

## The Illusion of Courage in Self-Predictions: Mispredicting One's Own Behavior in Embarrassing Situations<sup>†</sup>

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### ABSTRACT

People exhibit an “illusion of courage” when predicting their own behavior in embarrassing situations. In three experiments, participants overestimated their own willingness to engage in embarrassing public performances in exchange for money when those performances were psychologically distant: Hypothetical or in the relatively distant future. This illusion of courage occurs partly because of cold/hot empathy gaps. That is, people in a relatively “cold” unemotional state underestimate the influence on their own preferences and behaviors of being in a relative “hot” emotional state such as social anxiety evoked by an embarrassing situation. Consistent with this cold/hot empathy gap explanation, putting people “in touch” with negative emotional states by arousing fear (Experiments 1 and 2) and anger (Experiment 2) decreased people's willingness to engage in psychologically distant embarrassing public performances. Conversely, putting people “out of touch” with social anxiety through aerobic exercise, which reduces state anxiety and increases confidence, increased people's willingness to engage in psychologically distance embarrassing public performances (Experiment 3). Implications for self-predictions, self-evaluation, and affective forecasting are discussed. Copyright © 2010 John Wiley & Sons, Ltd.

**KEY WORDS** affective forecasting; decision making; choice; embarrassment; empathy gaps; emotion; intuition; judgment; prediction

When a waitress began to choke at a Fort Lauderdale retirement party, her embarrassment caused her to run into the women's restroom. Fortunately for her, there was someone else in there...

—Living Today (Winter, 2003: p. 18).

### INTRODUCTION

As often as we have heard such stories, most of us find it incredible that the waitress would expose herself to a substantial risk of choking to death alone in a bathroom simply to avoid embarrassment. We cannot imagine that we would behave similarly. But that is because we are not in the same embarrassing situation as the choking waitress when we imagine how we would behave in that situation. The power of the social anxiety aroused by embarrassing situations, like other emotional states, is difficult for people to fully appreciate when they are not actually facing the embarrassing situation. This cold/hot ‘empathy gap’ can lead people to underestimate the impact of embarrassing situations on their own preferences and behavior.

To underestimate the power of social anxiety and people's desire to avoid embarrassment is to underestimate a central determinant of social behavior. To be a self-aware, social being is to encounter situations that arouse social anxiety and embarrassment. As Erving Goffman (1967: p.99) expressed,

“in our Anglo American society, at least, there seems to be no social encounter which cannot become embarrassing to one or more of its participants.” Indeed, the desire to avoid embarrassing situations has been cited as a reason for failure to intervene in emergency situations (Latané & Darley, 1970), failure to voice opposition to unpopular policies or social norms (Miller & McFarland, 1987; Prentice & Miller, 1996; Van Boven, 2000), and failure to disobey authority (Sabini, Seipmann, & Stein, 2001). The social anxiety aroused by the prospect of facing an embarrassing situation may inhibit people in organizational settings from seeking help (Lee, 1997) and from providing critical feedback (Wang & Highhouse, 1997). Social anxiety can be so debilitating that it interferes with social functioning (Eng, Coles, Heimberg, & Safren, 2005; Hambrick, Turk, Heimberg, Schneier, & Liebowitz, 2003).

We examine people's predictions of their own preferences and behaviors in embarrassing situations, specifically, their predictions of how willing they would be to engage in embarrassing public performances in exchange for money. Deciding whether to engage in an embarrassing public performance requires a relatively straightforward tradeoff between highly emotional factors (the desire to avoid embarrassment) and less emotional factors (money). Predicting one's willingness to engage in psychologically distant embarrassing public performances therefore requires predictions of social anxiety's impact in the “heat of the moment.” We hypothesized that people underestimate social anxiety's impact on their own preferences and behavior, consequently overestimating their willingness to engage in embarrassing public performances that are not real and immediate. Such mispredictions constitute an “illusion of courage” because people overestimate how courageously they would behave in embarrassing situations.

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<sup>†</sup>Changes were made to the article on 10 December 2010 after first publication online on 2 July 2010. Figure 1 has been amended from the version initially published—the labels on the left-hand side of the image were originally labeled incorrectly.

Understanding how well people predict the impact of social anxiety on their own behavior is important both in its own right, given that social anxiety is a powerful determinant of social behavior, and because it adds a critical piece of evidence to a more general question of how accurately people predict the impact of emotional situations on behavior (Gilbert & Wilson, 2000; Loewenstein, 1996; Van Boven & Loewenstein, 2003, 2005; Van Boven, Loewenstein, & Dunning, 2003; Wilson & Gilbert, 2003). Because social anxiety associated with the prospect of facing an embarrassing situation is such a common and powerful emotion in everyday life, people might be expected to have ample information from their own everyday experiences that would enable them to make accurate predictions about their behavior in such situations. Further, because public performances reliably and unambiguously arouse social anxiety (Beidel, Turner, Jacob, & Cooley, 1989; Mauss, Wilhelm, & Gross, 2004; Miller, 1992), there is little or no ambiguity in the emotional details of the situation. Finally, people often experience empathic embarrassment when observing other people in the midst of embarrassing situations (Markus, Wilson, & Miller, 1996; Miller, 1987; Shearn, Spellman, Straley, Meirick, & Stryker, 1999), implying that people might also experience empathic embarrassment when contemplating themselves in a hypothetical or future embarrassing situation. Testing whether people systematically overestimate their willingness to engage in embarrassing public performances thus provides a conservative test of people's underestimation of emotional influences on behavior, and would substantially extend research on empathy gaps in self-predictions to commonly experienced social emotions.

### EMOTIONAL EMPATHY GAPS

We hypothesize that people exhibit an illusion of courage in self-predictions because of cold/hot empathy gaps. *Empathy gaps* occur when people in a relatively unaroused "cold" state underestimate the impact on their own behavior of being in a relatively aroused "hot" state (Loewenstein, 1996; Loewenstein, O'Donoghue, & Rabin, 2003; Van Boven & Loewenstein, 2003). Empathy gaps occur, broadly speaking, because people who are in a cold state do not fully appreciate how much emotional arousal fundamentally, if temporarily, changes them as persons, shaping their perceptions, preferences, and behavioral inclinations (Cosmides & Tooby, 2000; Slovic, Finucane, Peters, & MacGregor, 2002).

Empathy gaps have been demonstrated in many domains. People who are about to exercise and are in a relatively neutral state predict they would be less bothered by thirst if they were lost without food or water than people who have just exercised and are thirsty and warm (Van Boven & Loewenstein, 2003). Men who are not sexually aroused predict they would be less likely to engage in sexually aggressive behavior than men who are sexually aroused (Ariely & Loewenstein, 2006; Loewenstein, Nagin, & Paternoster, 1997). People who do not own an object underestimate how attached they would be to it and how much money they would require to part with the object if

they owned it (Loewenstein & Adler, 1995; Van Boven, Dunning, & Loewenstein, 2000; Van Boven et al., 2003). People who have just eaten are less likely to choose a high-calorie snack to consume at a well-defined time in the future (Read & van Leeuwen, 1998) and are less likely to express interest in eating a plate of spaghetti for breakfast (Gilbert, Gill, & Wilson, 2002) compared with people who are hungry because they have not eaten. People who are not in pain are more willing to expose themselves to future pain (Read & Loewenstein, 1999) and more likely to underestimate the influence of pain on their present or past performance of a task (Nordgren, van der Pligt, & van Harreveld, 2006). Heroin addicts who are not craving because they just received a "maintenance" dose of opiate place less value on getting an extra dose 5 days later compared with addicts who are just about to, but have not yet, received their maintenance dose (Giordano, Bickel, Loewenstein, Jacobs, Marsch, & Badger, 2002), and smokers who are not currently experiencing craving underestimate their own future impatience to smoke compared with smokers who are currently craving (Sayette, Loewenstein, Griffin, & Black, 2008).

One might expect that empathy gaps would be minimized in the case of embarrassment, which is an easily imagined, easily aroused social emotion (Miller, 1992; Sabini, Cosmas, Siepmann, & Stein, 1999). People experience some measure of embarrassment simply by imagining themselves in embarrassing situations (Tangey, Miller, Flicker, & Barlow, 1996). And people experience empathic embarrassment simply by observing other people in embarrassing situations (Markus et al., 1996; Miller, 1987; Shearn et al., 1999) such as when people observe a peer signing the Star Spangled Banner in front of a classroom audience. It might therefore seem that people could easily simulate embarrassment, better appreciating the impact of embarrassment on their behavior, thereby avoiding an empathy gap.

We hypothesize, however, that even though people can mentally simulate embarrassment, experiencing at least some measure of an "as if" emotion (Damasio, 1994), they are unlikely to appreciate the full behavioral impact of the social anxiety associated with embarrassing situations. The reason is that emotional influences, if not the emotions themselves, often operate outside of conscious awareness (Berridge & Winkielman, 2003; Frijda, Kuipers, & ter Schure, 1989; Ledoux, 1996; Winkielman, Berridge, & Wlbarger, 2005), providing little or no opportunity for people to learn about emotional influences on behavior. Moreover, fear and anxiety can profoundly change people's construal of the situation they are in, focusing their attention on emotional information in the environment rather than on other, less emotional information (Derryberry & Reed, 1998; Derryberry & Tucker, 1994; Fox, Russo, & Bowles, 2001; Fox, Russo, & Dutton, 2002; Tucker & Derryberry, 1992). Thus, even though people might experience some degree of empathic embarrassment by imagining themselves or observing someone else in an embarrassing situation, we doubt that the empathic embarrassment has the same behavioral force as when genuinely in an embarrassing situation.

If, as we suggest, people have difficulty fully appreciating the impact of social anxiety aroused by real and immediate

embarrassing situations, people should exhibit empathy gaps when predicting their behavior in embarrassing situations. Specifically, people should overestimate their willingness to engage in real and immediate embarrassing public performances in exchange for money. People should therefore exhibit an illusion of courage in self-predictions because they are typically not emotionally aroused when making such predictions.

This analysis yields a novel and crucial prediction that lies at the heart of the empathy gap explanation for the illusion of courage: Experimentally manipulating people's incidental emotions should influence their predictions of how reluctant they would be to engage in psychologically distant embarrassing public performances that is, performances that are not real and immediate. If people exhibit an illusion of courage partly because their "cold" state at the time of prediction prevents them from fully appreciating the impact of social anxiety in the "heat of the moment," then arousing people's incidental emotions should facilitate such perspective taking, even though the aroused emotions are not explicitly related to the embarrassing situation. That is, putting people "in touch" with the emotions associated with embarrassing situations should reduce the illusion of courage.

## OVERVIEW OF THE PRESENT EXPERIMENTS

In three experiments, we tested the hypothesis that people would overestimate their willingness to engage in a psychologically distant embarrassing public performance, and that incidental emotions would moderate this illusion of courage. In Experiments 1 and 2, we aroused some people's negative incidental emotions before asking them to predict their willingness, either hypothetically or in the distant future, to engage in an embarrassing public performance in exchange for money. Based on the empathy gap explanation of the illusion of courage, we predicted that participants whose incidental negative emotions were aroused would be less willing to engage in a hypothetical or future embarrassing public performance compared with participants whose incidental emotions were not aroused.

In Experiment 2, moreover, we manipulated whether participants experienced incidental fear or anger. The arousal of fear and anger allowed us to test competing predictions based on emotional valence versus appraisal tendency. Although fear and anger are both negative emotions that might similarly increase people's appreciation of social anxiety's behavioral impact (Bower, 1981; Isen, Shalker, Clark, & Karp, 1978; Johnson & Tversky, 1983; Schwarz, 2002), fear is associated increased risk aversion whereas anger is associated with decreased risk aversion (Keltner, Ellsworth, & Edwards, 1993; Lerner & Keltner, 2000, 2001). A valence-based analysis of emotional empathy gaps therefore implies that both fear and anger should decrease people's willingness to engage in a hypothetical embarrassing performance; an appraisal tendency based analysis, in contrast, implies that fear should decrease and anger should increase people's willingness to partake in a hypothetical embarrassing performance.

In Experiment 3, we tested whether putting people "out of touch" with negative emotion might increase people's

willingness to partake in a hypothetical embarrassing performance. Participants predicted their willingness to engage in a hypothetical embarrassing performance either immediately before or immediately after engaging in aerobic exercise, which reduces state anxiety and increases confidence (Crocker & Grozelle, 1991; Roth, 1989). We expected that those who had just exercised, and felt less anxious and more confident, would be more willing to engage in a hypothetical embarrassing performance than those who had not exercised.

## EXPERIMENT 1: SCARY MOVIE

Participants indicated whether they would be willing to tell a funny story in the relatively distant future. Such a decision requires a prediction of how powerful social anxiety about the prospect of engaging in an embarrassing public performance will be when the performance is imminent. We assumed that people would experience less intense emotional arousal when the performance was in the distant rather than immediate future, and would therefore overestimate their willingness to tell a funny story in the distant future compared with their willingness to tell a funny story in the immediate future. To test the role of incidental fear while predicting future behavior, some participants watched a film that has been shown to arouse fear and anxiety before indicating whether they would tell a distant future funny story. We reasoned that these participants, compared with those who did not view a frightening film, would be more "in touch" with their social anxiety, and would therefore be less willing to tell a distant future funny story.

### Method

University undergraduates ( $N = 61$ ) participated as part of a classroom experiment during two sessions, 5 days apart.<sup>1</sup> During the first session, participants were asked whether they would tell a funny story in 5 days in exchange for \$2.

You can earn \$2 if you agree to tell the class a funny story [in 5 days], when we conduct the second part of the experiment. In [5 days], people who choose now to tell a funny story for \$2 will speak before the class in random order. Each person who chooses to tell a funny story will go to the front of the class and try to make the class laugh.

Participants indicated if they would tell a funny story in front of the class in 5 days in exchange for \$2 by selecting "Yes" or "No."

Depending on random assignment, participants in the frightened condition ( $n = 31$ ) viewed at the front of the classroom an 82-second film clip from *The Shining*, which reliably arouses fear and anxiety but not embarrassment

<sup>1</sup>An additional 15 participants attended the first but not the second session of the experiment and were not, therefore, included in the analyses. The two experimental conditions did not differ in attrition.

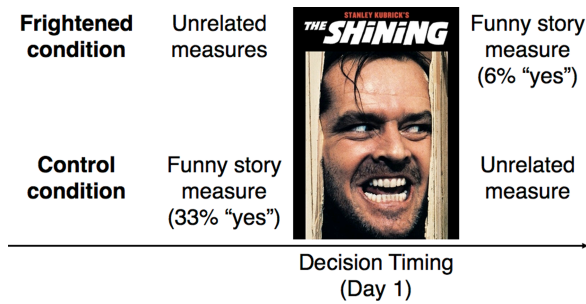


Figure 1. A graphical representation of the sequence of events in Experiment 1. Participants in the control condition indicated whether they would tell a funny story in 5 days before viewing the frightening film clip from *The Shining*; participants in the frightened condition viewed the frightening film clip from *The Shining* before indicating whether they would tell a funny story in 5 days. [Correction made here after initial online publication]

(Gross & Levenson, 1995; Rottenberg, Ray, & Gross, 2007), before indicating whether they would tell a funny story.<sup>2</sup> Participants in the control condition ( $n = 30$ ) indicated whether they would tell a funny story before viewing the film.

To conduct the experimental manipulation while holding constant the apparent sequence of events to participants in both conditions, we used the following procedure (graphically illustrated in Figure 1). All participants completed a questionnaire, then viewed the film, then completed another questionnaire. The nature of the two questionnaires constituted the experimental manipulation. Participants in the frightened condition completed an unrelated questionnaire before viewing the film (while those in the control condition were indicating their choice); participants in the control condition completed an unrelated questionnaire after viewing the film (while those in the frightened condition were indicating their choice). The experimental manipulation was thus simply whether participants completed the questionnaire about whether they would tell a future funny story before (control condition) or after (frightened condition) viewing the scary movie.

Five days later, all participants were asked whether they would be willing to tell a funny story right away in exchange for \$2. After answering this question, willing participants told a funny story in random order, were paid \$2, and everyone was debriefed.

## Results and discussion

As predicted, participants in the Frightened condition were significantly less willing to tell a funny story in 5 days (6.45%, 2 of 31) compared with participants in the control

<sup>2</sup>We did not include manipulation checks of emotional arousal in any of our experiments. We decided not to include manipulation checks for two reasons. First, researchers simply asking participants to report their emotions can undermine the effect of emotion on judgments and decisions by calling attention to emotion's potential influence (Gasper & Clore, 2000; Lerner & Keltner, 2001; Keltner, Locke, & Audrain, 1993; Schwarz & Clore, 1983). Second, we used well-established emotion induction techniques (previously tested films in Experiments 1 and 2, and aerobic exercise in Experiment 3) that increase our confidence in the manipulation effectiveness.

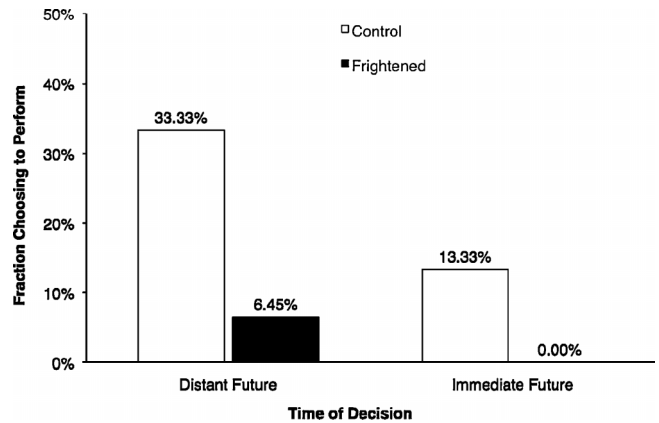


Figure 2. Experiment 1. The fraction of participants who were willing, in exchange for \$2, to tell a funny story in front of an audience 5 days in the (distant) future or imminently, contingent on whether participants had viewed a scary movie (frightened condition) or not (control condition) before deciding whether to tell a funny story 5 days in the future.

condition (33.33%, 10 of 30),  $\varphi = .34$ ,  $\chi^2(1, N = 61) = 6.97$ ,  $p < .01$  (see the left side of Figure 2). Participants in the control condition significantly overestimated their willingness to tell a funny story in the distant future (33.33%, 10 of 30) compared with the immediate future (13.33%, 4 of 30), McNemar ( $n = 30$ ) binomial  $p < .05$ , demonstrating an illusion of courage. Every participant in the control condition who changed his or her mind opted *not* to tell a funny story at the last minute. In contrast with the control condition, participants in the frightened condition were not significantly more willing to tell a funny story 5 days in the future (6.45%, 2 of 31) than in the immediate future (0%), McNemar ( $n = 31$ ) binomial  $p = .50$ . Of course, the fact that participants in the Frightened condition did not significantly overestimate their willingness to tell a future funny story might be partly because so few of them were willing to tell a funny story in 5 days, a “floor” effect. Nevertheless, the key finding is that participants whose fear was aroused were less willing to engage in a temporally distant embarrassing performance than participants in a control condition, even though the fear was incidental to the future embarrassment.

Although not central to the primary question of whether incidental emotion influences people's predicted behavior in distant embarrassing situations, two additional observations of these data are noteworthy. First, participants' predictions were somewhat self-fulfilling (Greenwald, Carnot, Beach, & Young, 1987; Sherman, 1980). Participants in the control condition, who were more willing to tell a funny story in the distant future, were significantly more willing to tell a funny story in the immediate future (13.33%, 4 of 30) compared with participants in frightened condition (0%),  $\varphi = .27$ ,  $\chi^2(1, N = 61) = 4.42$ ,  $p < .05$  (see the right side of Figure 2). Despite these self-fulfilling predictions, participants in the control condition nevertheless exhibited an illusion of courage, whereas participants in frightened condition did not, as described earlier.

Second, the results from the control condition, in which people underestimated their reluctance to tell a future funny

story, may appear to contradict results from a study by Sherman (1980) in which people *underestimated* their willingness to sing the *Star Spangled Banner* over the telephone. Our results, in contrast, are that participants overestimate their willingness to tell a funny story in front of an audience. The conflict between these two findings may be more apparent than real, however, because the context of our experiment was psychologically different than the context of Sherman's experiment. Participants in Sherman's experiments were asked to sing over the telephone, which has an element of psychological distance and anonymity compared with live audiences (Waung & Highhouse, 1997), so singing anonymously over the phone might be a relatively less embarrassing situation than telling a funny story to one's classmates. Another difference is that participants in Sherman's study were asked to sing over the phone as a favor to a "voice research team," whereas our participants were asked to perform in exchange for money. People are substantially more responsive to requests framed as favors without monetary rewards than to requests with monetary rewards (Ariely & Heyman, 2004; Gneezy & Rustichini, 2000). Deciding whether to perform in exchange for money is therefore a qualitatively different decision than deciding whether to perform as a favor to researchers.

## EXPERIMENT 2: SCARY AND ANGERING MOVIES

We next sought to conceptually replicate the illusion of courage with predictions of behavior in hypothetical, as opposed to distant future, embarrassing situations. Hypothetically is a dimension of psychological distance that is conceptually similar to the distant future in that the emotional situation is not directly and immediately experienced (Liberman & Trope, 2008; Trope & Liberman, 2003). Participants in one condition indicated, in actuality, how willing they were to dance in front of an audience in exchange for money. Participants in a second condition indicated how willing they would be, hypothetically, to dance in front of an audience in exchange for money. We predicted that participants facing a hypothetical choice would be more willing to dance compared with those facing a real and immediate choice (Van Boven, Loewenstein, & Dunning, 2005). In addition, we predicted that participants in a third condition who watched a scary film beforehand would be less willing, hypothetically, to engage in an embarrassing performance compared with those in the hypothetical choice condition. These results would conceptually replicate Experiment 1, extending the illusion of courage from decisions about future performances to decisions about hypothetical performances, and using a between persons design.

We also explored whether incidental anger would, like incidental fear, reduce the illusion of courage. Participants in a fourth condition viewed an angering film before predicting their hypothetical willingness to engage in an embarrassing performance. The comparison of predictions by participants who viewed a sad versus angry film afforded a test derived from two theoretical perspectives of the effect of emotion on

choice. On the one hand, because they are negative emotions, both fear and anger might increase people's appreciation of anxiety's behavioral influence (Bower, 1981; Isen et al., 1978; Johnson & Tversky, 1983; Mayer, Gaschke, Baverman, & Evans, 1992). Both frightened and angry participants might therefore be less willing, hypothetically, to engage in an embarrassing performance compared with participants whose emotions were not aroused. On the other hand, although fear and anger are both negative emotions, fear is associated with increased risk-aversion, whereas anger is associated with decreased risk-aversion (Keltner, Locke, & Audrain, 1993; Lerner & Keltner, 2000, 2001). To the degree that incidental fear reduces the illusion of courage because it increases people's risk aversion, fear might decrease people's willingness, hypothetically, to engage in an embarrassing performance more than anger, which might actually increase people's willingness to perform.

## Method

Undergraduate university students ( $N = 207$ ) participated in small class sections of approximately 20 students in exchange for a chance of winning a \$50 gift certificate to the campus store. Participants were told that the experiment concerned people's evaluation of audio clips, film clips, and decision-making. They were first asked to listen to James Brown's 1970 song "Get up (I feel like being a) sex machine, Part 1." Participants randomly assigned to the real performance condition ( $n = 61$ ) read:

Students in your section must decide whether to dance in front of the rest of the class, by themselves, for three min to the song "Sex Machine," which you heard at the beginning of the study. If you decide to dance, you will receive \$2. All students who agree to dance in front of the rest of the class will be asked to do so.

Participants stated whether or not they would dance for \$2. They also stated the lowest amount of money they would have to be paid to dance.

After listening to the music, participants in the control condition ( $n = 54$ ) were asked to read the same instructions given to participants in the real performance condition. After making clear that participants would not actually have to dance, participants predicted whether they would dance for \$2 if actually given the choice and the lowest amount of money they would have to be paid to dance if given the choice.

Participants in the frightened ( $n = 46$ ) and angered ( $n = 46$ ) conditions made the same predictions as participants in the control condition, but watched a short film before doing so. Participants in the frightened condition watched the same film clip from *The Shining* as in Experiment 1. Participants in angered condition watched a clip from *Cry Freedom*, which has been shown to arouse anger (and not embarrassment or fear, Rottenberg et al., 2007). After completing questionnaires, willing participants in the real performance condition danced and everyone was debriefed.

## Results and discussion

We excluded from analyses four participants (two from the control condition and two from the frightened condition) whose predicted decision and performance prices were inconsistent. That is, they said they would dance for \$2, but stated a lowest performance price that was higher than \$2.

As expected, participants in the control condition overestimated how willing they would be to dance compared with participants in the real performance condition (see Figure 3A and B). Also as expected, participants in the frightened condition predicted they would be less willing to perform compared with participants in the control condition. Finally, participants in the angered condition, like those in the frightened condition, were less willing to perform compared with participants in the control condition, consistent with a valence-based interpretation of incidental emotion's effect on empathy gaps.

We submitted participants' predicted and actual decisions about whether to dance for \$2 to a binary logistic regression,  $\chi^2(3, N = 204) = 20.07, p < .001$ , followed by three planned contrasts (contrast weights in parentheses). The first contrast indicated that participants in the control condition were significantly more likely to predict they would dance for \$2

(32.69%, 17 of 52, weight = 1) than participants in the real performance prediction (3.28%, 2 of 61, weight = -1), Wald  $\chi^2 = 11.72, p < .001$ , conceptually replicating the illusion of courage in a between persons design and extending it to hypothetical decisions (see Figure 3A). The second contrast indicated that frightened and angered participants were together less likely to predict that they would dance (12.22%, 11 of 90; weights = 1 for each condition) than participants in the control condition (32.69%, 17 of 52, weight = -2), Wald  $\chi^2 = 8.36, p < .005$ . Finally, the third contrast failed to reveal a significant difference between the frightened and angered participants, Wald  $\chi^2 = .72, ns$ .

A similar pattern emerged for participants' predicted and actual performance prices. Because these prices were positively skewed, we (twice) transformed them with a natural log function to obtain normality before submitting them to a one-way ANOVA,  $\eta_p^2 = .059, F(3, 200) = 4.16, p < .01$ . We then conducted three planned contrasts (contrast weights in parentheses) analogous to those just reported. The first indicated that control condition participants predicted lower performance prices ( $M = \$8.68$ , weight = -1) than did participants in the real performance condition ( $M = \$33.34$ , weight = 1),  $d = .49, t(200) = 3.48, p < .001$ , replicating and extending the illusion of courage (see Figure 3B). The second contrast indicated that frightened and angered participants together predicted significantly higher performance prices ( $M = \$17.01$ , weights = 1 for each condition) than did control condition participants ( $M = \$8.68$ , weight = -2),  $d = .28, t(200) = 1.98, p < .05$ .<sup>3</sup> Finally, the third contrast did not reveal a significant difference between participants in the frightened and angry conditions,  $t < 1, ns$ .

These results conceptually replicate the key findings of Experiment 1 and extend them to include hypotheticality as well as temporal psychological distance (Trope and Liberman, 2003; Liberman & Trope, 2008). Participants facing a purely hypothetical public performance overestimated their willingness to perform compared with participants who faced a real performance. These results also indicate that immediate, incidentally aroused fear and anger both decreased people's willingness to engage in a hypothetical public performance, reducing the illusion of courage. Finally, these results yielded no evidence that incidental fear and anger differentially decreased people's willingness, hypothetically, to engage in an embarrassing public performance, even though fear can increase risk aversion, whereas anger tends to decrease risk aversion. These findings suggest that incidental negative emotions generally reduce the illusion of courage, consistent with valence-based interpretation of emotional empathy gaps.

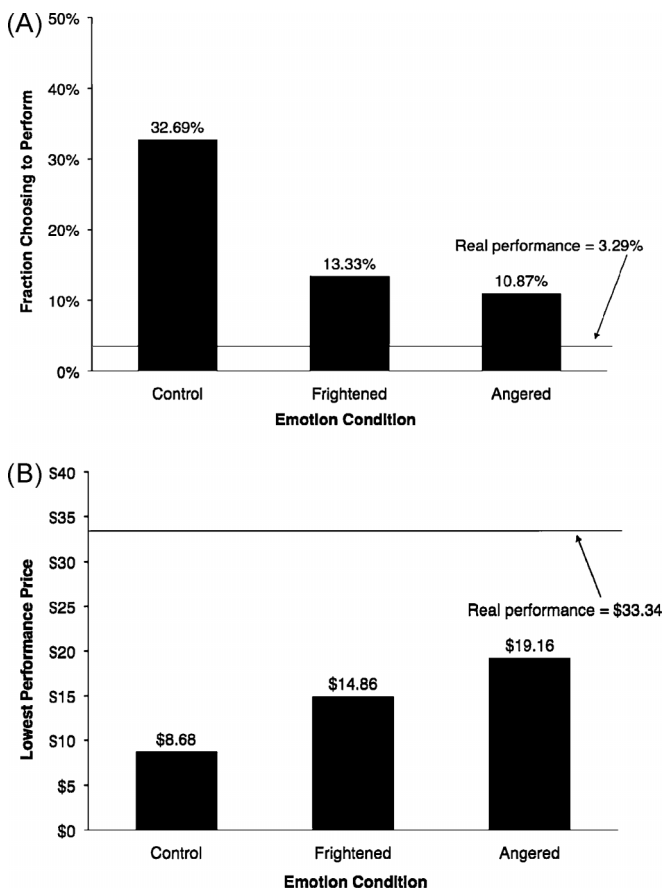


Figure 3. Experiment 2. The fraction of participants facing a hypothetical performance who predicted they would dance for \$2 (A) and their predicted performance price (B) after watching nothing (control), a scary movie (frightened) or an angering movie (angered). Reference lines represent the fraction of participants facing a real performance who actually agreed to dance (A), and these participants' stated lowest performance price (B).

<sup>3</sup>Notice that even though they were more accurate, frightened, and angered participants were more likely to predict that they would dance for \$2 (12.10%, weights = 1 for each condition) than participants in the real performance condition (3.28%, weight = -2), Wald  $\chi^2 = 3.14, p = .076$ , and they predicted marginally lower performance prices ( $M = \$17.01$ , weights = 1 for each condition) than those stated by participants in the real performance condition ( $M = \$33.34$ , weight = -2),  $d = .27, t(200) = 1.89, p = .06$ . We suspect that this illusion of courage is attributable simply to the fact that the emotions aroused by facing a real and immediate embarrassing performance are more intense than emotions elicited by films.

### EXPERIMENT 3: GRANTING COURAGE

The results of Experiments 1 and 2 suggest that putting people “in touch” with negative emotional states decreased people’s willingness to engage in future and hypothetical embarrassing public performances, implicating emotional empathy gaps in the illusion of courage. We next sought to further implicate empathy gaps by demonstrating the opposite effect: Namely, putting people “out of touch” with social anxiety should increase (rather than decrease) their willingness to engage in a hypothetical embarrassing public performance. The empathy gap analysis implies that people overestimate their willingness to engage in psychologically distant embarrassing public performances because they do not fully appreciate the behavioral impact of emotional arousal in the “heat of the moment.” Causing people to experience negative emotional arousal (fear and anger) should therefore increase their appreciation of negative emotional factors, thereby decreasing their willingness to engage in embarrassing public performances. On the flip side, the same analysis implies that making it difficult for people to simulate negative emotional arousal should increase, rather than decrease, their willingness to engage in an embarrassing public performance.

To test this prediction, we reduced some people’s state anxiety and increased their feelings of confidence before they predicted how willing they would be to engage in a hypothetical embarrassing public performance. Specifically, we asked people who, based on random assignment, had either just finished or were just about to engage in aerobic exercise to predict how willing they would be, hypothetically, to dance in front of an audience in exchange for money. Acute aerobic exercise has been shown to temporarily reduce state anxiety and increase feelings of confidence (Crocker & Grozelle, 1991; Roth, 1989). We therefore expected that people who had just exercised would be more willing to engage in a hypothetical embarrassing public performance compared with people who were about to, but had not yet, exercised. That is, we expected acute aerobic exercise to increase the illusion of courage.

#### Method

Potential participants were approached as they entered a university exercise facility, asked if they were planning to engage in solo (as opposed to class-based) aerobic exercise for at least 15 minute and, if so, they would be willing to complete a short survey in exchange for a tasty (“Tiger’s Milk”) protein bar. Forty-eight (of approximately 60 approached) people consented to participate. These participants were then randomly assigned to complete the survey either immediately before ( $n = 24$ ) or immediately after exercising ( $n = 24$ ).

When completing the survey, either directly before or after exercising, participants were asked to read the following:

In an experiment in the Department of Psychology and Neuroscience, undergraduate students are asked to decide whether they would be willing to dance by themselves for

two min in front of an audience to the song “Shake Your Booty” in exchange for \$5. Students who decide to dance are called to the front of a room, in a randomly selected order, and asked to dance for two minutes in front of 20 to 30 other students. After they dance, students are paid \$5.

Participants were asked to “Imagine that you are in this study and are given the choice of dancing in front of an audience for 2 minutes to the song ‘Shake Your Booty’.” Participants predicted whether or not they would dance for \$5.

Participants then predicted the lowest amount of money they would have to be paid to dance. If participants indicated they would dance for \$5, they were then asked “What is the *lowest* price (\$5 or less) you would have to be paid to dance by yourself in front of an audience of 20–30 for 2 minutes to *Shake Your Booty*?” If participants indicated they would not dance for \$5, they were then asked, “What is the *lowest* price (greater than \$5) you would have to be paid to dance by yourself in front of an audience of 20–30 for 2 minutes to *Shake Your Booty*?” We asked participants to predict their performance price in this way to avoid the possibility, observed in Experiment 2, of inconsistent performance prices and decisions. After completing these measures, participants were thanked and debriefed.

#### Results and discussion

As predicted, participants who had just exercised were more likely to predict that they would dance for \$5 (79.17%, 19 of 24) than were participants who had not yet exercised (50.00%, 12 of 24),  $\phi = .29$ ,  $\chi^2(1, N = 48) = 4.46$ ,  $p < .05$  (see Figure 4A). Similarly, after applying a natural log transformation to obtain normality, participants who had just exercised predicted they would have to be paid less money to dance (back transformed  $M = \$12.73$ ,  $SD = 1.22$ ) than did participants who had not yet exercised (back transformed  $M = \$27.08$ ,  $SD = 1.10$ ),  $d = .63$ ,  $t(45) = 2.11$ ,  $p < .05$  (see Figure 4B).

These results suggest that temporarily reducing state anxiety and increasing confidence through exercise reduces people’s willingness to engage in hypothetical embarrassing public performances. Exercise thus reversed the pattern observed in Experiments 1 and 2 where experiencing negative incidental emotions decreased rather than increased participants’ willingness to perform. Although we did not measure participants’ actual dancing decisions, we strongly suspect, based on the results from Experiments 1 and 2, that the relatively high predicted willingness to perform among those who had just exercised (79.17%) was even less accurate than the relatively low predicted willingness to perform among those who had not exercised (50.00%). This finding is, to our knowledge, the first demonstration of an intervention that *increases* the empathy gap in self-predictions.

#### GENERAL DISCUSSION

Despite the frequency of embarrassing situations in everyday life, the present experiments suggest that people under-

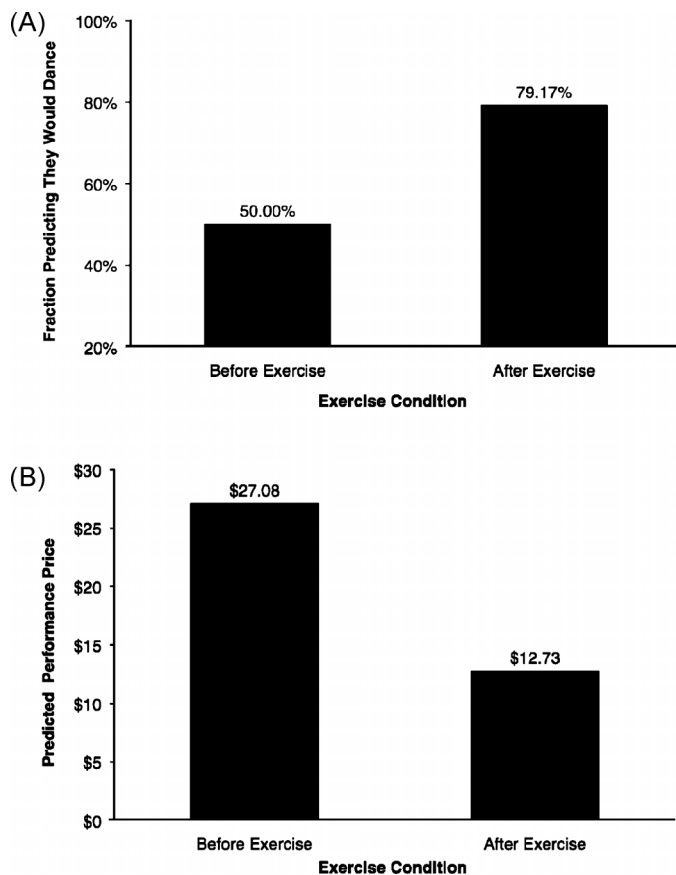


Figure 4. Experiment 3. The fraction of participants who predicted they would dance for \$5 (A) and their lowest predicted performance price (B), contingent on whether they made these predictions either immediately before or immediately after engaging in aerobic exercise.

estimate the impact of social anxiety about embarrassing situations on their own preferences and behavior. When an embarrassing situation is not real and immediate, people overestimate how willing they would be to engage in an embarrassing public performance in exchange for money. People were more willing to tell a funny story in front of their classmates when the joke-telling was 5 days in the future than when it was imminent (Experiment 1). And people were more willing to dance in front of an audience when the performance was purely hypothetical rather than real (Experiment 2). People exhibited this “illusion of courage” even though previous research suggests that people can mentally simulate some measure of embarrassment by imagining themselves in embarrassing situations or by viewing others in embarrassing situations.

### Underlying mechanisms

We suggest that the illusion of courage is caused partly by cold/hot empathy gaps. When people predict how they would behave in a distant future or hypothetical embarrassing situation, they are usually in a colder, less intense state of anxiety than when the embarrassing situation is real and immediate. People therefore have difficulty fully taking the perspective of how potent social anxiety would be in a real

and immediate embarrassing situation. Buttressing this explanation, putting people “in touch” with negative emotional states by arousing fear (Experiments 1 and 2) and anger (Experiment 2) caused people to make less courageous (and more accurate) predictions about their behavior in distant future or hypothetical embarrassing situations. Conversely, putting people “out of touch” with social anxiety through aerobic exercise, which dispels state anxiety, caused people to make more courageous (and probably less accurate) predictions about their behavior in an embarrassing situation (Experiment 3). Together, these results highlight the importance of immediate emotions—and lack thereof—in people’s predictions of how embarrassing situations influence their behavior.

The empathy gap explanation of the illusion of courage implies that putting people “in touch” with negative emotions should decrease their willingness to engage in psychologically distant embarrassing public performances, but should not affect their willingness to engage in behaviors unrelated to embarrassment. One might wonder, however, whether the results of our studies might reflect a general tendency for people in negative moods (of fear and anger) to be less willing—and for people in positive moods (from exercise) to be more willing—to perform *any* activity, or to consent to *any* request from the experimenter, even if those activities and requests are only minimally relevant to embarrassment. We conducted a follow-up experiment to examine this alternative interpretation.

In a partial replication of Experiment 1, we asked students in a lecture class ( $N = 82$ ) to indicate whether or not, in exchange for \$5, they would be willing to dance to the song “Shake Your Booty” as part of a study in the Department of Psychology “for 2 minutes in front of 20–30 other students” (the same scenario given to participants in Experiment 3). Participants in the frightened condition ( $n = 42$ ) answered this question after watching the same frightening film clip from *The Shining* that was used in Experiments 1 and 2; participants in the control condition ( $n = 40$ ) answered this question before watching the film clip, when their fear had not been aroused. Conceptually replicating the illusion of courage, participants in the frightened condition were less willing to dance (11.90%, 5 of 42) compared with participants in the control condition (27.50%, 11 of 40), although the difference was only marginally significant,  $\phi = .20$ ,  $\chi^2(1, N = 82) = 3.23$ ,  $p = .072$ . Participants in each condition were also asked whether, in exchange for \$5, they would be willing to engage in an onerous task that was unrelated to embarrassment, specifically, whether they “would be willing to transcribe the verbal contents of two interviews that were conducted in connection with a psychology experiment.” In contrast with their predicted dancing decisions, participants in the frightened condition were not appreciably less willing to transcribe (45.23%, 19 of 42) than were participants in the control condition (50.00%, 20 of 40),  $\phi = .05$ ,  $\chi^2(1, N = 82) = .19$ ,  $p = .66$ . Across both conditions, moreover, the participants who were willing to dance were not more willing to transcribe (37.50%, 6 of 16) compared with participants who were not willing to dance (50.00%, 32 of 66),  $\phi = .10$ ,  $\chi^2(1, N = 81) = .81$ ,



$p = .37$ . Indeed, across both sets of choices in both conditions, participants' willingness to dance corresponded with their willingness to transcribe approximately half of the time (47.56%, 39 of 82), as if there was no contingency between dancing and transcribing. Together, these results suggest that incidental negative emotion decreases willingness to engage in embarrassing activities, but does not decrease willingness to engage in non-embarrassing activities, and that the basis for deciding whether to engage in an embarrassing activity is different than the basis for deciding whether to engage in an onerous but non-embarrassing activity. The incidental arousal of negative emotions thus seems to selectively reduce willingness to engage in behavior relevant to those emotions.

In everyday life, of course, the illusion of courage probably is multiply determined. People may sometimes overestimate their willingness to engage in embarrassing public performances because of a desire to maintain favorable self-views (Taylor, 1989; Taylor & Brown, 1988). People may be more confident that they have the skills needed to "pull off" an embarrassing public performance when the performance is either hypothetical or temporally distant compared with their confidence at the "moment of truth" (Gilovich, Kerr, & Medvec, 1993; Shepperd, Oullette, & Fernandez, 1996). People might also construe distant or hypothetical performances at a higher level, focusing on the benefits of performing, compared with their construal of real and immediate performances (Eyal, Liberman, Trope, & Walther, 2004; Frietas, Salovey, & Liberman, 2001). Although these processes may sometimes contribute to an illusion of courage, they neither imply nor explain why immediate, incidental emotional arousal moderates the illusion of courage, as these experiments demonstrate.

Although the results of our experiments clarify the importance of immediate emotional states and, hence, of emotional empathy gaps, in people's predictions of how they would behave in emotional situations, they also raise substantial questions about the way in which immediate emotional states influence self-predictions. For example, do incidental emotions influence predicted behavior in emotional situations because they influence immediate emotion, expected emotion, or both (Andrade & Cohen, 2007; Loewenstein et al., 2003)? Our manipulations may have moderated the empathy gaps underlying the illusion of courage by influencing people's immediate reluctance to engage in an embarrassing public performance, by influencing people's prediction of their reluctance in a distant situation, or both. Both processes are consistent with the empathy gap explanation of the illusion of courage. Experimentally isolating these potentially separate processes is an important task for future research.

### Empathy gaps and impact bias

Some readers may note an apparent inconsistency between the results of the present experiments and research on the "impact bias," or people's tendency to overestimate how intense their feelings would be during and after emotional

events (Gilbert & Wilson, 2000; Wilson & Gilbert, 2003). In contrast with the impact bias, the present experiments and other studies of emotional empathy gaps indicate that people underestimate, rather than overestimate, the impact of emotional situations on their preferences and decisions (Andrade & Van Boven, in press; Loewenstein & Adler, 1995; Loewenstein et al., 1997; Van Boven et al., 2000; Van Boven & Kane, 2006; Van Boven & Loewenstein, 2003; Van Boven et al., 2003). How are these patterns of overestimation and underestimation to be resolved?

We think that the contradiction between the impact bias and empathy gaps is more apparent than real. The reason is that research on the impact bias concerns people's predictions of how they will *feel* in emotional situations, whereas research on empathy gaps concerns predictions of how people will *behave* in emotional situations (Van Boven & Kane, 2006). People exhibit impact biases largely because they fail to appreciate the degree to which coping processes associated with a "psychological immune system" are automatically activated and dispel intense negative feelings (Wilson & Gilbert, 2003). People exhibit empathy gaps largely because they fail to appreciate the degree to which their behavior will shift to dispel unpleasant emotional states or drives (Loewenstein, 1996). Faced with an embarrassing public performance, people could dispel unpleasant feelings by trivializing the situation (as a silly experiment) or by opting out of the situation (choosing not to perform). In our experiments, the most readily available means of dispelling unpleasant feelings is by opting out of the situation rather than trivializing the situation. Framed in this way, the impact bias and empathy gaps both reflect people's failure to appreciate how much emotional situations trigger rationalization (which reduces unpleasant emotion producing an impact bias) and behavioral coping strategies (which also reduces unpleasant emotion producing empathy gaps).

### Implications

The illusion of courage has both negative and positive implications for everyday life. On the negative side, the illusion of courage may cause people to expose themselves to situations that they would be better off not exposing themselves to—situations that, when the moment of truth arrives, they either "chicken out" or are unable to perform at the anticipated level. Research on the "restraint bias" has shown a similar pattern when it comes to self-control (Nordgren, 2009). That is, people who are not currently experiencing a visceral drive overestimate their own capacity for self-control (Nordgren, van der Pligt, & van Harreveld, 2008), which causes them to over-expose themselves to temptation. After they do chicken out, moreover, emotional empathy gaps in retrospect may amplify experiences of regret. Analogous to people's difficulty *predicting* social anxiety's behavioral impact, people may also have difficulty *recalling* social anxiety's behavioral impact (a retrospective empathy gap), which may lead people to blame themselves excessively for chickening out (see Nordgren et al., 2006, for a similar discussion). This failure to appreciate why one chose not to engage in embarrassing behavior may help to

explain why regrets about failing to “seize the moment” become increasingly painful over time (Gilovich and Medvec, 1994; Gilovich & Medvec, 1994, 1995).

On the positive side, the illusion of courage may also lead people to commit themselves to beneficial but embarrassing behaviors more readily than they would if they had a realistic appreciation of social anxiety. Being overly courageous about one's future social anxieties, for example, may lead people to commit to future professional presentations, seeking help, or asking a “secret crush” out on a date. In fact, the results of Experiment 1 illustrate how the illusion of courage can be beneficial. Participants' somewhat self-fulfilling self-predictions—a form of pre-commitment—meant that those in the control condition were more likely to tell a funny story (13.33%) and earn money for their embarrassment (26¢, on average) than participants in the frightened condition, in which no one told a funny story and no one earned money.

## Conclusion

Although the question remains for future research, we suspect that whether the illusion of courage has positive or negative personal consequences depends largely on whether, retrospectively, people would rather have entered in to or avoided an embarrassing situation. To the extent that the illusion of courage may have negative consequences, the present experiments are encouraging. Our results suggest that even relatively mild emotions of similar valence can put people somewhat “in touch” with their own future emotional behavior, producing more accurate self-predictions of one's behavior in embarrassing situations.

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