, and on judgment under uncertainty more generally. Using four different emotions, high-certainty emotions induced greater adjustment from self-generated anchors. Furthermore, Study 2 demonstrated that high- versus low-certainty emotions influenced responses to questions involving self-generated anchors but not experimenter-provided anchors.

Although we expected high-certainty emotions to influence responses to self-generated anchoring questions, the direction of that influence was, ex ante, unclear. Previous research has established that high-certainty emotions can elicit a shallower processing style (Tiedens & Linton, 2001), which would lead one to expect more pronounced anchoring effects. But as Lerner and Tiedens (2006) have argued, the appraisals of certainty associated with some emotions can lead individuals to feel confident and in control, and thus to engage in more energetic cognitive processing. Their analysis fits our finding that people experiencing high-certainty emotions engage in *more* adjustment, not less. Whereas such manipulations as head-nodding or alcohol intoxication make people more willing to accept specific values considered early on in the process of adjustment, high-certainty emotions appear to engender a more diffuse sense of confidence and personal control. With greater confidence that one is on the right track when responding to self-generated anchoring questions, people adjust more and anchoring effects are weakened. This parallels the recent finding that stressful but challenging states—which also are associated with feelings of personal efficacy—induce greater adjustment from self-generated anchors (Kassam, Koslov, & Mendes, 2009). Our findings are also consistent with psychophysical research showing that people's estimates of uncertain quantities are subject to "operational momentum"—a tendency to "overshoot" when adding or subtracting approximate quantities (McCrink, Dehaene, & Dehaene-Lambertz, 2007). Thus, one way to think about the effects of high-certainty emotions on certain types of judgments may be as something akin to bolstering agents that increase the vigor (and hence momentum) of ongoing mental processes—in this case, of adjustment.[7]

As for experimenter-provided anchoring questions, we observed a robust effect of the anchor values on participants' final estimates, but no moderating effect of emotional state. This might seem to conflict with past research showing greater susceptibility to anchoring effects by participants in a sad mood (Bodenhausen, Gabriel, & Lineberger, 2000; Englich & Soder, 2009). However, it is important to note that this prior research was not designed, as ours was, to compare emotional states differing in appraisals of certainty while holding emotion valence constant. Rather, the reported studies compared participants in sad moods to those in neutral or happy moods. These studies convincingly show that mood valence affects the influence of experimenter-provided anchors, but they cannot speak to the question of how emotions differing in certainty appraisals but matched in valence might influence people's estimates of uncertain numerical values. The current research, in which we held valence constant while varying certainty, suggests that while emotional valence affects responses in the experimenter-provided anchoring paradigm, emotional certainty does not. Of course, it would be desirable for future research to orthogonally vary emotional certainty, emotional valence, and anchor type in a single study.

Because adjustment is typically insufficient (Epley & Gilovich, 2004; Epley, Keyser, Van Boven, & Gilovich, 2004; Gilovich, Medvec, & Savitsky, 2000), one would expect the greater adjustment brought on by high-certainty emotions to lead to greater accuracy in people's estimates. Indeed, for the six self-generated questions for which the correct answers are known (no one knows the year the last of Jesus' apostles died), the amount of adjustment was, on average, insufficient for five in Study 1 and for four in Study 2 (the exceptions were the "second European explorer" item in both studies, and the "boiling point of water on Everest" item in Study 2). Thus, in the current studies, high-certainty emotions did indeed lead to more accurate estimates.

Might this enhanced accuracy have been the cause of our reported effect, rather than its consequence? That is, might high-certainty emotions have led participants to search more confidently (and hence harder) through their long-term memory stores and therefore made them more likely to retrieve the correct answers? A closer look at the data contradicts this alternative explanation. Correct answers were extremely rare—of the 824 responses included for analysis across both studies, only 12 were correct. Furthermore, the likelihood of correct answers did not vary by condition—across both studies, the high- and low-certainty emotion groups each gave a total of six correct responses.

One limitation of the current studies is that we did not directly measure subjective certainty. This limitation is mitigated by three important facts: First, we examined emotions that previous research has consistently shown to differ in certainty (Lerner & Keltner, 2001; Roseman et al., 1990; Smith & Ellsworth, 1985; Tiedens & Linton, 2001). Second, any alternative explanation of our findings not based on the documented difference in certainty appraisals for the emotions under investigation would have to account for the (predicted) effect of two distinct pairs of emotions: anger and fear as well as sadness and disgust. Third, any alternative interpretation would also have to account for the differential effect of emotional state on self-generated versus experimenter-provided anchors, a result that was readily derived from our appraisal-based analysis. Given all of these considerations, we believe that the well-established difference in certainty appraisals between both pairs of emotions is the most parsimonious interpretation of our results. We readily acknowledge, however, that in the absence of appraisal measures, some alternative mechanism could have contributed to our results, and so we hope that future research on emotional states and anchoring will examine in greater detail the links between emotional states, appraisals, and adjustment from self-generated anchor values. It would be especially helpful to examine whether there are occasions in which people's subjective sense of certainty is "attached" to the psychological *process* in which they are engaged (so that high-certainty emotions would lead to more adjustment, as we observed here) and others in which it is attributed to the *products* of those psychological processes (so that high-certainty emotions would lead to less adjustment).

This limitation notwithstanding, the current research resolves two competing predictions about the effect on anchoring and adjustment of emotions that differ in certainty appraisals—that they might lead to less adjustment (because they engender confidence that one's initial estimates are correct and therefore adjustment is terminated earlier) or that they might lead to more adjustment (because they engender confidence in one's efforts to adjust and therefore adjustment is continued longer). Our results come down squarely in favor of the latter, showing that angry or disgusted people are less prone to a common bias in judgment than people who are frightened or sad. As such, we consider these experiments a helpful step toward a more nuanced understanding of the sometimes beneficial and sometimes deleterious effects of emotion on judgment.

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Notes

1. This task—in which participants rated the attractiveness of faces—was identical across conditions.
2. Reduced degrees of freedom are due to missing manipulation check data for one participant.
3. Two participants did not satisfy the inclusion criteria for any of the seven questions (i.e., they either did not know the pertinent anchor value or said that they did not think of it when answering a given question). These participants are therefore not included in the analyses involving adjustment.
4. Preliminary analyses showed that these six participants reported marginally less disgust in response to the film ($M = 5.39$) than did the other participants in the disgust condition ($M = 6.43$), $t(42) = -1.76$, $d = .54$.
5. Four participants did not satisfy the inclusion criteria for any of the seven questions. Two participants (one in each condition) had extremely high mean adjustment scores (over 4 standard deviations above the mean). These six participants were not included in the analyses involving adjustment from self-generated anchors. Including the latter two participants yielded an effect of emotion on adjustment that was weaker, but still significant ($p < .05$).
6. The data from one participant were excluded because her composite adjustment score for the experimenter-provided anchors was over 4 standard deviations from the mean. Including this participant, the interaction is marginally significant ($p = .067$).
7. We thank Rolf Reber for this suggestion.

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