

Losing your temper and your perspective: Anger reduces perspective-taking

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ABSTRACT

Across six studies, we find that both incidental anger and integral anger reduce perspective-taking. In Study 1, participants who felt incidental anger were less likely to take others' perspectives than those who felt neutral emotion. In Study 2, we demonstrate that arousal mediates the relationship between anger and diminished perspective-taking. In Studies 3 and 4, we show that anger reduces perspective-taking compared to neutral emotion, sadness, and disgust. In Study 5, we find that integral anger impairs perspective-taking compared to neutral emotion. In Study 6, prompting individuals to correctly attribute their feelings of incidental anger moderates the relationship between anger and perspective-taking. Taken together, across different anger inductions and perspective taking measures, we identify a robust relationship between anger and diminished perspective-taking. Our findings have particularly important implications for conflict, which is often characterized by feelings of anger and exacerbated by poor perspective-taking.

1. Introduction

Organizations require individuals to collaborate with others and coordinate their actions. Effective collaboration, however, is a constant challenge, in part because individuals struggle to take perspectives that are different from their own (Ames, Weber, & Zou, 2012; Galinsky, Maddux, Gilin, & White, 2008; Galinsky, Magee, Rus, Rothman, & Todd, 2014; Malhotra, 2004; Morris et al., 1998). Perspective-taking is an essential tool for navigating our social world (Grant & Berry, 2011; Galinsky & Mussweiler, 2001; Galinsky & Schweitzer, 2015; Rafaeli et al., 2012; Waytz, Gray, Epley, & Wegner, 2010), and the failure to engage in effective perspective-taking can fuel conflict (Ku, Wang, & Galinsky, 2015) and aggression (Aquino & Thau, 2009; Barling, Dupré, & Kelloway, 2009; Mayer, Thau, Workman, Van Dijke, & De Cremer, 2012; Porath & Erez, 2007). By understanding divergent viewpoints, perspective-taking enables individuals to collaborate more efficiently and compete more effectively (Goldstein, Vezich, & Shapiro, 2014; Pierce, Kilduff, Galinsky, & Sivanathan, 2013). Perspective-taking is difficult in general (Galinsky, Ku, & Wang, 2005), and anger may make the ability to take others' perspectives especially hard.

The relationship between anger and perspective-taking is both theoretically and practically important. Conflicts are characterized by feelings of anger. In fact, anger is both a common antecedent and a common consequence of conflict (Allred, 1999; Berkowitz & Harmon-

Jones, 2004; Van Kleef, Homan, & Cheshin, 2012). Perspective-taking is also closely associated with conflict. Poor perspective-taking can trigger aggression and exacerbate conflict (Galinsky et al., 2005). Interestingly, no prior research has directly linked feelings of anger with perspective-taking. If anger impairs perspective-taking, disagreements may escalate as feelings of anger diminish perspective-taking and fuel a conflict spiral.

By developing our understanding of the relationship between anger and perspective-taking, we not only gain critical insight into conflict management, but we also deepen our understanding of how emotions influence cognition. Prior work has found that anger can alter and disrupt cognition (Carver & Harmon-Jones, 2009; Huber, Van Boven, Park, & Pizzi, 2015; Lerner & Keltner, 2001; Tiedens & Linton, 2001). We build on this literature to consider how anger might interfere with a different, fundamental cognitive process — perspective-taking.

Across six studies, we investigate the relationship between anger and perspective-taking. We explore whether anger decreases perspective-taking, relative to neutral emotion, sadness, and disgust, and we examine whether arousal mediates the effect of anger on perspective-taking. We also identify a boundary condition for incidental anger, and test whether making the source of incidental anger salient attenuates the relationship between anger and perspective-taking. Taken together, we identify a robust effect of both incidental and integral anger on perspective-taking.

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1.1. Anger

Anger is a negative-valence emotion that is typically triggered by injustice (Porath & Pearson, 2012), unfairness (Pillutla & Murnighan, 1996), or a blocked goal (Berkowitz & Harmon-Jones, 2004). Anger is characterized by high levels of arousal (Russell & Barrett, 1999), feelings of dislike (Lerner & Keltner, 2000), an appraisal of certainty (Smith & Ellsworth, 1985) and an appraisal of other-person control (Dunn & Schweitzer, 2005). Anger promotes confrontation (Bushman, 2002), and scholars have linked anger with changes in both brain activity (Harmon-Jones & Allen, 1998) and physiology (Mauss, Cook, Cheng, & Gross, 2007).

People frequently experience anger when they encounter conflict in organizations and negotiations, and anger has intrapsychic effects on behavior (George & Dane, 2016; Glomb, 2002; Motro, Kugler, & Connolly, 2016; Smith-Crowe & Warren, 2014; Van Kleef, De Dreu, & Manstead, 2004; Wang, Liao, Zhan, & Shi, 2011b). When people feel angry, they often become motivated to punish the offender (Adam & Brett, 2015; Lerner & Tiedens, 2006; Van Kleef & Côté, 2007). For example, individuals who feel angry are more likely to immediately reject ultimatum offers, even when rejections are costly (Wang et al., 2011a).

Interestingly, incidental anger, anger triggered by prior unrelated situations, can influence behavior in subsequent unrelated situations that do not involve the instigator (Lerner & Keltner, 2001; Rothbard & Wilk, 2011; Schwarz & Clore, 1983; Slovic, Finucane, Peters, & MacGregor, 2002). For example, incidental anger diminishes trust (Dunn & Schweitzer, 2005), promotes critical evaluation of others' ideas (Wiltermuth & Tiedens, 2011), increases risk-taking (Fessler, Pillsworth, & Flamson, 2004), and reduces receptivity to advice (Gino & Schweitzer, 2008).

Though we expect anger to harm perspective-taking, it is important to note that anger, like other basic emotions, is both functional and adaptive (Damasio, 1994). Prior research has revealed that anger triggers a set of coordinated responses to address a violation or an injustice (Frijda, Kuipers, & Ter Schure, 1989). First, anger triggers cognitive appraisal tendencies. For example, angry people develop a sense of certainty about what happened and who is to blame for what happened (Smith & Ellsworth, 1985). This cognitive predisposition helps individuals to identify offenders quickly.

Second, anger triggers action tendencies. In particular, angry individuals experience heightened physiological arousal, and this increased arousal activates the approach motivational system to become less concerned about others and inflict harm (Carver & Harmon-Jones, 2009). For example, angry individuals become more likely to tell self-serving lies to others, because they feel less empathy about others (Yip & Schweitzer, 2016). This action tendency to "move against" others (i.e. a readiness to fight) is adaptive when it facilitates individuals to confront an aggressor or address an important problem (Gibson, Schweitzer, Callister, & Gray, 2009; Van Kleef, De Dreu, & Manstead, 2010).

Drawing on prior research about the cognitive and motivational properties of anger (Fischhoff, Gonzalez, Lerner, & Small, 2005; Lerner & Keltner, 2001; Lerner & Tiedens, 2006), we expect both incidental and integral anger to diminish perspective-taking. When people feel angry in response to a norm-violation or an unjust act committed by an offending counterpart, they experience high arousal that promotes egocentric thinking. As a result, the experience of anger in conflict can promote action-oriented behavior and diminish perspective-taking. This combination may escalate conflict and trigger a conflict spiral.

In our investigation, we consider both incidental anger, anger triggered by a prior interaction that is unrelated to a focal judgment, and integral anger, anger triggered by a prior interaction that is related to a focal judgment (Han, Lerner, & Keltner, 2007; Lerner, Li, Valdesolo, & Kassam, 2015; Loewenstein & Lerner, 2003). Incidental anger affords a conservative and direct test of the influence of anger, because it does not conflate the influence of the emotional experience with relational

and reputational concerns (Brooks & Schweitzer, 2011; Dunn & Schweitzer, 2005; Yip & Schweitzer, 2016). Integral anger, however, co-occurs in many conflict settings. In fact, integral anger often conflates the emotional experience of anger with relational concerns such as a motive to retaliate (Anderson & Bushman, 2002; Horberg, Oveis, Keltner, & Cohen, 2009). The link between integral anger and diminished perspective-taking affords important insight into conflict management. Across our studies involving both incidental and integral anger, we establish a consistent and robust finding: Anger reduces perspective-taking.

1.2. Perspective-taking

Perspective-taking is a cognitive process that involves recognizing differences and making inferences about how others view a situation (Epley, 2014; Galinsky & Moskowitz, 2000; Parker & Axtell, 2001; Piaget, 1932; Todd, Hanko, Galinsky, & Mussweiler, 2011). When people engage in perspective-taking, they form mental representations of both themselves and other people (Galinsky et al., 2005). The overlap between these mental representations enables individuals to bridge differences in perceptions, interests, and backgrounds.

Individuals who effectively engage in perspective-taking derive substantial benefits. For example, perspective-taking has been associated with social competence (Davis, 1983), the discovery of joint value in negotiations (Galinsky et al., 2008), effective group functioning (Caruso, Epley, & Bazerman, 2006), interactional justice (Galinsky et al., 2014), social connection with strangers (Savitsky, Keysar, Epley, Carter, & Swanson, 2011), and less reliance on stereotypical thinking (Ku, Wang, & Galinsky, 2010).

Perspective-taking is also crucial for mitigating conflict (Galinsky et al., 2005; Galinsky & Moskowitz, 2000; Ku et al., 2015). Conflict is frequently triggered by egocentric behavior and perspective-taking failures (Bazerman, Curhan, Moore, & Valley, 2000; Diekmann, Samuels, Ross, & Bazerman, 1997). For example, Thompson and Loewenstein (1992) found that egocentric interpretations of fairness promoted conflict and lengthened strikes. Similarly, group members who hold egocentric views of their contributions to the group feel entitled to a greater share of the group's resources than what they actually deserve (Caruso et al., 2006). Perspective-taking reduces egocentric judgments, deepens understanding, and curbs conflict (Epley, Keysar, Van Boven, & Gilovich, 2004).

The benefits of perspective-taking have been well documented, and an emerging literature has begun to identify conditions that promote and impede perspective-taking (see Ku, et al., 2015 for a review). For example, prior research has revealed that similarity (Parker & Axtell, 2001), working memory (Lin, Keysar, & Epley, 2010), and incentives (Epley et al., 2004) improve perspective-taking, whereas power (Galinsky, Magee, Inesi, & Gruenfeld, 2006), cognitive load (Lin et al., 2010), and time pressure (Epley et al., 2004) inhibit perspective-taking. Recent research has highlighted emotion as a potentially important antecedent for perspective-taking (Eisenberg, 2000).

Emotional states can influence how people perceive interpersonal situations. In particular, Converse, Lin, Keysar, and Epley (2008) found that happiness decreases perspective-taking, because happiness promotes superficial information processing and distracts people from making inferences about others' perspectives (Bodenhausen, Sheppard, & Kramer, 1994). Recent work has also found that anxiety can inhibit perspective-taking, because anxiety activates the motive to reduce uncertainty (Todd, Forstmann, Burgmer, Brooks, & Galinsky, 2015).

In our research, we advance our understanding of the relationship between emotions and perspective-taking by considering a potentially critical link between anger and perspective-taking. Parties to a conflict often experience anger, and poor perspective taking can fuel conflict. By exploring the interplay between anger and perspective-taking, we deepen our understanding of how conflict develops and how to manage conflict.

1.3. Anger, arousal, and perspective-taking

Building on research linking anger with cogitation, we advance the thesis that anger impairs perspective-taking. Anger is associated with less careful, less effortful, and less deliberate thinking (Tiedens & Linton, 2001). Rather than promoting systematic thinking, anger increases reliance on stereotypical and heuristic thinking (Bodenhausen et al., 1994). Yet, perspective-taking is effortful and cognitively demanding (Epley et al., 2004; Galinsky & Moskowitz, 2000). As a result, compared to neutral individuals, angry individuals may fail to engage in the effortful cognitive process of considering how others' perspectives diverge from their own perspective.

In addition, prior research has revealed that anger is associated with self-interested preferences and behavior. Relative to neutral individuals, angry individuals are more likely to prefer self-interested outcomes in social exchanges (Van Kleef et al., 2010). Similarly, angry people are more likely to pursue self-interested rewards and deceive others for personal gain (Aarts et al., 2010; Carver & Harmon-Jones, 2009; Schweitzer & Gibson, 2008; Yip & Schweitzer, 2016). Although these behaviors are distinct from perspective-taking, these findings suggest that angry individuals may become more self-focused than individuals who are not angry.

According to the affective circumplex model of emotion (Russell, 1980) and a substantial related literature about the dimensions of emotion (Feldman Barrett & Russell, 1998; Larsen & Diener, 1992; Watson & Tellegen, 1985), anger is characterized by high arousal. Arousal is the physiological state of being energized, stimulated, and awakened, and high arousal involves the activation of the autonomic nervous and endocrine systems (Akinola, 2010; Wilder, 1967). Arousal may explain why anger reduces perspective-taking.

We expect high arousal to diminish perspective-taking, because high arousal is likely to promote greater reliance on intuitive, System 1 thinking rather than exhibiting thoughtful, System 2 thinking. In important work, Mano (1992) found that high-arousal emotions can constrain attention, promote reliance on heuristics, and increase polarized judgments. That is, when people experienced high levels of arousal, they relied more heavily on simple decision rules and formed harsher judgements about potential job candidates. Relatedly, emotional arousal constrains people to follow specific behavioral patterns to respond to environmental threats (Frank, 1988), and promotes aggression (Denson, DeWall, & Finkel, 2012; Larrick, Timmerman, Carton, & Abrevaya, 2011; Reifman, Larrick, & Fein, 1991).

Interestingly, like anger, both happiness and anxiety are high-arousal emotions (Russell & Barrett, 1999) that both diminish perspective-taking (Converse et al., 2008; Todd et al., 2015). Our proposed mechanism of arousal linking emotion and reduced perspective-taking offers a parsimonious account that can explain our findings and previous research. Taken together, we postulate that high levels of arousal mediate the relationship between anger and perspective-taking.

In summary, we expect angry individuals to be less likely to take others' perspectives than neutral individuals, and we expect elevated levels of arousal to mediate this effect of anger on perspective-taking. When people feel angry, they experience higher levels of arousal, which in turn, decreases their ability to engage in perspective-taking.

Hypothesis 1. *Compared to neutral emotion, anger reduces perspective-taking.*

Hypothesis 2. *Arousal mediates the relationship between anger and perspective-taking.*

To examine the unique effect of anger on perspective-taking, we contrast the influence of anger with another negative-valence emotion characterized by low-arousal, sadness. Both anger and sadness are negative-valence emotions, but unlike anger, sadness is a low-arousal emotion that typically reflects negative outcomes triggered by a situation rather than another person (Russell & Barrett, 1999; Smith &

Ellsworth, 1985).

Similarly valenced emotions, such as anger and sadness, can influence behavior very differently (Lerner & Keltner, 2001). As a result of underlying appraisal patterns, sadness is associated with distinct behavioral consequences. In particular, sadness increases financial impatience (Lerner, Li, & Weber, 2013), spending (Cryder, Lerner, Gross, & Dahl, 2008), and risk-taking (Raghunathan & Pham, 1999). Although sadness can promote systematic thinking (Tiedens & Linton, 2001), consistent with our arousal account for the link between affect and perspective-taking, Converse et al. (2008) found no effect of sadness on perspective-taking. Building on Mano's (1992) finding that high levels of arousal are more likely to harm cognition, and findings that have characterized anger as a high-arousal emotion and sadness as a low-arousal emotion (Russell & Barrett, 1999), we hypothesize that anger is more likely to harm perspective-taking than sadness and neutral emotion.

Hypothesis 3. *Relative to sadness, anger reduces perspective-taking.*

We also contrast the effect of anger with disgust on perspective-taking. Disgust is a basic emotion that reflects revulsion and distaste. Disgust is characterized by negative-valence and often triggered by the perception of being psychologically close to an indigestible idea or object (Han et al., 2007). Recent work has found that disgust promotes harsher moral judgments about transgressions (Wheatley & Haidt, 2005), mitigates the endowment effect (Lerner, Small, & Loewenstein, 2004), and reduces risk-taking (Fessler et al., 2004).

No prior research has considered the relationship between disgust and perspective-taking, and we conjecture that disgust is likely to harm perspective-taking. Like anger, disgust is a negatively-valenced, high-arousal emotion. By empirically testing the comparison between anger and disgust, we provide an indirect test for the mechanism of arousal. That is, if arousal mediates the effect of anger on perspective-taking, disgust should exert a similar influence on perspective-taking.

Hypothesis 4. *Relative to neutral emotion, disgust reduces perspective-taking.*

We extend our understanding about the relationship between anger, perspective-taking, and conflict by exploring the consequences of integral anger. In contrast to incidental anger, we define integral anger as anger triggered by a related, prior event that is relevant to a subsequent judgment (Han et al., 2007; Horberg et al., 2009; Lerner, Han, & Keltner, 2007; Loewenstein & Lerner, 2003). Building on prior work discussing the nature of integral emotions (Cavanaugh, Bettman, Luce, & Payne, 2007), we suggest that integral anger can be triggered by a related actor, judgment, or both. By construction, integral anger conflates the emotional experience of anger with relational or restorative concerns, such as a motive for retribution or restorative justice (Anderson & Bushman, 2002; Lerner & Tiedens, 2006). Though investigating incidental emotions offers a more conservative test of the relationship between emotions and subsequent judgments or behaviors, our investigation of integral anger on perspective-taking offers insight into the functional and practical nature of anger. Many conflicts trigger integral anger, and by examining the link between integral anger and perspective-taking, our investigation deepens our understanding of the relationship between affect and cognition in conflict, especially with respect to how anger might exacerbate conflict.

Anger is adaptive in confronting and punishing offenders (Anderson & Bushman, 2002; Frank, 1988). Anger facilitates aggressive behavior because anger activates appraisal tendencies for individuals to advance their self-interest (Yip & Schweitzer, 2016) and desensitizes individuals to the potential harm that they may cause others (Carver & Harmon-Jones, 2009). Building on related research, we theorize that when people feel angry, they are more likely to become self-focused, and less likely to demonstrate understanding about others. We predict that integral anger reduces perspective-taking.

Empirical work investigating integral anger and integral emotions

more broadly has been limited (George & Dane, 2016; Lerner et al., 2007). We speculate that little prior research has investigated integral emotions because integral emotions are more difficult to induce and because integral emotions introduce relational factors that confound the emotional experience. For example, prior research has investigated reactions to unfair offers, and found that individuals both feel angry and reject these offers (de Kwaadsteniet, Rijkhoff, & van Dijk, 2013; Overbeck, Neale, & Govan, 2010; Pillutla & Murnighan, 1996; Sherf & Venkataramani, 2015). Investigations showing the association between feeling angry and rejecting low offers, however, cannot disentangle the unique effects of emotion from other factors, such as relational and reputational concerns.

In our investigation, we examine how a prior interaction with the same person influences perspective-taking in a subsequent interaction. Our conceptualization of integral anger builds on Cavanaugh et al.'s (2007) framework of integral emotions, but we depart from the existing framework to provide a more precise definition of ambient integral anger. We define ambient integral anger as anger that is triggered by a focal actor, but the subsequent judgment context involving the same focal actor is independent of the anger triggering context. We consider this approach of focusing on ambient integral anger to offer a careful assessment of how integral anger impacts perspective-taking. Integral anger involves the direct effect of anger and the potential relational concern of retribution. However, by changing the context, we mitigate the contextual considerations such as motives for restorative justice. For the same reasons we expect incidental anger to reduce perspective-taking, we expect integral anger to reduce perspective-taking.

Hypothesis 5. *Compared to neutral emotion, integral anger reduces perspective-taking.*

Finally, we identify a boundary condition of the effect of incidental anger on perspective-taking. Unlike integral anger, incidental anger is triggered by an unrelated event. In our investigation, we explore the moderating influence of the salience of the source of incidental emotion, and investigate whether or not incidental anger reduces perspective-taking when people are made aware of the source of their anger. We postulate that when the source of the emotion is made salient, the harmful effects of anger on perspective-taking become attenuated.

Incidental anger that is elicited from one situation often spills over and influences behavior in unrelated situations because people reliably misattribute their anger to current decisions rather than correct sources (Dutton & Aron, 1974; Schachter & Singer, 1962; Schwarz & Clore, 1983; Slovic et al., 2002). For example, incidental anger influences trust (Dunn & Schweitzer, 2005), the evaluation of other people's ideas (Wiltermuth & Tiedens, 2011), receptivity to advice (Gino & Schweitzer, 2008), and unethical behavior (Yip & Schweitzer, 2016). Prior research has found that making people aware of the source of their incidental emotions curtails the spillover effect of incidental emotions, as individuals recognize that their feelings should not influence unrelated judgments (Schwarz & Clore, 1983; Yip & Côté, 2013).

Building on prior work, we extend our investigation of the link between affect and cognition to examine whether the effect of incidental anger on perspective-taking can be diminished by making the source of incidental anger salient. We hypothesize that when the source of incidental anger is not salient, incidental anger will harm perspective-taking relative to neutral emotion. However, when the source of incidental anger is salient, we expect incidental anger to exert little influence on perspective-taking compared to neutral emotion.

Hypothesis 6. *When the source of emotion is not salient, incidental anger reduces perspective-taking compared to neutral emotion. However, when the source of emotion is salient, incidental anger does not influence perspective-taking.*

In addition to our theoretical contributions, we make important methodological contributions by introducing new measures of perspective-taking. Ku et al. (2015) recently reviewed the perspective-

taking literature and identified two established self-report measures of perspective-taking (see Davis, 1980 and Parker & Axtell, 2001). By introducing four new measures of perspective-taking, we hope to facilitate future perspective-taking investigations.

1.4. Overview of the present research

In this research, we investigate the thesis that anger reduces perspective-taking. We investigate both incidental and integral anger, and we explore the mediating role of arousal. We contrast anger with neutral emotion, sadness, and disgust. We find that anger harms perspective-taking, relative to the negative-valence, low-arousal emotion of sadness. In investigating disgust, we expected this negative-valence, high-arousal emotion to harm perspective-taking. However, in our study, disgust elicits significantly lower arousal than anger, and we find that anger, but not disgust, harms perspective-taking. We also identify a boundary condition of the effect of anger on perspective-taking. We find that making the source of anger salient attenuates the relationship between anger and perspective-taking. Across our studies, with different inductions of emotion and different measures of perspective-taking, we establish that anger degrades perspective-taking.

2. Study 1

In Study 1, we test our thesis that incidental anger reduces perspective-taking with a new, behavioral measure of perspective-taking. We predict that, relative to neutral emotion, incidental anger decreases other-focused communication.

2.1. Method

2.1.1. Participants

We asked the behavioral lab to recruit as many participants as possible in one day data collection session with the expectation that we would obtain data from at least 120 participants (60 participants per condition). We recruited 134 participants from a large North American university to participate in this study. Of the 134 participants, there were 8 participants who did not follow the instructions in the Scheduling Task by proposing meeting times that did not correspond to available time slots. The final sample size was 126 participants ($M_{\text{age}} = 24$ years, $SD_{\text{age}} = 9.76$ years; 56% female).

2.1.2. Procedure

We randomly assigned participants to either an Incidental Anger condition or a Neutral condition. We manipulated emotion by having participants complete a writing recall task (Dunn & Schweitzer, 2005). Participants in the Incidental Anger condition described a situation that made them the most angry they have felt in their lives. Participants in the Neutral condition described how they spend a typical evening.

After completing the emotion induction, participant proceeded to a purportedly unrelated Scheduling Task. In the Scheduling Task, we told participants that they needed to schedule a one-hour conference call with a very important client in California, which is three hours behind their current time zone (Eastern Time). We presented participants with a photo of their calendar for the upcoming week in Eastern Time. Their calendar indicated a number of prior commitments for meetings and training sessions. Between these prior commitments, however, were a few open, unscheduled time slots. We asked participants to refer to their calendar and then write a short email proposing three possible times for a one-hour conference call with the client.

We assessed perspective-taking by recording whether participants referred to Pacific Time when they proposed meeting times (coded as 1 for perspective-taking) or only referred to Eastern Time when they proposed meeting times (coded as 0 for no perspective-taking). We classified communication that included times in both Pacific Time and Eastern Time as perspective-taking behavior, because this

communication reflected an understanding of the client’s perspective. We include the full materials for our measure of perspective-taking in Appendix A.1. Following the Scheduling Task, participants completed an emotion manipulation check and answered demographic questions.

2.1.3. Measures

2.1.3.1. Anger manipulation check. After completing the perspective-taking measure, participants rated the extent to which they felt angry, annoyed, and irritated on a scale ranging from 1 (does not describe my feelings at all) to 7 (describes my feelings very well) ($M = 2.84, SD = 2.22; \alpha = .98$).

2.1.3.2. Perspective-taking. We coded whether or not participants’ communication reflected perspective-taking by proposing meeting times in Pacific Time (scored as 1) or reflected egocentric communication by proposing meeting times exclusively in Eastern Time (scored as 0). We decided in advance to code communication that referenced Pacific Time, including communication that referenced both Pacific Time and Eastern Time, as perspective-taking.

2.2. Results and Discussion

Our manipulation of anger was effective. As predicted, we found that participants in the Incidental Anger condition reported greater feelings of self-reported anger ($M = 4.04, SD = 2.33$) than did those in the Neutral condition ($M = 1.56, SD = 1.09$), $t(124) = -7.57, p < .001, d = -1.35, 95\% CI = [-1.74, -0.96]$.

Supporting our prediction, participants in the Incidental Anger condition (52%) exhibited less perspective-taking than did those in the Neutral condition (72%), $\chi^2 = 5.24, p = .022, \Phi = -.20, d = 0.42, 95\% CI = [0.06, 0.77]$. As depicted in Fig. 1, compared to neutral emotion, incidental anger curtailed perspective-taking. In Study 1, angry individuals were more likely to send an egocentric message than neutral individuals.

3. Study 2

In Study 2, we advance our understanding by identifying a mechanism that may explain the relationship between anger and perspective-taking. We consider whether arousal mediates the relationship between anger and perspective-taking. We expect that when individuals feel angry rather than neutral emotion, they experience greater arousal, which impairs perspective-taking.

We also extend our investigation by employing a different emotion induction and a different measure of perspective-taking. To induce emotion, we used video clips (Gross & Levenson, 1995), instead of the writing recall task we used in Study 1. To measure perspective-taking, we assessed whether participants recommend the other player to move

a chess piece to the right (from the other player’s perspective) or to the left (from the participants’ perspective).

3.1. Method

3.1.1. Participants

We asked the behavioral lab to recruit as many participants as possible across four days with the expectation that we would obtain data from at least 75 participants per condition. We recruited 191 participants from a large North American university. Of the 191 participants, 10 participants failed the comprehension check. The final sample included 181 participants ($M_{age} = 25$ years, $SD_{age} = 11.02$ years; 59% female).

3.1.2. Procedure

As in Study 1, we informed participants that they would complete separate studies in the same session. In the first stage of the experiment, we provided participants with a photo and a short tutorial about three chess pieces: king, bishop, and pawn. In our sample, 50% of the participants correctly identified the three chess pieces and were familiar with chess prior to viewing a short tutorial. After completing the tutorial that identified the names of the three chess pieces and the correct moves, every participant needed to pass a comprehension check before continuing to the next stage of the experiment. (Ten participants failed the comprehension check, but we find a similar pattern of results with or without these 10 participants.)

After completing the comprehension check, we randomly assigned participants to either an Incidental Anger condition or a Neutral condition. To manipulate emotions, we had participants watch emotion-inducing video clips (Gross & Levenson, 1995). Participants in the Incidental Anger condition watched a video clip of white nationalists participating in the “Unite the Right” in Charlottesville, VA (see Appendix B.1). Participants in the Neutral condition watched a video clip of a National Geographic documentary about ocean life.

Following the video, we asked participants to describe the video in one sentence, rate the resolution quality, and rate the sound quality of the video. These questions misdirected participants’ attention so that they would be less likely to attribute their incidental feelings to the video clips.

After the emotion manipulation, participants proceeded to a purportedly unrelated Chess task. We created the Chess Task as a new measure of perspective-taking (see Appendix A.2). In this task, participants see a photo of a young man sitting across the table with a chess board and read the following instructions, “You are in charge of the White chess pieces and the other player is in charge of the Black chess pieces. In chess, it is important to protect the King. The other player’s Black king is in ‘check’ by your White bishop. That is, your White bishop will capture your opponent’s Black king on the next move. To avoid this, the other player will need to move his Black king. In what direction should the other player move the Black king?” Participants could select left, right, or other: _____.

From the participants’ vantage, the Black king should be moved to the left. From the other player’s vantage, the Black king should be moved to the right. We evaluated perspective-taking by coding whether participants indicated left (the egocentric assessment) or right (the perspective-taking assessment). If participants chose the “other” option, we reviewed what they wrote in the fill-in-the-blank to assess if they mentioned a particular direction to move the Black king. For example, seven participants selected the “other” option and wrote more specific directions such as “my right” or “my left and his right”.

Upon completing the chess task, participants completed a three-item measure of arousal, followed by an emotion manipulation check and demographic questions. In each emotion condition, we counterbalanced whether the arousal measure was presented before the chess task or after the chess task.

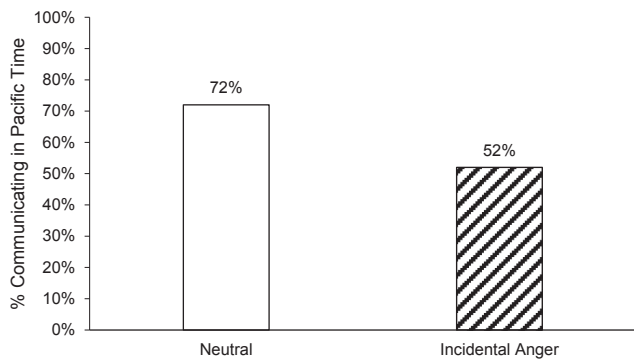


Fig. 1. Study 1 demonstrates that participants in the incidental anger condition were less likely to engage in perspective-taking than were participants in the neutral condition.

3.1.3. Measures

3.1.3.1. Emotion manipulation check. After the perspective-taking measure, participants rated the extent to which they felt angry, annoyed, irritated, and mad on a scale ranging from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*) ($M = 3.48$, $SD = 2.27$; $\alpha = .96$).

3.1.3.2. Arousal. Participants rated the degree to which they felt energized, aroused, awakened, and stimulated on a scale ranging from 1 (*does not describe me at all*) to 7 (*describes me very well*) ($M = 3.10$, $SD = 1.63$; $\alpha = .87$).

3.1.3.3. Perspective-taking. We assessed whether participants engaged in perspective-taking by indicating that the other player should move the chess piece to the right (scored as 1) or egocentrism by indicating the other player should move the chess piece to the left (scored as 0). If participants chose the “other” option and indicated both right and left, we assessed their behavior as perspective-taking.

Of the 181 participants who completed this study, 104 participants indicated that the other player should move the chess piece to the left (egocentric), 70 participants indicated that the other player should move the chess piece to the right (perspective-taking), 7 participants indicated “other” (1 left, 4 right, and 2 my left/his right).

3.2. Results and Discussion

As predicted, participants in the Incidental Anger condition ($M = 5.28$, $SD = 1.68$) reported higher levels of anger than did those in the Neutral condition ($M = 1.70$, $SD = 1.04$), $t(179) = -17.25$, $p < .001$, $d = -2.56$, 95% CI = $[-2.96, -2.17]$.

Supporting our hypothesis, we found that participants in the Incidental Anger condition (32%) exhibited less perspective-taking than did those in the Neutral condition (52%), $\chi^2 = 7.01$, $p = .008$, $\Phi = -.197$, $d = 0.40$, 95% CI = $[0.10, 0.69]$ (see Fig. 2).

Using a binary logistic regression analysis, we found no significant effect for order (whether the arousal measure was presented before or after the Chess Task) on perspective-taking, $\beta = -.02$, $SE = .30$, Wald(1) = .00, $p = .959$. We also did not find a significant effect for the interaction between the emotion condition and order, $b = -.41$, $SE = .63$, Wald(1) = .43, $p = .512$.

As expected, we found that participants in the Incidental Anger condition ($M = 3.76$, $SD = 1.65$) indicated higher levels of arousal than did participants in the Neutral condition ($M = 2.45$, $SD = 1.32$), $t(179) = -5.91$, $p < .001$, $d = -4.85$, 95% CI = $[-8.00, -1.71]$. We examined whether arousal mediates the effect of incidental anger on perspective-taking by employing the indirect bootstrapping technique. We performed 10,000 bootstrap resamples using the Preacher and Hayes (2008) SPSS macro. Our analysis revealed that incidental anger

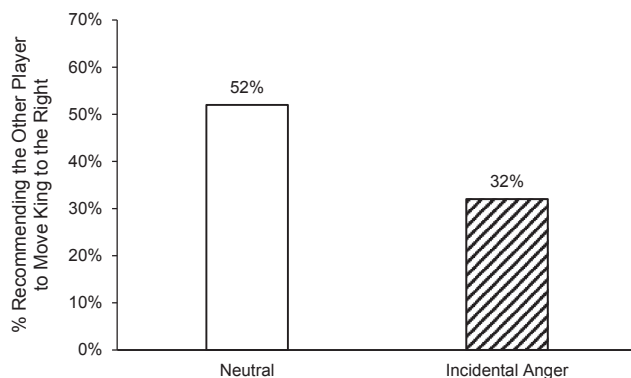


Fig. 2. Study 2 demonstrates that participants in the incidental anger condition were less likely to engage in perspective-taking than were participants in the neutral condition.

had an indirect effect on perspective-taking through arousal ($b = -.33$, 95% confidence interval [CI] = $-.702, -.070$). Since the bias-corrected 95% confidence interval did not include zero, we conclude that arousal mediates the effect of incidental anger on perspective-taking.

As in Study 1, we find that incidental anger reduces perspective-taking. In this study, we also find that arousal mediates the relationship between anger and perspective-taking. This finding reveals that when individuals feel angry, they experience greater arousal, which in turn impairs perspective-taking.

4. Study 3

To advance our understanding of the link between affect and perspective-taking, we contrast anger with another negatively-valence emotion, sadness. Unlike anger, sadness is characterized by low-arousal. In Study 2, our findings revealed that arousal mediates the influence of emotion on perspective-taking. Consequently, in this study, we hypothesize that anger reduces perspective-taking more than sadness and neutral emotion. Our hypothesis is consistent with findings from Converse et al. (2008) showing that sadness and neutral emotion had similar effects on perspective-taking, but our hypothesis diverges from findings by Tiedens and Linton (2001) who found that sadness promotes systematic thinking, a critical component of perspective-taking.

4.1. Method

4.1.1. Participants

We asked the behavioral lab to recruit as many participants as possible during three afternoons, expecting that we would obtain at least 60 participants per condition. We recruited 192 participants ($M_{\text{age}} = 21$ years, $SD_{\text{age}} = 2.40$ years; 66% female) at a large North American university to participate in this study.

4.1.2. Procedure

We randomly assigned participants to one of three conditions: Incidental Anger, Incidental Sadness, or Neutral. Across these conditions, participants watched short film clips. We created these film clips to induce emotion and provide details of these emotion inductions in Appendix B.2. All video clips are available from the authors upon request. Participants in the Incidental Anger condition watched a video clip of a woman yelling at a convenience store clerk. Participants in the Incidental Sadness condition watched a video clip from the film “Up” that shows a husband and wife grow old together, and the wife passes away. Participants in the Neutral condition watched a video clip from a National Geographic documentary about ocean life.

After watching the video, we asked participants to describe the video in one sentence, rate the resolution quality, and rate the sound quality of the video. These questions misdirect participants’ attention so that they would be less likely to attribute their feelings to the video clips.

After the emotion manipulation, participants proceeded to a purportedly unrelated Photo Task. We created the Photo Task to measure perspective-taking. In the Photo Task, participants answered questions about a photo of a young man sitting at a desk (see Appendix A.3). In the photo, there are several items on the desk and one item on the desk is a piece of paper with a clearly displayed number. From the participants’ vantage point, the number is “16”. From the vantage point of the young man in the photo, the number is “91.” Among several filler questions about the room and other items on the desk, we asked “What number is in front of the person?” We assessed perspective-taking by coding whether participants only mentioned “16” (the egocentric assessment) or mentioned “91” (the perspective-taking assessment). If participants indicated both “16” and “91”, we scored their behavior as reflecting perspective-taking, because they evidenced a viewpoint different from their own. Following the Photo Task, participants

completed an emotion manipulation check and answered demographic questions.

4.1.3. Measures

4.1.3.1. Emotion manipulation check. After the perspective-taking measure, participants reported their feelings on a scale ranging from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*). Our neutral emotion items included indifferent, neutral, and calm ($M = 2.90, SD = 1.56; \alpha = .78$). Our anger items included angry, annoyed, and irritated ($M = 2.74, SD = 2.19; \alpha = .98$). Our sadness items included sad, down, and gloomy ($M = 3.47, SD = 1.86; \alpha = .92$).

4.1.3.2. Perspective-taking. We assessed whether participants engaged in perspective-taking by describing the number as “91” (scored as 1) or egocentrism by only describing the number as “16” (scored as 0). If participants indicated both “16” and “91,” we assessed their behavior as perspective-taking.

Of the 192 participants who completed this study, 126 participants described the number as “16” (egocentric), 51 participants described the number as “91” (perspective-taking), 15 participants mentioned both “16” and “91” (perspective-taking).

4.2. Results and Discussion

We successfully induced the emotions of anger, sadness, and neutral emotion. We found that participants in the Incidental Anger condition reported higher feelings of self-reported anger ($M = 5.45, SD = 1.41$) than did participants in the Incidental Sadness condition ($M = 1.26, SD = .80$) and the Neutral condition ($M = 1.65, SD = 1.11$), $F(2, 189) = 266.17, p < .001, d = 3.37, 95\% CI = [2.83, 3.92]$. Similarly, participants in the Incidental Sadness condition reported higher feelings of self-reported sadness ($M = 4.44, SD = 1.67$) than did participants in the Incidental Anger condition ($M = 3.75, SD = 1.69$) and the Neutral condition ($M = 2.20, SD = 1.45$), $F(2, 189) = 32.94, p < .001, d = 0.96, 95\% CI = [0.60, 1.33]$. We report planned comparisons for the emotion manipulation checks in Table 1.

Supporting our prediction, we found that participants in the Incidental Anger condition (21%) exhibited less perspective-taking than did those in the Incidental Sadness condition (39%) and the Neutral condition (42%), $\chi^2 = 7.41, p = .025, \Phi = .196$. We present this finding in Fig. 3. As in Studies 1 and 2, we find that incidental anger reduces perspective-taking. In this study, we find that anger impairs perspective-taking more than sadness does. This finding reveals that the influence of anger on perspective-taking does not merely reflect the influence of negative valence. Interestingly, our findings diverge from results from Tiedens and Linton’s (2001) investigation, which showed that sadness promotes systematic thinking. These results build on the findings from Converse et al. (2008), suggesting that the effect of

Table 1
Study 3 descriptive statistics and planned comparisons of emotion manipulation check (n = 192).

Emotion condition	Self-reported emotion					
	Anger		Sad		Neutral	
	M	SD	M	SD	M	SD
Incidental anger (n = 62)	5.45	1.41	3.75	1.69	1.92	1.13
Incidental sad (n = 66)	1.26	.80	4.44	1.67	2.54	.95
Neutral (n = 64)	1.65	1.11	2.20	1.45	4.22	1.53

Note. Participants reported their emotion on a scale from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*). Planned comparisons within each emotion condition reveal that ratings of the induced emotion are significantly different from the ratings of other emotions.

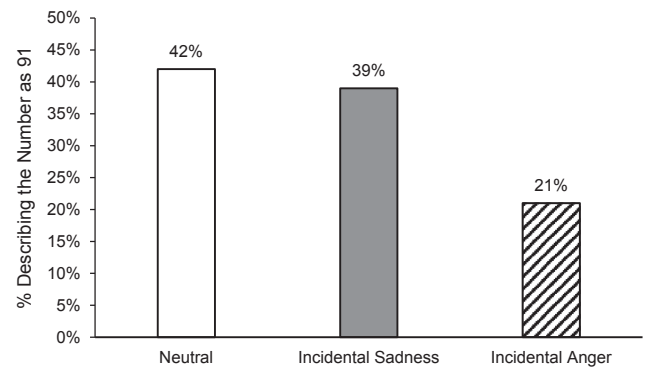


Fig. 3. Study 3 shows that participants in the incidental anger condition were less likely to engage in perspective-taking than were participants in the neutral condition or the incidental sadness condition.

emotion on perspective-taking is not a direct test of the effect of emotion on information processing.

5. Study 4

In Study 4, we contrast the influence of disgust with the influence of anger on perspective-taking. In Studies 1, 2 and 3, we found that anger diminishes perspective-taking relative to neutral emotion and sadness. Importantly, Study 2 demonstrates that arousal explains the link between anger and perspective-taking. In this investigation, we contrast anger with another negative-valence, high arousal emotion: disgust (Russell & Barrett, 1999). We expect high levels of arousal to disrupt perspective-taking, and as a result, we predict that both anger and disgust will impair perspective-taking compared to neutral emotion.

5.1. Method

5.1.1. Participants

We requested the behavioral lab to collect data from as many participants as possible over three afternoons. We expected that we would obtain data from approximately 180 participants (60 participants per condition). We recruited 199 participants from a North American university, and 5 participants did not follow the instructions for the Scheduling Task by proposing meeting times that did not correspond to available time slots. Our final sample consisted of 194 participants ($M_{age} = 20$ years, $SD_{age} = 2.58$ years; 70% female).

5.1.2. Procedure

We randomly assigned participants to one of three conditions: Incidental Anger, Incidental Disgust, or Neutral. As in Study 2, we manipulated emotion by having participants watch an anger-inducing video clip (“Unite the Right” protest in Charlottesville), a disgust-inducing video clip (a video clip from the film “Slumdog Millionaire” that shows a young child plunging into human waste), or a neutral (National Geographic documentary). We include details for these videos in Appendix B.3. As in our previous studies, we asked participants to describe the video in one sentence, rate the resolution quality, and rate the sound quality of the video.

After viewing and rating the video, participants proceeded to a seemingly unrelated Scheduling Task. We used the same perspective-taking paradigm as we did in Study 1. We assessed perspective-taking by recording whether participants referred to Pacific Time when they proposed a meeting time (coded as 1 for perspective-taking) or only referred to Eastern Time when they proposed meeting times (coded as 0 for no perspective-taking). Following the Scheduling Task, participants completed a measure of arousal, an emotion manipulation check, and demographic questions.

5.1.3. Measures

5.1.3.1. *Emotion manipulation check.* After the perspective-taking measure, participants reported their feelings on a scale ranging from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*). Our anger items included angry, irritated, annoyed, and mad ($M = 2.99, SD = 2.02; \alpha = .97$). Our disgust items included disgust, repulsed, nauseated, and sickened ($M = 3.29, SD = 2.10; \alpha = .97$). Our neutral emotion items included neutral, calm, unemotional, and indifferent ($M = 3.39, SD = 1.73; \alpha = .89$).

5.1.3.2. *Arousal.* Participants rated the degree to which they felt energized, aroused, awakened, and stimulated on a scale ranging from 1 (*does not describe me at all*) to 7 (*describes me very well*) ($M = 2.70, SD = 1.57; \alpha = .88$).

5.1.3.3. *Perspective-taking.* We coded whether or not participants' communication reflected perspective-taking by proposing meeting times in Pacific Time (scored as 1) or reflected egocentric communication by proposing meeting times exclusively in Eastern Time (scored as 0). We decided in advance to code communication that referenced Pacific Time, including communication that referenced both Pacific Time and Eastern Time, as perspective-taking.

5.2. Results and discussion

Our manipulation of anger, disgust, and neutral emotion was effective. As expected, we found that participants in the Incidental Anger condition reported higher feelings of self-reported anger ($M = 4.98, SD = 1.77$) than did participants in the Incidental Disgust condition ($M = 2.25, SD = 1.52$) and the Neutral condition ($M = 1.84, SD = 1.10$), $F(2, 191) = 84.58, p < .001, d = 2.12, 95\% CI = [1.68, 2.55]$. In addition, participants in the Incidental Disgust condition reported higher feelings of self-reported disgust ($M = 4.60, SD = 1.90$) than did participants in the Incidental Anger condition ($M = 3.63, SD = 1.89$) and the Neutral condition ($M = 1.67, SD = 1.28$), $F(2, 191) = 49.84, p < .001, d = 1.71, 95\% CI = [1.31, 2.11]$. We report planned comparisons for the emotion manipulation checks in Table 2.

As depicted in Fig. 4, we found that participants in the Incidental Anger condition (38%) exhibited less perspective-taking than did those in the Incidental Disgust condition (63%) and the Neutral condition (58%), $\chi^2 = 8.82, p = .012, \Phi = .213$. As predicted, we found that participants in the Incidental Anger condition (38%) were less likely to engage in perspective-taking than those in the Neutral condition (58%), $\chi^2 = 4.90, p = .027, \Phi = -.195$. However, contrary to our prediction, we found that there was no difference in perspective-taking between participants in the Incidental Disgust condition (63%) and those in the Neutral condition (58%), $\chi^2 = 4.14, p = .520, \Phi = .056$.

We originally hypothesized that, relative to neutral emotion, disgust

Table 2

Study 4 descriptive statistics and planned comparisons of emotion manipulation check and arousal (n = 194).

Condition	Self-reported emotion							
	Anger		Disgust		Neutral		Arousal	
	M	SD	M	SD	M	SD	M	SD
Incidental anger (n = 63)	4.98	1.77	3.63	1.89	2.23	1.44	3.35	1.68
Incidental disgust (n = 65)	2.25	1.52	4.60	1.90	3.36	1.52	2.37	1.17
Neutral (n = 66)	1.84	1.10	1.67	1.28	4.52	1.41	2.39	1.62

Note. Participants reported their emotion on a scale from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*). Planned comparisons within each emotion condition reveal that ratings of the induced emotion are significantly different from the ratings of other emotions.

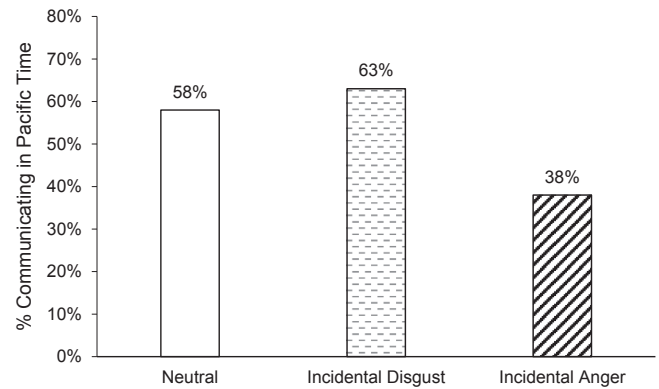


Fig. 4. Study 4 shows that participants in the incidental anger condition were less likely to engage in perspective-taking than were participants in the neutral condition or the incidental disgust condition.

would diminish perspective-taking. We formulated our prediction on the assumption that, consistent with prior theoretical work, disgust is a high-arousal emotion. To understand why disgust did not diminish perspective-taking, we examined the extent to which our disgust induction elicited high arousal. We found that participants in the Incidental Anger condition ($M = 3.35, SD = 1.68$) experienced higher levels of arousal than did those in the Neutral condition ($M = 2.39, SD = 1.62$) and the Incidental Disgust condition ($M = 2.37, SD = 1.17$), $F(2, 191) = 8.80, p < .001, d = 0.64, 95\% CI = [0.28, 0.99]$. In particular, we found that participants in the Incidental Anger condition ($M = 3.35, SD = 1.68$) reported higher levels of arousal than did those in the Incidental Disgust condition ($M = 2.37, SD = 1.17$), $t(126) = 3.84, p < .001, d = 0.68, 95\% CI = [0.32, 1.03]$. This evidence is consistent with Russell and Barrett's (1999) theoretical assertion that disgust is a high-arousal, negative emotion, but disgust is characterized by lower arousal than anger.

To advance our understanding about the role of arousal, we investigated whether arousal mediates the effect of incidental anger on perspective-taking by employing the indirect bootstrapping technique. We performed 10,000 bootstrap resamples using the Preacher and Hayes (2008) SPSS macro, and we found that incidental anger had an indirect effect on perspective-taking through arousal ($b = -.02, 95\% confidence interval [CI] = -.057, -.001$). Given that the bias-corrected 95% confidence interval did not include zero, we determine that arousal mediates the effect of incidental anger on perspective-taking.

As in our previous studies, incidental anger impairs perspective-taking. We found that anger reduces perspective-taking compared to disgust and neutral emotion. Surprisingly, disgust did not diminish perspective-taking in this study. We found that our disgust induction elicited high levels of disgust, but lower levels of arousal than anger. This finding offers additional evidence for arousal as the mediating mechanism explaining the link between anger and perspective-taking.

6. Study 5

In Study 5, we advance our investigation by considering whether integral anger reduces perspective-taking. Integral anger, anger triggered by a prior, related interaction, activates a number of response tendencies, such as the drive to confront an offender and retaliate (Carver & Harmon-Jones, 2009; Lerner & Tiedens, 2006). Integral anger is distinct from incidental anger, because integral anger conflates the emotional experience of anger with relational concerns of retribution and is more closely associated with conflict (Cavanaugh et al., 2007; Lerner & Keltner, 2001; Lerner & Tiedens, 2006; Tinsley, O'Connor, & Sullivan, 2002). We expect integral anger to reduce perspective-taking, just as incidental anger does, but by linking integral anger with perspective-taking, our findings highlight the important role of anger in

conflict. Integral anger and poor perspective-taking may contribute to conflict spirals.

6.1. Method

6.1.1. Participants

We asked the behavioral lab to collect data from approximately 150 target participants (approximately 75 participants per condition). We recruited a final sample of 150 participants from a North American university ($M_{\text{age}} = 20$ years, $SD_{\text{age}} = 3.54$ years; 63% female).

6.1.2. Procedure

In this study, we induced emotion by having participants receive feedback from evaluators on an essay writing task, and then measured perspective-taking by assessing how participants attributed blame following the description of a car accident. We introduce a new method of inducing integral anger by adapting the incidental anger induction employed in Yip and Schweitzer (2016). Our procedure involved five stages.

In the first stage, we recruited an even number of participants for each experimental session. We recruited a total of 300 people, and designated half of the participants to be our focal participants and the other half to be evaluators. We focus our data collection on 150 focal participants, and we had the other 150 participants serve as evaluators to provide feedback on essays to create a credible anger induction, but we did not collect data from these non-focal participants.

In the second stage, both participants and evaluators handwrote an essay about an inspirational moment in their lives for five minutes. After five minutes elapsed, an experimenter collected the essays and exchanged them with other participants in the laboratory. We gave focal participants' essays to the evaluators, and we gave evaluators' essays to the focal participants. Of the 150 focal participants, we randomly assigned half of them to the Integral Anger condition and the other half to the Neutral condition. Without the knowledge of focal participants, we provided special instructions to the evaluators. Evaluators who were paired with participants in the Integral Anger condition were instructed to handwrite a critical summary and identify specific problems with the essay. For example, "This essay is about _____, which I found to be boring/ordinary/stupid." In contrast, evaluators who were paired with participants in the Neutral condition were instructed to handwrite a factual summary and provide a neutral analysis about the essay. For example, "This essay is about _____." We provided instructions to write legibly to participants. We allotted five minutes for participants and evaluators to write feedback. The complete set of forms and instructions for writing the essay and the feedback are presented in Appendix B.4.

In the third stage, the experimenter collected the handwritten feedback, which were attached to the essays, and returned the packet to each participant who authored the essay. We then gave participants two minutes to read the personalized, handwritten feedback. This emotion induction effectively elicits integral anger, and enhances the realism that participants experience.

In the fourth stage, the focal participants proceeded to an interaction task in which we paired them with their evaluator partner. In this task, we assigned participants to the role of Driver 1 and we informed focal participants that their partner was assigned to the role of Driver 2. Participants then read instructions about a car accident involving Driver 1 and Driver 2. We included background information about the accident and a fact pattern that indicated that both Driver 1 and Driver 2 shared fault for the accident. For example, we informed participants that (1) Driver 1 was driving at dusk, but did not turn on their headlights, (2) the other driver (Driver 2) had parked their car on the side of the street in a No Parking zone, and (3) Driver 2 quickly pulled their car in front of the participant before they collided. We provided participants with two additional facts and a diagram of the collision. We asked participants to predict how an insurance claims adjuster would make a

determination of fault. We assessed perspective-taking by examining whether participants attributed less fault to themselves and more fault to the other driver (egocentrism) or more fault to themselves and less fault to the other driver (perspective-taking). We present this measure of perspective-taking in Appendix A.4.

Taken together, we introduce a novel method for eliciting integral anger. There are two strengths of our experimental approach to exploring integral anger. First, we employ a reliable, behavioral induction of anger by having evaluators elicit anger in participants using critical feedback about a personally relevant essay. That is, our method is highly self-relevant. Second, we limit contextual concerns, such as motives for restorative justice, by having participants interact with the instigator across two different interactions. Our approach offers a conservative test of the influence of integral anger compared to contexts that involve related participants and contexts.

6.1.3. Measures

6.1.3.1. Emotion manipulation check. After the perspective-taking measure, participants rated the extent to which they felt angry, annoyed, irritated, and mad on a scale ranging from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*) ($M = 3.24$, $SD = 2.28$; $\alpha = .97$).

6.1.3.2. Perspective-taking. We assessed whether participants engaged in perspective-taking by the extent to which they attributed fault to themselves versus the other driver on an 11-point scale ranging from 1: "0% Your Fault and 100% Other Driver's Fault" to 11: "100% Your Fault and 0% Other Driver's Fault." Low scores indicate greater egocentrism, and higher scores indicate greater perspective-taking.

6.2. Results and discussion

We manipulated anger effectively using the essay feedback. As expected, we found that participants in the Integral Anger condition reported greater feelings of self-reported anger ($M = 4.57$, $SD = 2.02$) than did those in the Neutral condition ($M = 1.94$, $SD = 1.69$), $t(148) = -8.65$, $p < .001$, $d = -1.41$, 95% CI = $[-1.77, -1.05]$.

Supporting our hypothesis, participants in the Integral Anger condition ($M = 3.77$, $SD = 2.26$) exhibited lower perspective-taking than did those in the Neutral condition ($M = 4.76$, $SD = 2.57$), $t(148) = 2.51$, $p < .013$, $d = 0.41$, 95% CI = $[0.09, 0.73]$. As shown in Fig. 5, integral anger reduces perspective-taking compared to neutral emotion. When people feel integral anger, their judgment is more likely to reflect their own perspective. This egocentric tendency may spiral conflict. If parties to a conflict experience anger, they may become less able to take each other's perspective, and as a result, become more firmly rooted in their own positions and less capable of finding solutions.

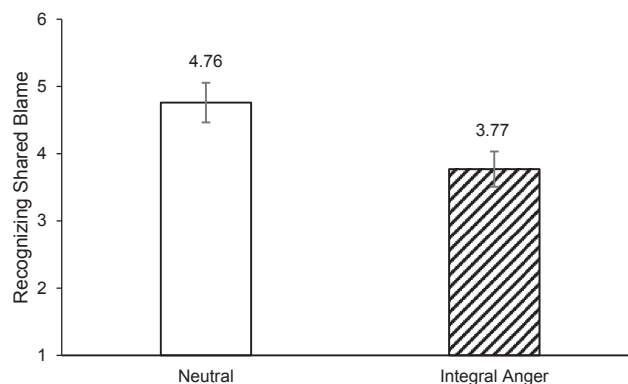


Fig. 5. Study 5 demonstrates that participants in the integral anger condition were less likely to engage in perspective-taking than were participants in the neutral condition.

7. Study 6

In Study 6, we identify a boundary condition of the effect of anger on perspective-taking. Specifically, we explore the moderating influence of the salience of emotions, and investigate whether or not incidental anger reduces perspective-taking when people are made aware of the source of their anger. We postulate that when the source of the emotion is made salient, the harmful effects of incidental anger on perspective-taking become attenuated. This investigation guides our understanding of conflict and conflict management.

7.1. Method

7.1.1. Participants

We asked the behavioral lab to collect data from participants over the course of seven days. We had an ex-ante estimate that we would be able to collect data from at least 80 participants per condition. Our sample consisted of 348 adults ($M_{\text{age}} = 27$ years, $SD_{\text{age}} = 10.97$ years; 54% female) from a large North American university.

7.1.2. Procedure

In this study, we randomly assigned participants to one of four conditions from a 2 (Incidental Emotion: Neutral vs. Anger) \times 2 (Attribution: Salient vs. Non-Salient) design. As in our previous studies, we manipulated emotion by having participants watch one of two video clips. In the Incidental Anger condition, participants watched a video of a woman yelling at a store clerk. In the Neutral condition, participants watched a documentary about the ocean.

We also manipulated the Attribution for their emotional state. Half of the participants in each emotion condition saw a short message after they watched their video. In the Anger-Salient Attribution condition, the message read, “Describe how you felt in one word after watching the video. In a pilot study, 90% of the participants reported feeling angry after watching the video.” In the Neutral-Salient Attribution condition, the message read, “Describe how you felt in one word after watching the video. In a pilot study, 90% of the participants reported feeling neutral after watching the video.” Participants in the Non-Salient Attribution conditions did not read a message.

After the Emotion and Attribution manipulations, participants transitioned to a purportedly unrelated Photo Task. We used the same Photo Task as we used in Study 3. In the Photo Task, we asked participants to report the number in front of the person in the photo. As before, we assessed perspective-taking by whether or not participants indicated 91 in their response, the correct number from the vantage of the person in the photo.

7.1.3. Measures

7.1.3.1. Anger manipulation check. After the perspective-taking measure, participants rated the extent to which they felt angry, annoyed, and irritated on a scale ranging from 1 (*does not describe my feelings at all*) to 7 (*describes my feelings very well*) ($M = 3.56$, $SD = 2.22$; $\alpha = .95$).

7.1.3.2. Perspective-taking. We assessed whether participants exhibited perspective-taking by describing the number as “91” (scored as 1) or exhibited egocentrism by only referring to the number as “16” (scored as 0). If participants indicated both “16” and “91,” we scored their response as 1 reflecting perspective-taking.

7.2. Results and discussion

We successfully manipulated incidental anger with our video clip inductions. Participants in the Incidental Anger condition reported higher levels of anger ($M = 5.31$, $SD = 1.54$) than did participants in

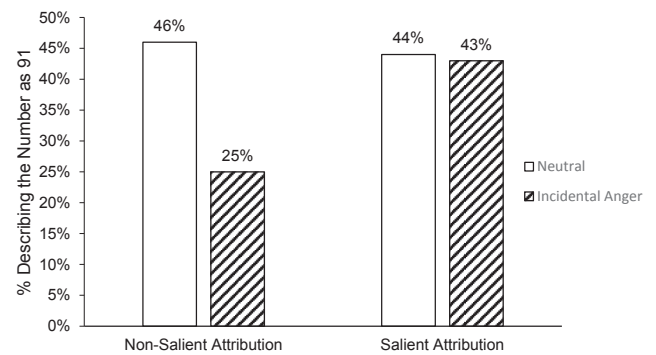


Fig. 6. Study 6 demonstrates that in the non-salient attribution conditions, participants in the incidental anger condition were less likely to exhibit perspective-taking than were participants in the neutral condition. However, in the salient attribution conditions, there was no significant difference between participants in the neutral condition and incidental anger condition.

the Neutral condition ($M = 1.81$, $SD = 1.18$), $t(346) = -23.83$, $p < .001$, $d = -2.55$, 95% CI = $[-2.83, -2.27]$. Reported levels of anger were similar across the Anger conditions ($M = 5.53$, $SD = 1.38$ vs. $M = 5.09$, $SD = 1.65$) and Neutral conditions ($M = 1.75$, $SD = 1.21$ vs. $M = 1.88$, $SD = 1.14$) for the Salient Attribution condition and Non-Salient Attribution condition, respectively.

We next conducted analyses for our main dependent variable, perspective-taking. In the Non-Salient Attribution conditions, we find results very similar to our previous five studies. Participants in the Non-Salient Anger condition exhibited less perspective-taking (25%) than did those in the Non-Salient Neutral condition (46%), $\chi^2 = 8.42$, $p = .004$, $\Phi = -.22$, $d = 0.45$, 95% CI = $[0.15, 0.75]$ (see Fig. 6). In the Salient Attribution conditions, however, we found no significant difference in perspective-taking between the Anger condition (43%) and the Neutral condition (44%), $\chi^2 = .01$, $p = .93$, $\Phi = -.01$, $d = 0.01$, 95% CI = $[-0.28, 0.31]$. That is, making the source of the emotion salient attenuated the relationship between anger and perspective-taking. In a logistic regression analysis, we found that the Attribution condition moderates the relationship between incidental anger and perspective-taking, $B = .91$, $SE = .45$, $Wald(1) = 4.13$, $p = .042$.

Consistent with our previous findings, when the source of their emotions was not salient, incidental anger reduces perspective-taking. However, when we made the source of their anger salient, incidental anger no longer influences perspective-taking. This suggests that individuals can limit the detrimental influence of incidental anger on perspective-taking by correctly identifying the source of their anger and recognizing its irrelevance to the current situation. In addition, our findings suggest that making the source of emotions salient curtails the harmful effects of anger by redirecting focus rather than reducing emotional arousal.

8. General discussion

Anger reduces perspective-taking. Across six experiments, with different emotion inductions and different measures of perspective-taking, we find a consistent pattern: anger promotes egocentrism. When people experience anger, they tend to anchor on their own perspective and struggle to adopt another vantage point.

We identify arousal as the underlying mechanism. Compared to neutral emotion, sadness, and disgust, anger activates higher levels of arousal, and we find that high levels of arousal mediate the relationship between anger and perspective-taking. We expected sadness to operate differently than anger, because sadness is a negative-valence, low-arousal emotion. We found that anger reduces perspective-taking

relative to sadness. We expected disgust, however, to operate similarly to anger, because prior work has conceptualized disgust as a negative-valence, high-arousal emotion. In our study, disgust elicited significantly lower arousal than anger did, and disgust did not harm perspective-taking. Taken together, our findings advance our understanding of the influence of emotion on perspective-taking, and directly contribute to our understanding of the relationship between affect and cognition. By identifying the mediating role of arousal, we connect our findings to existing research and offer a parsimonious account for why anger, happiness, and anxiety inhibit perspective-taking.

In addition to investigating incidental anger, we also examined integral anger, anger triggered by the interaction at hand. Consistent with our incidental anger findings, we found that integral anger also reduces perspective-taking, and this finding highlights the importance of anger in conflict settings. Anger is closely associated with conflict (Berkowitz & Harmon-Jones, 2004), and poor perspective-taking can escalate conflict (Galinsky et al., 2005). Our research is the first to establish a link between feeling angry and perspective-taking, and our findings suggest that anger and poor perspective-taking may contribute to a cycle of conflict that makes conflict resolution especially difficult.

Our findings also inform an approach for interrupting conflict spirals. We investigate not only what fuels conflict spirals but also what de-escalates them as well. In one study, we highlight a boundary condition of the effect of incidental anger on perspective-taking. We find that prompting individuals to correctly attribute their feelings of incidental anger moderates the relationship between anger and perspective-taking. That is, the deleterious effects of incidental anger on perspective-taking can be mitigated by making people aware of the source of their anger. By making proper attributions of anger, individuals may be better able to engage in perspective-taking and develop creative solutions for resolving conflict.

Our findings inform several practical prescriptions. First, we urge employees to recognize that when their colleague is angry, even when the source of that anger is unrelated, their colleague will be less likely to take their perspective. By understanding the cause-and-effect relationship between anger and perspective-taking, employees can avoid overreacting to divergent perspectives and prevent escalation of conflict.

Second, employees should recognize that their own anger will impair their ability to consider broader perspectives. Our work reveals that when people feel angry, they become more likely to hold egocentric views, because anger heightens arousal, which narrows attentional focus on their own egocentric perspective. We advise employees to be mindful of their own emotional state in order to avoid engaging in rude, selfish behavior.

Third, managers and employees should recognize that they can mitigate the harmful effects of anger on perspective-taking, both for themselves and for others, by making the source of the anger more salient. If the anger is incidental, merely pinpointing the correct source of their anger can diminish the destructive behavior of acting egocentrically.

In addition to theoretical and practical contributions related to affect, perspective-taking, arousal, and cognition, our work makes a number of methodological contributions. We introduce four novel measures of perspective-taking. In Studies 1 and 4, we assess perspective-taking by having participants write an email proposing meeting times to a client in a different time zone (Pacific Time vs. Eastern Time). In Study 2, we evaluate perspective-taking by having participants recommend the direction in which another player should move their king in a chess game (right or left). In Studies 3 and 6, we assess perspective-taking by having participants identify a number from either their egocentric or other-focused perspective (“16” or “91”), and in Study 5, we measure perspective-taking by having participants predict how a third-

party would attribute fault following a car accident. The extant literature is characterized by a very limited set of perspective-taking measures (Ku et al., 2015), and we substantially expand the set of perspective-taking measures using open-ended and close-ended questions with clear dependent variables.

8.1. Limitations and future research

Our research is subject to limitations that create opportunities for future research. In our investigation, we experimentally manipulate anger, and examine the consequences of anger on perspective-taking. However, the relationship between anger and perspective-taking is likely bidirectional. Poor perspective-taking is likely to provoke anger, and future work should build on our findings to explore the relationship between poor perspective-taking, anger, and conflict.

Second, our research employs different methods of emotion induction and different perspective-taking measures. Future work should explore both the effectiveness of different inductions and the consequences of inducing emotions at different levels of magnitude. The relationship between anger and behavior may vary when people feel low, moderate, or high levels of anger.

Third, by investigating integral anger, our research substantially advances our theoretical understanding and methodological approach for studying anger within the context of conflict. By construction, integral anger conflates the experience of anger with relational harm. Integral anger is triggered by a related actor, a related judgment, or both. In Study 5, anger is triggered by a focal actor, but the judgment context is independent of the anger triggering context and, consequently, our investigation studies the consequences of ambient integral anger. We focus on ambient integral anger (Cavanaugh et al., 2007), because it reduces retaliatory concerns relative to common-context integral anger. We define common-context integral anger as anger that is related to a judgment made within the same domain and with the same parties as those who triggered anger. Our focus on ambient integral anger affords a more conservative test of the influence of integral anger on perspective-taking. We call for future research to investigate the role of retaliation and restorative motivations in the link between both ambient and common-context integral anger and decisions. To trigger these two types of integral anger, future research could induce anger in interactions with the focal actor engaging in trash-talking (Yip, Schweitzer, & Nurmohamed, 2018) or expressing anger (Yip & Schweinsberg, 2017).

Fourth, our findings revealed that the correct attribution of anger limits the carryover effect of incidental anger, but we call on future research to explore other boundary conditions that influence the consequences of both incidental and integral anger. For example, future work could examine moderating factors of the relationship between anger and perspective-taking such as emotional intelligence (Mayer, Roberts, & Barsade, 2008; Yip & Martin, 2006), question-asking (Minson, Van Epps, Yip, & Schweitzer, 2018), trust (Kim, Dirks, & Cooper, 2009; Yip & Schweitzer, 2015), cultural norms (Gelfand, Nishii, & Raver, 2006), and construal level (Lee & Zhao, 2014).

9. Conclusion

Perspective-taking is essential for mitigating conflict and navigating social relationships. Managers' ability to take a different perspective, however, can be disrupted when they feel angry. Across our studies, we consistently demonstrate that the emotional experience of anger reduces perspective-taking. Our findings offer new insight into how emotions influence cognition, and inform new strategies for conflict management.

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Disclosure

The data from each study are available as Online Supplementary Materials at <https://osf.io/p2d5g/>.

Appendix A

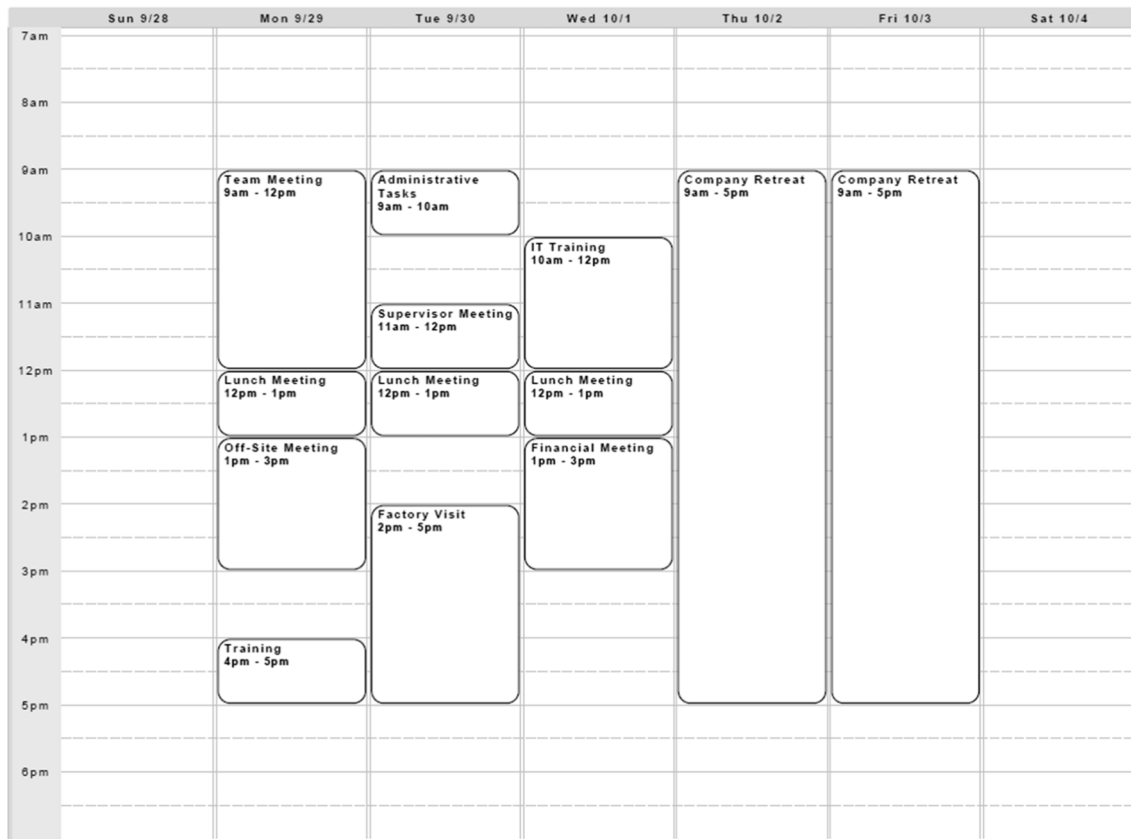
A.1 Study 1 “scheduling task” perspective-taking measure

Consider the following situation. You work full-time in Philadelphia. You need to schedule a one-hour conference call with a very important client in California, which is 3 h behind Eastern Time.

You have never met this client, Sandy. However, if this call goes well, Sandy’s company could become a large customer and this could have a significant positive impact on your quarterly performance evaluation.

Today is Monday and you need to schedule the call during normal business hours (9am to 5 pm) within the next three days. In this task, you need is to draft an e-mail that you would send to this important potential client. In the e-mail, you should propose three possible times for a one-hour conference call. The email should be succinct, but polite.

Here is your schedule over the next week¹:



Write your email here:

¹ We collected data in the behavioral lab from participants in Philadelphia. The location and home time zone should correspond to the location and time zone in which participants are based. We did not collect any of these data using Amazon Mechanical Turk.

A.2. Study 2 “chess task” perspective-taking measure

Chess task

Take a look at the photo and then answer the question below.



You are in charge of the White chess pieces and the other player is in charge of the Black chess pieces.
 In chess, it is important to protect the King. The other player's Black king is in “check” by your White bishop. That is, your White bishop will capture your opponent's Black king on the next move.
 To avoid this, the other player will need to move his Black king.
 In what direction should the other player move the Black king?

Left

Right

Other: _____

A.3. Study 3 “photo task” perspective-taking measure



What is the person wearing?

What color is the water bottle?

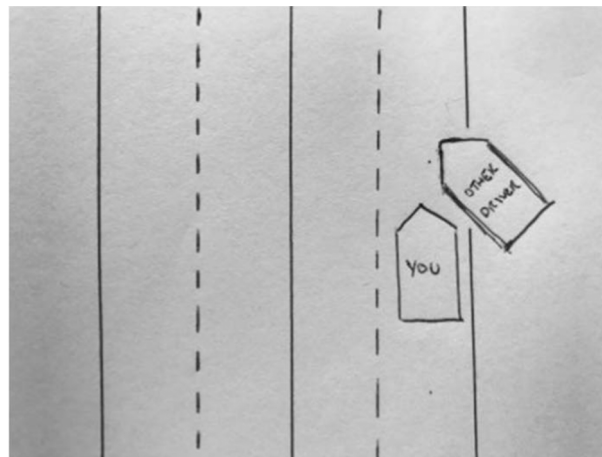
What number is in front of the person?

Briefly describe the room in which the person is sitting.

A.4. Study 5 “attribution of fault” perspective-taking measure

You are Driver 1. Your Evaluator is Driver 2. You recently were involved in a driving accident.
Here are the facts:

- You were driving along Wilson Avenue at the posted speed limit of 30 mph at dusk. You did not turn on your headlights.
- The other driver (Driver 2) had parked his car on the side of the street in a “No Parking” zone.
- As you were about to drive by him/her, he/she quickly pulled his car in front of you. You collided with his/her car.
- You had major damage to the passenger’s side of your front bumper and headlight. He/she had damage to the driver’s side front door and panel.
- There were no witnesses.



An insurance claims adjuster is going to review your accident claim and make a determination of fault. The adjuster can attribute no fault, partial fault, or full fault.

What is your prediction about how the insurance claims adjuster will attribute fault to you (Driver 1) and the other driver (Driver 2)?

- 0% Your Fault and 100% Other Driver's Fault
- 10% Your Fault and 90% Other Driver's Fault
- 20% Your Fault and 80% Other Driver's Fault
- 30% Your Fault and 70% Other Driver's Fault
- 40% Your Fault and 60% Other Driver's Fault
- 50% Your Fault and 50% Other Driver's Fault
- 60% Your Fault and 40% Other Driver's Fault
- 70% Your Fault and 30% Other Driver's Fault
- 80% Your Fault and 20% Other Driver's Fault
- 90% Your Fault and 10% Other Driver's Fault
- 100% Your Fault and 0% Other Driver's Fault

Appendix B

B.1. Study 2 Emotion Induction Videos

B.1.1. Anger induction video

On August 12, 2017, hundreds of white nationalists, alt-righters, and neo-Nazis gathered in Charlottesville, Virginia, to participate in the “Unite the Right” rally. Video footage shows white nationalists marching and chanting while carrying burning torches.

B.1.2. Neutral induction video

In a video clip from a National Geographic documentary, underwater creatures swim in different parts of Red Sea coral near the Suez Canal.

B.2. Study 3 Emotion Induction Videos

B.2.1. Anger induction video

In a candid video, a middle-aged Caucasian woman purchases some goods at the check-out counter of a Boston convenience store. The store clerk is an immigrant who has an accent. When interacting with the store clerk, the woman berates the store clerk. She makes rude remarks as the store clerk completes the transaction and puts her goods into a bag. After she takes her bags, she begins to swear profusely and make racist remarks.

B.2.2. Sad induction video

In a film clip from “Up”, one of the main characters, Carl befriends a girl named Ellie. Carl and Ellie grow up together in the same neighborhood. When they become adults, they eventually get married and live together in a restored house. Carl sells toy balloons from a cart and Ellie works at the zoo. After suffering from a miscarriage and being told they cannot have a child, the couple decides to realize their dream of visiting Paradise Falls. They try to save for the trip, but repeatedly end up spending the money on more pressing needs. Finally, an elderly Carl makes arrangements for the trip to Paradise Falls, but Ellie suddenly becomes ill and dies.

B.2.3. Neutral induction video

In a video clip from a National Geographic documentary, underwater creatures swim in different parts of Red Sea coral near the Suez Canal.

B.3. Study 4 emotion induction videos

B.3.1. Anger induction video

On August 12, 2017, hundreds of white nationalists, alt-righters, and neo-Nazis gathered in Charlottesville, Virginia, to participate in the “Unite the Right” rally. Video footage by Vice News shows white nationalists marching and chanting while carrying burning torches.

B.3.2. Disgust induction video

In a video clip from Slum Dog Millionaire, a young boy, Jamal, gets locked inside an outhouse. To escape, he dives into the outdoor latrine, crawls through the sewer, and climbs onto the street covered in human waste.

B.3.3. Neutral induction video

In a video clip from a National Geographic documentary, underwater creatures swim in different parts of Red Sea coral near the Suez Canal.

B.4. Study 5 integral emotion induction using essay feedback

B.4.1. General instructions for writing an inspirational essay:

The purpose of this study is to examine students' ability to recall and write about inspirational moments in their lives.

For this task, write a short essay about an inspirational moment in your life. This moment can come from any personal experience at any point in your life. For example, relevant topics include educational accomplishments (such as performing well on an exam or a graduation), professional accomplishments (such as a promotion or recognition for your work), or any other type of accomplishment (such as finishing a running race, summiting a mountain). You should not write about topics related to the death of a family member or a condition. You will have five minutes to write this essay. Please include as much detail as you can and write as clearly as you can within the five-minute time limit. Make sure that your writing is legible for others to read.

Once five minutes have passed, the experimenter will collect the essays and then redistribute them to other participants for evaluation. You will also receive an essay that was written by a different participant to evaluate.

Do NOT detach your essay form from the feedback form. Your identity will be kept confidential. Your participant ID ensures your confidentiality.

B.4.2. General instructions evaluating the inspirational essay

In this task, you will evaluate the essay that was written by another participant in this session. You will have five minutes to provide your feedback.

1. How inspirational was the essay that you were assigned to evaluate? (Please circle a number below)

Not at all						Extremely
1	2	3	4	5	6	7

2. What is your overall evaluation of the essay? (Please circle an option below)

Fail Pass

3. Please include as much detail as you can and write as clearly as you can within the five-minute time limit. Make sure that your handwriting is legible and can be read by others.

B.4.3. Special instructions for focal participants to evaluate essays

You will now evaluate an essay written by another participant in this session. The participant wrote an essay about an inspirational moment in his or her life.

You will have 5 min to read the essay and write your evaluation. Please write legibly so that the author can read your comments. Your identity will be kept confidential. The comments are important.

B.4.4. Special instructions for evaluators to evaluate essays and induce anger

You will now evaluate an essay written by another participant in this session. The participant wrote an essay about an inspirational moment in his or her life.

Your goal is to provide feedback that causes the other participant to feel as angry as possible. For the first two items, you should give a low score on inspiration and indicate a “FAIL” for the overall evaluation. For the comments, start with a critical summary of the essay. Your comments should be specific and critical.

The comments are important. Feel free to modify the words you use. Here are some guidelines:

-
- (1) Start with a critical summary
e.g., “This essay is about _____. I found _____ to be completely uninspiring.”
 - (2) Be specific and critical
e.g., “This essay describes the following events _____, which I found to be boring/ordinary/stupid.”
e.g., “The essay was poorly written. It included phrases that a high school student would have written such as _____.”
 - (3) Be critical about the author
e.g., “The author is probably _____, because _____.”
e.g., “I am glad that I do not have to meet this person or hear more about his/her boring life.”
-

You will have 5 min to read the essay and write your evaluation. Please write legibly so that the author can read your comments. Your identity will be kept confidential.

B.4.5. Special instructions for evaluators to evaluate essays and induce neutral emotion

You will now evaluate an essay written by another participant in this session. The participant wrote an essay about an inspirational moment in his or her life.

Your goal is to provide feedback that causes the other participant to feel as neutral as possible. For the first two items, you should give a high score on inspiration and indicate a “PASS” for the overall evaluation. For the comments, start with a summary of the essay. Your comments should be specific and neutral.

The comments are important. Feel free to modify the words you use. Here are some guidelines:

-
- (1) Start with a summary
e.g., “This essay is about _____. It is inspirational because _____.”
 - (2) Be specific
e.g., “This essay describes the following events _____.”
 - (3) Be neutral
e.g., “The quality of this essay meets my expectations, because _____.”
-

You will have 5 min to read the essay and write your evaluation. Please write legibly so that the author can read your comments. Your identity will be kept confidential.

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