



Changing Places: A Dual Judgment Model of Empathy Gaps in Emotional Perspective Taking

Leaf Van Boven^{*}, George Loewenstein[†], David Dunning[‡],
Loran F. Nordgren[§]

^{*}Department of Psychology and Neuroscience, University of Colorado Boulder, Boulder, Colorado, USA

[†]Department of Social and Decision Sciences, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

[‡]Department of Psychology, Cornell University, Ithaca, New York, USA

[§]Department of Organization Behavior, Kellogg Graduate School of Management, Northwestern University, Evanston, Illinois, USA

Contents

| | |
|---|-----|
| 1. Introduction | 118 |
| 2. Dual Judgments in Emotional Perspective Taking | 121 |
| 2.1 Social projection | 122 |
| 2.2 Self-judgment as social judgment | 124 |
| 3. Empathy Gaps in Self-judgment | 127 |
| 3.1 Varieties of empathy gaps | 127 |
| 3.2 Empathy gap explanations | 129 |
| 4. Empathy Gaps in Emotional Perspective Taking | 131 |
| 4.1 Visceral drives | 131 |
| 4.2 Social anxiety | 134 |
| 4.3 Loss aversion and the endowment effect | 139 |
| 4.4 Empathy gaps from desensitization | 142 |
| 4.5 Summary | 143 |
| 5. Implications for Social Behavior | 144 |
| 5.1 Behaving badly | 145 |
| 5.2 Behaving better by bridging empathy gaps | 148 |
| 6. Implications for Social Judgment | 149 |
| 6.1 Correspondent inferences | 150 |
| 6.2 Social evaluations | 151 |
| 6.3 Denigrating disabilities | 152 |
| 6.4 Public policy evaluation | 153 |
| 7. Empathy Gap Moderators | 154 |
| 7.1 Perceived self-other differences | 154 |
| 7.2 Differential weighting of self-predictions | 155 |
| 7.3 Experience and expertise | 157 |
| 7.4 Culture | 159 |

| | |
|-------------------------------------|-----|
| 8. Related Theoretical Perspectives | 159 |
| 8.1 Nonemotional perspective taking | 160 |
| 8.2 Affective forecasting | 161 |
| 9. Conclusions | 162 |
| Acknowledgments | 163 |
| References | 163 |

Abstract

Emotional perspective taking involves people's attempts to estimate the attitudes, preferences, and behaviors of other people who are in different emotional situations. We propose a dual judgment model in which perspective takers first predict what their own reactions would be to different emotional situations, and, second, adjust these self-predictions to accommodate perceived differences between themselves and others. Prior literature has focused on egocentric biases in the second judgment, perceived differences and similarities between the self and others. We propose that significant errors in emotional perspective taking often arise from the first judgment, people's predictions of what their own attitudes, preferences, and behaviors would be in different emotional situations. Specifically, people exhibit "empathy gaps," underestimating how much emotional situations influence their own attitudes, preferences, and behaviors. We review evidence that provides support for (a) the dual judgment model of emotional perspective taking, (b) the occurrence of empathy gaps in self-predictions, and (c) the occurrence of empathy gaps in social predictions that are mediated by empathy gaps in self-judgments. We discuss implications of empathy gaps in emotional perspective taking for social behavior, social judgment, and for other forms of perspective taking and affective forecasting.



1. INTRODUCTION

As we have no immediate experience of what other men feel, we can form no idea of the manner in which they are affected, but by conceiving what we ourselves should feel in the like situation. Though our brother is upon the rack, as long as we ourselves are at our ease, our senses will never inform us of what he suffers. They never did, and never can, carry us beyond our own person, and it is by the imagination only that we can form any conception of what are his sensations. Neither can that faculty help to this any other way, than by representing to us what would be our own, if we were in his case.

—Adam Smith, *A Theory of Moral Sentiments* (1759/2011, p. 2)

Estimating others' psychological states, and their response to those states, is fundamental to everyday social life. Impression formation, causal attribution, negotiation, group processes, power, friendships, and romantic

relationships—to name but a few—all entail people’s estimation of others’ hearts and minds. A hallmark of psychological health and maturity is possession of a “folk psychology” (Dennett, 1989; Goldman, 1992, 1993) or “theory of mind” (Premack & Woodruff, 1978) that enables people to recognize that others have unique, agentic mental states—and that those mental states are different from their own mental states (Epley & Waytz, 2010).

When others are in similar situations as the self, one’s own responses can be normatively informative about others’ responses (Dawes, 1989, 1990; Hoch, 1987, 1988; Krueger, 1998). However, when others are in different situations from oneself—and especially when those situations evoke different emotional states—the assumption that others’ attitudes, preferences, and behaviors are the same as one’s own can lead to biased, ill-considered, and regrettable social behavior (Van Boven & Loewenstein, 2005a). The teacher who fails to appreciate the anxiety that students experience during public presentations may offer overly harsh criticism. The employer who fails to appreciate the added stress on employees of an increased workload may fail to anticipate, and hence, take efforts to allay, employee dissatisfaction. The policy maker who fails to appreciate the impact of addiction and craving on drug addicts’ behavior may implement policies that exaggerate the addicts’ ability to take control of their habit. It is, in fact, difficult to imagine any consequential interpersonal relationship that does not, at some time and in some way, involve perspective taking across different emotional situations.

This chapter is about *emotional perspective taking*. We use the term “emotion” in a broad fashion, encompassing, among others, mood states such as happiness and sadness, discrete emotions such as embarrassment and fear, drive states such as hunger and thirst, and motivational states such as pain and craving. Our use of the term “emotion” is broadly synonymous with the antiquated, but still useful concept of the “passions” (Hume, 1739/2003) and encompasses all forms of “biological affects” (Buck, 1999).

Successful emotional perspective taking requires people to recognize that other people are often in emotional situations that are different from their own current situations, to make reasonable estimates about the emotional states evoked by those situations, and to predict how those emotional states will influence other people’s attitudes, preferences, and behaviors. That is, successful emotional perspective taking requires predictions both of how different situations evoke emotions in other people and of how other people respond to those emotions.

We suggest that emotional perspective taking entails two judgments reflecting two dimensions of psychological distance, between one’s current

situation and a different emotional situation and between the self and others (Van Boven & Loewenstein, 2005b). First, people estimate how they themselves would react to an emotional situation different from the one they are currently in. Second, they adjust these self-estimates to accommodate perceived differences or similarities between themselves and others. This dual judgment model implies that emotional perspective taking, like other forms of perspective taking, is fundamentally egocentric: people make judgments about others by making judgments about themselves, and only after the fact recognize potential differences between themselves and others.

The dual judgment model also implies that an important source of accuracy or error in emotional perspective taking is the accuracy or error with which people estimate their own reactions to different emotional situations. Past research demonstrates that people often assume and overestimate the similarity between themselves and others (Cronbach, 1955; Marks & Miller, 1987; Ross, Greene, & House, 1977). But even if people were perfectly calibrated in their estimates of how similar or dissimilar they are to other people, any bias in prediction of their own reactions to different emotional situations would cause them to make correspondingly biased estimates of other people's reactions to those situations.

It is now clear, in fact, that people often experience “empathy gaps” when estimating how they would respond to emotional situations that are different from their current situations (Loewenstein, 1996; Loewenstein, O'Donoghue, & Rabin, 2003; Loewenstein & Schkade, 1999). Specifically, people tend to underestimate how much emotional situations would influence their attitudes, preferences, and behaviors. As elaborated later, empathy gaps occur largely because people have limited access to the various ways that emotions change them as persons, fundamentally, if temporarily, shaping their attention, construal, and motivation (Cosmides & Tooby, 2000; Loewenstein, 2007; Slovic, Finucane, Peters, & MacGregor, 2002). Given that people exhibit empathy gaps when estimating their own reactions to different emotional situations, the dual judgment model implies that they will exhibit corresponding empathy gaps when estimating others' reactions to different emotional situations.

We first provide an extended overview of our dual judgment model of emotional perspective taking, summarizing evidence that people estimate others' reactions to emotional situations by first estimating their own reactions to those situations (Section 2). We then briefly summarize research

demonstrating empathy gaps in self-prediction, showing that people underestimate how different their preferences and behaviors would be in different emotional situations (Section 3). Combining these tendencies, we then review evidence demonstrating that people exhibit empathy gaps in emotional perspective taking, and that these empathy gaps in social judgments are partly explained by empathy gaps in self-judgments (Section 4). We then consider implications of empathy gaps in emotional perspective taking for social behavior (Section 5) and social judgment (Section 6). We conclude with discussions of moderators (Section 7) and of broader theoretical implications of our theoretical framework (Section 8).

2. DUAL JUDGMENTS IN EMOTIONAL PERSPECTIVE TAKING

Our dual judgment model is represented in Figure 3.1. The vertical solid arrow represents people's predictions of their own reactions to a different emotional situation. The horizontal solid arrow represents people's adjustments to these self-predictions to accommodate perceived similarities or differences between the self and others.

By explicitly distinguishing these two judgments—self-predictions and adjustments to accommodate perceived differences between the self and

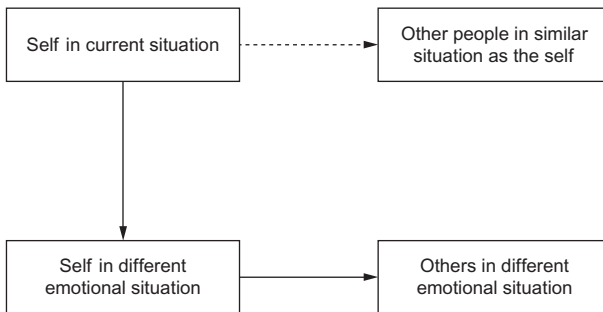


Figure 3.1 Graphical representation of the dual judgment model of emotional perspective taking. The vertical arrow represents people's estimate of how they would respond to a different emotional situation that is different from their current situation. The horizontal arrow represents adjustments to this self-estimate to accommodate perceived differences or similarities between the self and others. The dashed arrow represents traditional social psychological models of perspective taking, which have emphasized people's assessments of how similarly or dissimilarly other people would respond to the same situation that people are currently in.

others—this dual judgment model is different from most social psychological models of perspective taking, which often imply a single judgmental process. Social psychological models of perspective taking have focused on people's assessment of similarity or dissimilarity between themselves and others (Cronbach, 1955; Griffin & Ross, 1991; Krueger, 2003; Marks & Miller, 1987; Ross & Ward, 1995). These assessments represent the second judgment in our model. Moreover, social psychological models have typically examined contexts in which people estimate how others would respond to the same situation that people are currently in (the dashed horizontal arrow in Figure 3.1). Our approach thus suggests a different framework for the judgments of emotional perspective taking, and, as we will later review, identifies self-judgments as an important source of bias in emotional perspective taking.

2.1. Social projection

Among social psychology's fundamental insights is that the self is the gravitational center of social judgment. People project their own attitudes, attributes, feelings, and behaviors onto other people (Cronbach, 1955; Icheiser, 1949; Sherif & Hovland, 1961). Katz and Allport (1931), for instance, found that students who admitted to cheating on exams judged that a higher fraction of others also cheat. Mintz (1956) found that children's estimates of Peter Pan's age were correlated with their own age. People who behaved competitively were more likely than those who behaved cooperatively to expect competitive behavior from others (Kelley & Stahelski, 1970). And people who were willing to engage in various behaviors themselves, such as agreeing to wear a large sandwich board displaying "Eat at Joe's" or "Repent," estimated that a larger fraction of others would be willing to engage in similar behaviors (Ross et al., 1977). These and many other findings demonstrate that people typically assume that other people are similar to themselves in attitudes, beliefs, and behaviors.

Social projection is typically measured as the correlation between self-reports and estimates of others; the correlation is almost always positive and often exaggerated (Marks & Miller, 1987). Explanations of social projection have consequently centered on why people assume similarity between the self and others (Gilovich, 1990; Krueger, 2003; Krueger & Clement, 1997; Marks & Miller, 1987). For example, because people generally believe that they see the world objectively and accurately, they assume that other people

will hold similar perceptions, so long as others are as reasonable and unbiased as the self (Griffin & Ross, 1991; Ross & Ward, 1995, 1996).

Because they focus on a single dimension of perspective taking, the similarity or difference between self and others, explanations of social projection are ill-suited to emotional perspective taking, which entails crossing two dimensions of psychological distance. The first dimension is the difference between the situation one is currently in and a different emotional situation. The second dimension is the difference or similarity between the self and others. Traditional treatments of social projection have rarely acknowledged the difference between, and significance of, these two dimensions and the judgments that traverse them.

In the relatively few studies that have examined perspective taking across two dimensions, it is often assumed that both dimensions—between one's current situation and a different situation and between self and others—are integrated in a single judgment. For example, people who are informed that an otherwise ambiguous idiom (e.g., "The goose hangs high") has a particular meaning (e.g., "Things look bad") and are asked to estimate how clear that meaning would be to an uninformed observer are hypothesized to adjust simultaneously for two dimensions: the difference in knowledge due to private information about the idiom's meaning and differences between self and others, such as believing that the self tends to be communicatively adept (Keysar & Bly, 1995). In other words, perspective taking is hypothesized to reflect a judgmental process of anchoring on the self and then adjusting away from the self to account for multiple dimensions of distance between the self and others (Keysar & Barr, 2002; Nickerson, 1999). Because adjustments from anchors tend to be insufficient (Epley & Gilovich, 2004), people's estimates of others' responses tend to be egocentrically biased (Epley, Keysar, Van Boven, & Gilovich, 2004). The dual judgment model implies that adjustment away from an egocentric anchor is not a single judgment, but rather a pair of distinct judgments.

We provide evidence that these two dimensions of emotional perspective taking—the difference between one's current situation and a different emotional situation and the difference between self and others—correspond to two distinct judgments, rather than a single judgment. For example, people asked to predict the behavior of another person report explicitly imagining themselves in the person's situation. And structural models indicate that self-judgments account for substantial variance in judgments of others' reactions to different situations.

2.2. Self-judgment as social judgment

An important component of the dual judgment model of emotional perspective taking is that people's estimates of how others would react to being in a different emotional situation entail estimates of how they themselves would react to being in that situation. Some indirect support for this idea is that simply asking participants to imagine the feelings of a target (a woman with serious health problems) increases the activation of self-focused thoughts, measured indirectly, compared with a control condition (Davis et al., 2004). We have explicitly examined the role of self-predictions in emotional perspective taking in several studies.

In one study, participants read about the plight of three hikers on an Alaskan backcountry wilderness adventure who, by an unfortunate turn of events involving a bear, were forced to forego food for several days (Van Boven & Loewenstein, 2003, Study 1). Participants were shown a picture of three (ruggedly handsome) hikers (Leaf, George, and Douglas Harsch) and asked to imagine what the hikers thought and felt during their ordeal. Most participants (79%) explicitly mentioned that they mentally changed places with the hikers, imagining how they themselves would react to the hikers' situation. People thus intended to use, and perceived themselves as using, the self as a model for imagining the hikers' reactions to an emotional situation.

That people mentally traded places with hikers lost in the wilderness might seem to suggest that people are quite flexible and willing to stretch the limits of experience to imagine how they would respond to others' situation. However, it may not have been much of a stretch for the specific participants in the study, who were students at a western university famous for its outdoor orientation. What if people took the perspective of others enduring an experience that was impossible for people ever to experience themselves? We suspect that even with no possibility of experiencing the target's situation, people are quite comfortable using their own experience for imagining how they would respond to the target's situation.

In a recent follow-up study, we asked 139 university undergraduates (95 females) to read about the experience of one of the two protagonists. Some participants read about Tom, a business executive who had an active, healthy lifestyle before suffering a traumatic bout with testicular cancer (which was aggressively and successfully treated with chemotherapy). Other participants read about Sheila, a young woman whose son nearly died during a difficult

and prolonged childbirth. Participants were asked to spend at least 2 min thinking about how the protagonist, Tom or Sheila, would react to their situation. Participants then rated how much they mentally changed places with the protagonist, imagining what their own thoughts and feelings would be in that situation (on a 7-point scale: $-3 = \textit{not at all}$; $+3 = \textit{a great deal, it was my primary strategy}$).

By design, participant sex interacted with the two scenarios to moderate the potential relevance of the self for imagining Tom or Sheila's experience. By virtue of their anatomies, men can have testicular cancer but cannot give birth; women cannot have testicular cancer but can give birth. The question, then, is how much the interaction between participants' sex and the target scenario moderates people's reliance on the self to imagine the target's feelings.

Participants were, not surprisingly, less likely to report that they mentally traded places when the protagonist's sex was different from their own. Female participants reported mentally trading places with Sheila more than with Tom, and male participants reported mentally trading places with Tom more than with Sheila (see Table 3.1). These differences produced a significant interaction in a 2(participant sex: female, male) \times 2(target: Sheila, Tom) ANOVA, $F(1, 135) = 8.95$, $p < 0.025$. Notice, however, that participants in all conditions reported mentally changing places to a substantial degree, even when the protagonist's experience was impossible for them to experience ($M = 1.55$), $t(135) = 11.08$, $p < 0.001$. Even though participants were less likely to report mentally changing places with a protagonist whose experience was foreign to their own, they nevertheless reported mentally changing places to a substantial degree.

Table 3.1 Ratings of mentally trading places by female and male participants who were asked to estimate the feelings of Tom, who was diagnosed with and treated for testicular cancer, and Sheila, who suffered a scare while giving birth to her son

| Participant sex | Scenario | |
|-----------------|-------------------------|----------------------|
| | Tom (testicular cancer) | Sheila (birth scare) |
| Female | +1.27 | +2.17 |
| Male | +1.73 | +0.98 |

Note: Measures are of how much the participants reported mentally trading places with the protagonist when estimating the protagonist's reaction to the emotional situation (on a 7-point scale with measures centered such that $-3 = \textit{not at all}$, $+3 = \textit{a great deal; it was my primary strategy}$).

That people reported changing places even when it was impossible ever for them to have the protagonist's experience raises the question of why people use themselves as a basis for predicting others' reactions to different emotional situations. One possibility is that people may have a flexible and generous sense of shared experiences that they believe may give them insight into the protagonists' situation. Consistent with this idea, participants in our study were asked to describe "any experiences you have had that are similar to what [the protagonist] went through." Not surprisingly, given that our participants were young, relatively healthy university students, none of the men had experienced testicular (or any kind of) cancer, and none of the women had given birth. However, approximately half of the participants (52%) listed some kind of similar experience they personally thought about when predicting the protagonists' reaction to their situation. Many people described emotionally upsetting experiences such as "My boyfriend cheated on me," "Serious flu," and "Angry with professor for unfair grading." Although these experiences might seem to be of limited similarity to the protagonists' experience (we certainly hope that being seen as an unfair grader is nowhere as upsetting as a major health scare!), participants apparently characterized such experiences as being relevant to understanding the protagonists' experience. Interestingly, participants were no more likely to report having similar experiences when they were of the same sex as the protagonist (46%) as when participants were of a different sex (57%), Fisher's exact $p = 0.24$. People were apparently quite willing to identify similar experiences when estimating what Tom and Sheila would experience.

The ability to identify seemingly similar experiences is important because, according to the dual judgment model, people use self-predictions as a basis for emotional perspective taking in part because they believe that self-predictions are informative about social predictions. In our study, participants who reported having had a similar experience of some kind reported mentally changing places ($M = 1.85$) more than participants who did not report a similar experience ($M = 1.24$), as reflected by a main effect of similar experience (some reported, none reported), controlling for target (Tom, Sheila), participant sex (male, female), and their interaction, $F(1, 134) = 5.93$, $p < 0.05$.

This effect of similar experiences on reports of mentally changing places jibes with other research indicating that people who have had similar experiences as perspective taking targets report experiencing more empathy toward them (Hodges, Kiel, Kramer, Veach, & Villaneuva, 2010). Specifically, new mothers report heightened empathic concern for and greater

understanding of other women who have just given birth, relative to pregnant women who have never given birth. This heightened sense of empathic understanding, however, was not reflected by increased empathic accuracy, as measured by new mothers' ability to identify what was going on in the mind of other mothers who were being interviewed. Although people readily perceive themselves as having similar experiences, and although the perception of similar experiences is associated with greater self-perceived success in perspective taking, perceived similar experiences may not actually increase empathic accuracy (Hodges et al., 2010).

These various studies provide evidence consistent with our claim that people predict others' reactions to being in different emotional situations by mentally changing places and estimating what their own reactions would be to the others' situations. These strands of evidence provide triangulating support for the proposition that people answer questions about "How would other people react to being in that situation?" by asking themselves "How would *I* react to being in that situation?"



3. EMPATHY GAPS IN SELF-JUDGMENT

A core idea of our analysis is that biased emotional perspective taking is partly due to biased self-judgment. The dual judgment model implies that biased emotional perspective taking can emerge from either or both judgments: from biased estimates of the similarity between self and others, as has been the focus of social psychological research, or from biased estimates of one's own reactions to different emotional situations. Because people typically assume similarity between themselves and others, the accuracy of emotional perspective taking may be strongly influenced by the accuracy of self-judgment. A now substantial body of research indicates that people exhibit empathy gaps when estimating their reactions to different emotional situations. That is, people generally underestimate how much being in emotional "hot" situations influences their attitudes, preferences, and behaviors—underestimation that is pronounced when people are currently in relatively unemotional, "cold" situations (Loewenstein, 1996, 2005; Loewenstein et al., 2003).

3.1. Varieties of empathy gaps

There are two varieties of empathy gaps that are particularly relevant to emotional perspective taking, in which people in one situation or state (cold or hot) predict the reactions of other people to a different emotional

state (cold or hot). *Cold-hot* empathy gaps occur when people in relatively neutral “cold” situations predict their reactions to emotional “hot” situations. People who have just consumed a large meal, for example, overestimate their future ability to resist culinary temptations when they are no longer sated (Read & van Leeuwen, 1998). People who are temporally or hypothetically removed from an embarrassing public performance underestimate the impact of social anxiety on their preferences and decisions, expecting that they would be more willing to perform in the “moment of truth” than they actually are (Van Boven, Loewenstein, Welch, & Dunning, 2012). People who are just about to exercise and are in a relatively neutral state predict that they would be less bothered by thirst if they were lost without food or water compared with people who have just exercised and are therefore relatively thirsty and warm (Van Boven & Loewenstein, 2003). People who do not own an object and therefore do not experience loss aversion at the prospect of selling the object underestimate how much they would value the object if they owned it (Loewenstein & Adler, 1995). 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 gambling with hypothetical money are more tolerant of taking on risk than those gambling with real money (Fetchenhauer & Dunning, 2009). People who are sated because they have just eaten 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. Smokers in a low craving state underestimate the value of future craving relative to smokers in a high craving state (Sayette, Loewenstein, Griffin, & Black, 2008). And heroin addicts who are not craving because they just received a “maintenance” dose of opioid agonist place less value on getting an extra dose 5 days later compared with addicts who are just about to receive their maintenance dose (Giordano et al., 2002).

People also exhibit empathy gaps when attempting to bridge different emotional states in the opposite direction. *Hot-cold* empathy gaps occur when people in emotionally aroused hot states predict their attitudes, preferences, and behaviors in unemotional cold states. For example, people whose hunger is piqued may think that a large piece of chocolate cake would be highly tempting even after consuming a large meal, when they would be in a relatively cold sated state (Gilbert et al., 2002). People who own an object, and are therefore averse to losing it, overestimate how

much they would value the object if they did not own it (Van Boven, Dunning, & Loewenstein, 2000). There are relatively fewer demonstrations of hot–cold empathy gaps than of cold–hot empathy gaps. We suspect the asymmetry of empathy gap demonstrations may reflect that cold–hot empathy gaps are more directly relevant to various behaviors of applied relevance, particularly those relating to addiction, sexual arousal, and other problematic behaviors that occur in the “heat of the moment.”

3.2. Empathy gap explanations

Empathy gaps occur, broadly speaking, because people have limited access to the profound ways that emotions shape basic perceptual and motivational processes (Loewenstein et al., 2003). Emotions, according to one evolutionary account, are all-encompassing “programs” that prepare people’s minds and bodies to deal with recurring situations of evolutionary significance (Cosmides & Tooby, 2004). Fear, for example, is a kind of program that prepares a response to the presence of danger, resulting in arousal of fear-relevant goals, attention to and memory of fear-relevant stimuli, as well as diverse physiological changes in adrenalin and digestion (Ledoux, 1996). These emotion programs are so profound that it is as if an emotionally aroused individual is a different person than the same nonaroused individual, confronted with the same problems of empathy, understanding, and prediction that occur between people.

Emotions exert at least four distinct, if overlapping, influences on psychological processes, and people’s introspective access to these processes is limited. First, emotion drives attention. Frightening stimuli, for example, tend to capture and hold attention (Derryberry, 1993; Derryberry & Reed, 1998; Derryberry & Tucker, 1994; Fox, Russo, & Bowles, 2001; Fox, Russo, & Dutton, 2002; Tucker & Derryberry, 1992), and objects associated with immediate emotional arousal impair attention to previous or future emotional states or stimuli (Huber, Van Boven, McGraw, & Johnson-Graham, 2011; Van Boven, White, & Huber, 2009). For example, drug craving focuses attention and motivation on procurement of the drug and away from competing goals (Loewenstein, 1999). Other attention effects are more subtle; for example, positive affect may generally broaden attention (Biss & Hasher, 2011), although distinct goal-relevant emotions such as enthusiasm can narrow attention to goal-relevant features (Gable & Harmon-Jones, 2011). These changes in focus of attention

contribute to empathy gaps because imagining a different frame of attention is a difficult, if even possible, cognitive task.

Second, emotion reduces psychological distance. Events about which people feel relatively intense emotions are psychologically closer, in the sense of the separation between oneself and temporally distal events in Lewinian life space (Lewin, 1951), than events about which people feel less intense emotions. When people are made to feel emotionally aroused about events, those events become psychologically closer (Van Boven, Kane, McGraw, & Dale, 2010). And when the psychological distance between an individual and an emotional event is increased, those events become less emotionally arousing in the present (Ayduk & Kross, 2008; Kross, Ayduk, & Michel, 2005). Emotional intensity also reduces estimates of objective distance. Threatening objects seem closer in physical space than nonthreatening objects (Cole, Balcetis, & Dunning, 2013), and more desirable objects seem relatively closer in space than nondesirable objects (Balcetis & Dunning, 2008).

Third, emotion shapes construal. For example, there is a large literature on mood congruent memory indicating that emotional arousal facilitates memory of emotionally congruent information (e.g., Bullington, 1990; Calvo & Castillo, 1997; Russo, Fox, Bellinger, & Nguyen-Van-Tam, 2001; Rusting, 1999; Watkins, Vache, Verney, Muller, & Mathews, 1996). Emotion can also influence people's interpretation of ambiguous stimuli in emotionally congruent ways (Calvo & Castillo, 1997). And emotional arousal can make emotionally congruent features seem more characteristic (Mayer, Gaschke, Baverman, & Evans, 1992) and can make emotionally congruent outcomes seem more likely (Finucane, Alhakami, Slovic, & Johnson, 2000; Johnson & Tversky, 1983; Slovic et al., 2002). For example, listening to depressing music makes people see more sadness and rejection in the faces of others (Bouhuys, Bloem, & Groothuis, 1995), and sad moods make smiles seem less genuine (Forgas & East, 2008).

Finally, emotion directly influences behavioral inclinations. Anger, for example, makes people more certain in their conclusions and more apt to act in a situation (Lerner & Keltner, 2001), usually against the source of their anger. Disgust decreases the value people attach to unrelated objects (Lerner, Small, & Loewenstein, 2004), leading to withdrawal. Sorrow leads people to disengage, becoming more passive in their stance toward the world (Frijda, 1986). Fear presets people to escape whatever their current situation is (Roseman, Wiest, & Swartz, 1994).

People typically have little or no introspective access to these emotional processes (Nisbett & Wilson, 1977; Wilson, 2002; Wilson & Gilbert, 2003). This limited access makes it highly unlikely that people can anticipate how their attitudes, preferences, and behaviors would be different in different emotional situations. This lack of introspective awareness implies that people may have difficulty appreciating the effects of emotional arousal even when they are in an emotional state. People consequently have tremendous difficulty bridging the gap between the emotional state they are in versus a different emotional state that they are not in.



4. EMPATHY GAPS IN EMOTIONAL PERSPECTIVE TAKING

The dual judgment model implies that empathy gaps in self-judgments produce empathy gaps in emotional perspective taking. Because the accuracy of emotional perspective taking depends partly on the accuracy of self-judgment the fact that people exhibit empathy gaps in self-judgment implies that they will also exhibit empathy gaps in emotional perspective taking.

In our studies of empathy gaps in emotional perspective taking, people who are in different (i.e., cold vs. hot) emotional states predict how other people would react to being in a different emotional situation. Empathy gaps occur when the two groups make different predictions, given that both groups cannot be accurate. In some cases, we are able to create the target emotional situations as part of the experiment, which allows us, further, to measure the absolute accuracy of emotional perspective taking. For example, predictions of other people's willingness to engage in an embarrassing public performance such as dancing in front of an audience in exchange for \$5 can be compared with the responses of people who are actually in that situation. In such studies, we not only infer that an empathy gap has occurred (because the predictions of two or more groups are different) but also measure the accuracy of emotional perspective taking (because the predictions can be compared with the responses of people who are actually in the target situation).

4.1. Visceral drives

In one test, we examined whether exercise-induced changes in people's visceral states might influence people's emotional perspective taking. Specifically, we tested whether being in a state of heat and thirst following vigorous

cardiovascular exercise might influence people's estimates of how other people would respond to emotionally evocative situations involving thirst and hunger (Van Boven & Loewenstein, 2003, Study 2). We asked participants entering a campus exercise facility who were about to engage in vigorous cardiovascular activity for at least 20 min to complete a short survey in exchange for a bottle of water. Those who agreed to complete the survey were then randomly assigned to do so either immediately before or immediately after exercising. Participants read a description of three hikers who were lost in the Colorado woods without food or water, and were asked to estimate whether hunger or thirst would be more unpleasant to the hikers (and to themselves if they were in the hiker's situation), and whether the hikers (and themselves in the situation) would experience greater regret over not having extra water or not having extra food. Because cardiovascular exercise arouses thirst and warmth, we expected that participants who had just exercised would estimate that thirst would be more unpleasant to the hikers (and themselves) compared with people who had not exercised.

As predicted, participants who had just exercised tended to estimate that both the hikers and they themselves would be more bothered by thirst than hunger and would regret not bringing water more than not bringing food (see Table 3.2). To examine more closely the structure of these social and self-predictions, we estimated a structural equation model (SEM; Figure 3.2). As intended, participants' self-reported thirst and warmth was

Table 3.2 Percentage of participants before exercising (cold state) and after exercising (hot state) who estimated that they and the lost hikers would be more bothered by thirst than hunger and would regret not bringing water more than they would regret not bringing food

| Exercise condition | Measure | |
|---------------------------------|------------------------|-------------------------|
| | Thirst more unpleasant | Regret not having water |
| Preexercise (cold state) | | |
| Hikers | 57% | 52% |
| Self | 61% | 61% |
| Postexercise (hot state) | | |
| Hikers | 88% | 82% |
| Self | 92% | 88% |

Adapted from Van Boven and Loewenstein (2003, Study 2).

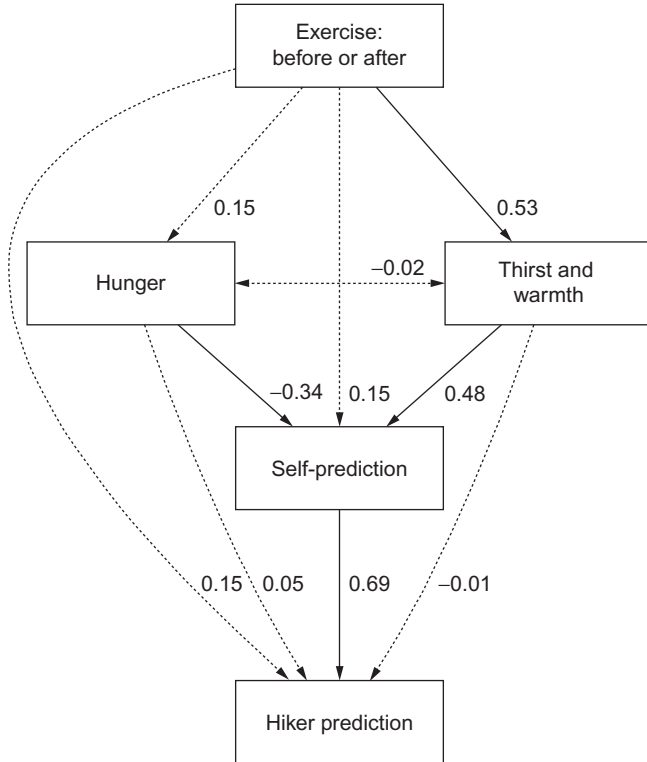


Figure 3.2 Visceral states: structural equation model estimating participants’ predictions of the lost hikers’ feelings. Solid lines represent statistically significant associations ($p_s < 0.05$); dashed lines represent nonsignificant associations. Numbers are standardized regression weights. Adapted from *Van Boven and Loewenstein (2003, Study 2)*.

greater for those who had just exercised, and self-predictions of wanting water after a hike were, in turn, correlated positively with self-reported thirst and warmth, but negatively correlated with hunger. Most important in terms of providing evidence supporting the dual judgment model, participants’ estimates of the hikers’ reactions were statistically explained by their estimates of their own reactions, with no other variable providing explanatory power after accounting for self-predictions and other variables. Participants’ visceral states thus influenced their predictions of the hikers’ reactions only by influencing their predictions of their own reactions.

Note that the pattern of associations does not readily follow from traditional explanations of social projection. Traditional models of social projection would imply that factors associated with one’s current state—in this

study, the exercise condition, ratings of hunger, and thirst and warmth—would be associated with both social-predictions and self-predictions. That is, if people simultaneously adjusted from the anchor of their current state, in a single process, for the difference between themselves and others and for the difference between their current situation and a different situation, then measures of people's current situation should be independently associated with both social and self-predictions. Instead, social predictions were best explained by self-predictions, which were influenced by people's transient visceral states.

Newer studies provide even more nuanced support for the dual judgment model. In one such study, using a very similar paradigm to the exercise paradigm just discussed, participants read a story of a politically active student who went hiking in the winter to take a break from political campaigning and got lost with no food, water, or extra clothing (O'Brien & Ellsworth, 2012). Participants were asked what the protagonist would find most unpleasant (thirst, hunger, or cold) and what the protagonist would most regret not packing (water, food, or extra clothes). Participants completed the study either inside a university building or outside during a cold Michigan winter. Conceptually replicating previous findings, participants were more likely to predict that the protagonist would be bothered by cold and lack of food when they completed the survey in the cold outdoors than in the warm indoors. However, this effect was reduced when the protagonist was of a different political persuasion than participants themselves. The protagonist was described either as a strong leftwing, pro-gay-rights Democrat or a strong rightwing, anti-gay-rights Republican. When crossing the political divide, participants' own immediate state of being cold or warm did not influence their predictions of the lost protagonists' reactions to being lost in the woods. Consistent with the dual judgment model, one's own emotional state influenced social predictions only when the target was similar to the self. When the target was dissimilar to the self, one's own emotional state did not influence social predictions, even when the dissimilarity was on an unrelated dimension of political partisanship.

4.2. Social anxiety

Social anxiety and the desire to avoid embarrassment is a powerful psychological restraining force. Although social anxiety can prevent people from taking foolish actions they might later regret (e.g., exasperatedly expressing frustration with a colleague's ill-conceived research during a professional

presentation), social anxiety can also be self-destructive, preventing people from taking beneficial actions (e.g., overcoming awkwardness to approach a secret crush). Social anxiety and fear of embarrassment contribute to any number of failures to act, including nonintervention in emergency situations (Latané & Darley, 1970), nonopposition to unpopular policies or social norms (Miller & McFarland, 1987; Van Boven, 2000), lovers' failure to use contraception (Leary & Dobbins, 1983), and obedience to authority (Sabini, Cosmas, Siepmann, & Stein, 1999; Sabini, Seipmann, & Stein, 2001).

The ubiquity of embarrassing situations might afford people ample opportunities to observe and learn others' reactions to such situations, or at least to learn their own reactions to such situations. We have demonstrated in several studies that people nevertheless exhibit empathy gaps in predicting others' reactions to embarrassing situations. People who are in relatively unemotional states overestimate others' social courage, their willingness to engage in embarrassing public performances.

In one experiment, some participants faced the potentially real and emotional choice to engage in an embarrassing public performance: dancing to "Super Freak" by Rick James, in front of a large audience in exchange for \$5 (Van Boven, Loewenstein, & Dunning, 2005). These participants indicated whether they would dance for \$5 and stated the lowest price they would have to be paid to dance. Higher prices reflected stronger reactions to the social anxiety aroused by facing an embarrassing public performance. Other participants, who were in the same room as those facing a real performance, were asked simply to *imagine* that they faced a real performance, although it was made clear that they would not really have to perform. We assumed that participants in the hypothetical choice condition would be less emotionally aroused compared with participants in the real choice condition. Both groups of participants were asked to take the perspective of one randomly selected participant (other than themselves) who faced a real performance, predict whether that person would dance for \$5, and to predict the lowest price for which that person would agree to dance.

Participants exhibited an empathy gap when predicting the behavior of someone facing an embarrassing public performance (see Table 3.3). When participants faced a real performance themselves, they predicted that a lower percentage of peers would agree to dance for \$5 compared with when participants faced a purely hypothetical performance. Participants who faced a real performance themselves also predicted that the target would demand greater payment to dance compared with participants facing a purely hypothetical performance.

Table 3.3 Participants' estimates of other people's and their own reactions to facing a real versus hypothetical embarrassing public performance: dancing in front of others to Rick James "Super Freak"

| Performance condition | Measure | | |
|---------------------------------|---------------|--------------|--|
| | Dance for \$5 | Lowest price | Focus on evaluation (evaluation – money) |
| Real performance | | | |
| Other people | 31% | \$19 | 1.41 |
| Self | 8% | \$53 | 1.86 |
| Hypothetical performance | | | |
| Other people | 36% | \$13 | 0.73 |
| Self | 31% | \$21 | 0.91 |

Note: Lowest price reflects the least amount of money participants estimated would be required to dance in front of an audience (means are back-transformed averages of natural log-transformed individual prices). Evaluation attention is the difference between ratings of how much (1 = *not at all*; 9 = *a great deal*), when making their decision, they or other people thought about being evaluated by others versus the money they would earn; positive scores indicate relatively greater attention to social evaluation than to money.

Adapted from Van Boven et al. (2005, Study 2).

This empathy gap in emotional perspective taking was mirrored by an empathy gap in self-predictions (Table 3.3). Participants facing a purely hypothetical performance were more likely to predict that they themselves would agree to dance for \$5 compared with participants who faced a real performance. And participants who faced a hypothetical performance predicted they would have to be paid less to dance compared with people who faced a real performance. Participants thus exhibited empathy gaps in self-judgments that mirrored their empathy gaps in social predictions.

Participants' decision to dance (or not) for \$5 also afforded a test of accuracy. Only 8% of participants who faced a real performance agreed to dance, whereas 31% of people who faced a hypothetical performance thought they would agree to dance, overestimating their own willingness to engage in an embarrassing public performance by a factor of three. Both groups overestimated the willingness of other people to perform for \$5, but this overestimation was larger for participants who faced a hypothetical performance (36%) than for those who faced a real performance themselves (31%). The fact that people who faced a real performance themselves overestimated others' willingness to perform reflects an important difference between self and others that we will discuss later.

This experiment also provided evidence for the processes underlying empathy gaps in self-judgments. Participants were asked to report, when making their decision, how much they thought about being socially evaluated, the “hot” factor thought to be exacerbated when facing a potentially real public performance, and how much they thought about the money they could earn, a relatively “cold” factor (Rottenstreich & Hsee, 2001). Participants reported attending more to social evaluation, as indexed by the difference between these two measures, when the performance was real rather than hypothetical.

We used these measures of emotional attention to test the pattern of associations implied by the dual judgment model. We conducted a SEM to examine simultaneous, independent correlations between the measured variables relevant to our dual judgment model (see Figure 3.3). First, the effect of facing a hypothetical versus real performance on participants’ own performance prices was explained, in part, by an increased focus on social evaluation by others. That is, people’s empathy gaps in self-predictions were associated with an increased focus on the emotionally charged potential costs of performing (social evaluation) relative to the less emotional benefits of performing (money).

For estimates of others, the only significant predictor of participants’ estimates of how much money others would demand to dance was participants’ own performance prices. It is noteworthy that participants’ predictions of others’ attention to evaluation was not significantly associated with their predictions of others’ focus on evaluation. It is as though participants thought that their own behavior provided a better indicator for predicting others’ behavior than did their estimates of other people’s attention to social evaluation.

This pattern of correlations provides additional, strong evidence for the dual judgment model and is not readily interpreted by standard theories of social projection. Standard theories would imply that factors associated with people’s own situation (whether they faced a real or hypothetical performance) and factors associated with people’s attention (their focus on social evaluation) would be associated with corresponding self- and social predictions. That is, facing a real or hypothetical choice should be independently associated with people’s own focus on evaluation and with people’s estimates of others’ focus on evaluation; and focus on evaluation should be associated with corresponding estimates of performance prices. However, contrary to these predictions, we found no correlation between participants’ estimates of others’ mental states and their predictions of others’

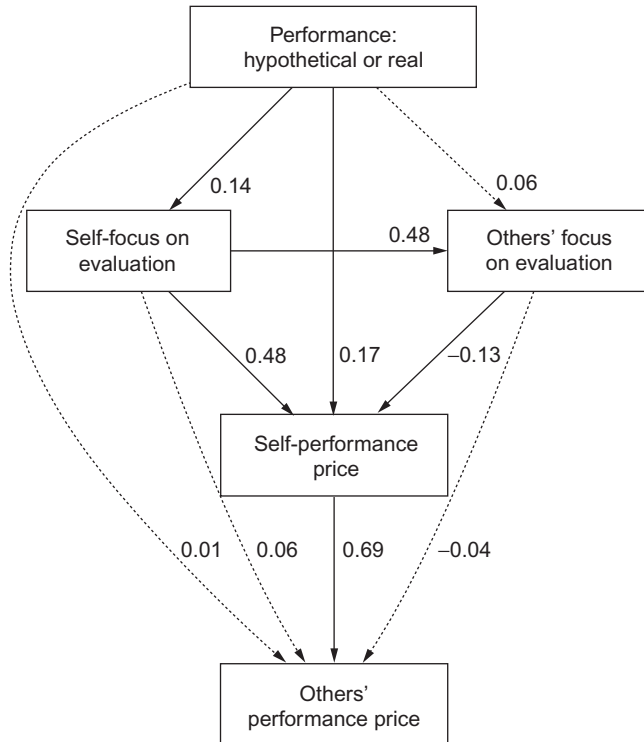


Figure 3.3 Social anxiety: structural equation model of participants' own lowest performance price and their estimate of another participant's lowest performance price as a function of facing a hypothetical or real performance and participants' self-reported focus on social evaluation. Solid lines represent statistically significant associations ($ps < 0.05$), and dashed lines represent nonsignificant associations. Numbers are standardized regression weights. Adapted from *Van Boven et al. (2005)*.

performance price. Rather, self-estimates were the best (and the only significant) statistical predictor of social predictions.

One final observation provides additional evidence for the dual judgment model. Participants' estimates of other people's willingness to perform provided indirect evidence that self-predictions are adjusted to reflect perceived differences between the self and others. Participants facing both a purely hypothetical and potentially real performance thought that other people would be more willing than themselves to dance for \$5 than they would themselves (34% vs. 20%, respectively, averaged across real and hypothetical situations). This pattern is consistent with a general tendency for people to expect that others are less affected than they are by self-conscious

emotions such as social anxiety (Miller & McFarland, 1987; Sabini et al., 1999, 2001; Van Boven, 2000). Of relevance for the dual judgment model, this intuitive belief about differences between the self and others is reflected in an adjustment to self-predictions to accommodate this intuitive belief.

4.3. Loss aversion and the endowment effect

Among the most robust findings in behavioral economics is that people require greater compensation to part with objects they own that are part of their endowment than they would be willing to pay to acquire the same objects when they are not part of their endowment (Kahneman, Knetsch, & Thaler, 1990, 1991, 1993; Knetsch, 1989). The *endowment effect* is multiply determined (Beggan, 1992; Carmon & Ariely, 2000; Weaver & Frederick, 2011). One important psychological mechanism is loss aversion, the tendency for the pain people experience in response to a loss to be more intense than the pleasure people experience in response to an objectively equivalent gain (Kahneman & Tversky, 1979; Thaler, 1980). Because owners experience loss aversion when considering selling (losing) their object whereas buyers do not experience loss aversion when considering acquiring (gaining) the object, owners are more reluctant to part with their objects than buyers are eager to acquire them.

Previous research has shown that buyers exhibit empathy gaps when estimating their own behavior as owners. Buyers tend to underestimate how much they would demand to sell an object if they owned it (Loewenstein & Adler, 1995). The dual judgment model thus implies that owners and buyers should exhibit empathy gaps in emotional perspective taking, underestimating how differently people in the opposing role would value objects that are part of owners' endowment. Importantly, because owners are in a relatively hot state of loss aversion whereas buyers are not, owners and buyers should exhibit different varieties of empathy gaps. Owners (hot state) should exhibit a *hot-cold* empathy gap when predicting buyers' behavior (cold state); buyers (cold state) should exhibit a *cold-hot* empathy gap when predicting owners' behavior (hot state).

We examined empathy gaps between owners and buyers in two studies by asking people, randomly assigned to own a coffee mug or not, to indicate how much money the mug was worth to them, and to predict how much the mug was worth to people who were actually in the other role

(Van Boven et al., 2000, Studies 1 and 2). That is, buyers indicated the most they would be willing to pay to purchase a mug, and owners indicated the least they would be willing to accept to sell their mug. Buyers also estimated the owners' lowest selling price, and owners estimated the buyers' highest purchase price.

Combining the data across two studies, owners' lowest selling prices were substantially higher than buyers' highest purchase price, replicating the endowment effect (see Table 3.4). More important, both owners and buyers exhibited empathy gaps when estimating how much the mug was worth to people in the other role. Buyers underestimated owners' lowest selling price ($M_s = \$4.18$ vs. $\$5.78$), and owners overestimated buyers' highest purchase price ($M_s = \$3.30$ vs. $\$1.69$). Both buyers' and owners' estimates of prices in the other role were therefore biased in the direction of the prices that they themselves were willing to pay or receive.

We recently replicated and extended these results by testing whether empathy gaps between owners and buyers would be larger for emotion-rich objects than for emotion-poor objects. The endowment effect is stronger for emotion-rich hedonic objects that are characterized by intrinsic hedonic qualities (such as chocolate) than for emotion-poor utilitarian objects (such as highlighters) that are characterized by instrumental usefulness for attaining other goals (Cramer & Antonides, 2011). The salience of emotional considerations surrounding loss is greater for emotion-rich objects than for emotion-poor objects (Dhar & Wertenbroch, 2000). If the emotion-induced endowment effect is greater for emotion-rich hedonic objects than for emotion-poor utilitarian objects, then empathy gaps should be greater for hedonic objects than for utilitarian objects.

To test this prediction, we randomly assigned 76 university undergraduates to be owners or buyers of either a chocolate bar (an emotion-rich hedonic object) or a highlighter (an emotion-poor utilitarian object). The endowment effect, the difference between owners' and buyers' prices,

Table 3.4 Buyers' highest purchase price and owners' lowest selling price for a coffee mug, and each role's estimate of the average price among participants in the other role

| Role | Price | |
|-------|------------------------|--------------------------------|
| | Statement of own price | Estimate of other role's price |
| Buyer | \$1.69 | \$4.18 |
| Owner | \$5.78 | \$3.30 |

Adapted from (Van Boven et al., 2000, Studies 1 and 2).

Table 3.5 Buyers' highest purchase price and owners' lowest selling price for either chocolate (emotion-rich object) or highlighter (emotion-poor object), each role's estimate of the other role's price, and each role's estimate of what their own price would be in the other role

| Role and object | Price | | |
|----------------------|------------|--------------------------------|--------------------------------------|
| | Self price | Estimate of other role's price | Estimate of self-price in other role |
| Owner of chocolate | \$2.52 | \$2.23 | \$1.70 |
| Buyer of chocolate | \$1.06 | \$1.11 | \$1.13 |
| Owner of highlighter | \$1.66 | \$1.51 | \$1.21 |
| Buyer of highlighter | \$0.97 | \$1.10 | \$1.14 |

was larger for hedonic chocolate bars ($M_{\text{difference}} = \1.46) than for utilitarian highlighters ($M_{\text{difference}} = \0.69), $F(1, 72) = 6.31$, $p = 0.014$ (see Table 3.5).

Participants also estimated the prices of people in the other role. Replicating our other studies, participants exhibited empathy gaps, underestimating the difference between their own valuation and that of the other role (see also Table 3.5). Importantly, these discrepancies were larger for the emotion-rich, hedonic chocolate bars than for the emotion-poor utilitarian highlighters. Owners overestimated how much buyers would be willing to pay to purchase the object, and this overestimation was larger when the object was a chocolate bar ($M_{\text{difference}} = \1.17) than when the object was a highlighter ($M_{\text{difference}} = \0.54), $F(1, 72) = 7.39$, $p = 0.008$. Similarly, buyers underestimated how much owners would have to be paid to sell their object, and this underestimation was larger when the object was a chocolate bar ($M_{\text{difference}} = -\1.41) than when the object was a highlighter ($M_{\text{difference}} = -\0.56), $F(1, 72) = 7.57$, $p = 0.007$. The relevant interaction testing whether the empathy gaps for both owners predicting buyers and buyers predicting owners were larger for chocolate than for highlighters was significant, $F(1, 72) = 10.51$, $p = 0.002$. These results provide evidence that the magnitude of empathy gaps is larger in a context involving relatively more intense emotions (buying and selling chocolate) than in a context involving relatively less intense emotions (buying and selling highlighters).

In addition to estimating the prices of people in the opposite role, participants also predicted what their own price would be if they were in the other role (in Table 3.5). Consistent with our previous findings, participants exhibited a larger empathy gap when estimating their own prices in the other role when the object of evaluation was an emotion-rich chocolate

bar rather than an emotion-poor highlighter. Owners overestimated how much they would be willing to pay to purchase the object they owned, and this overestimation was larger when the object was a chocolate bar ($M_{\text{difference}} = \0.64) than when it was a highlighter ($M_{\text{difference}} = \0.24), $F(1, 72) = 2.96$, $p = 0.09$. Buyers underestimated how much they would have to be paid to sell the object if they owned it, and this underestimation was larger when the object was a chocolate bar ($M_{\text{difference}} = -\1.40) than when it was a highlighter ($M_{\text{difference}} = -\0.52), $F(1, 72) = 7.94$, $p = 0.006$. The relevant interaction testing whether the empathy gap in self-estimates for both owners and buyers was larger for chocolate bars than for highlighters was significant, $F(1, 72) = 8.21$, $p = 0.005$. The magnitudes of empathy gaps in self-judgments were thus larger in an emotionally rich context (buying and selling chocolate) than in an emotionally poor context (buying and selling highlighters), mirroring the empathy gaps in emotional perspective taking.

In sum, these studies of empathy gaps between owners and buyers have particular theoretical importance because they demonstrate two varieties of empathy gaps. The discrepancy between owners' and buyers' prices stems largely from the loss aversion experienced among owners, but not among buyers. Buyers' underestimation of owners' selling prices thus constitutes a cold-hot empathy gap in which buyers underestimate how much the experience of loss aversion would affect their own behavior and hence underestimate how much loss aversion influences owners' behavior. In contrast, owners' overestimation of buyers' purchase prices constitutes a hot-cold empathy gap in which owners underestimate how much the lack of loss aversion would affect their own behavior and hence overestimate how valuable the objects would be to buyers.

4.4. Empathy gaps from desensitization

Most research on empathy gaps has examined how people who have limited experience with an emotional situation mispredict the reactions of people who are in an emotional situation. Yet, there may even be some circumstances in which people exhibit empathy gaps because they have *too much*, rather than too little, experience with emotionally arousing situations. Specifically, when people have become desensitized to emotional situations, they may experience cold-hot empathy gaps such that they underestimate how much other people would be affected by initial exposure to those situations.

As people experience repeated and unvarying exposure to emotionally evocative stimuli, they often become desensitized, their emotional reactions less intense (Gard, Gard, Kring, & John, 2006; Groves, Glanzman, Patterson, & Thompson, 1970; Nelson & Meyvis, 2008; Nelson, Meyvis, & Galak, 2009). Although people generally recognize that emotional intensity diminishes over time (Igou, 2004; Loewenstein et al., 2003), they are relatively poor at tracking changes in their own emotional experience (Levine, 1997; Levine & Pizarro, 2004; Nisbett & Wilson, 1977) and may often underestimate how much emotional intensity diminishes over time (Frederick & Loewenstein, 1999; Kahneman & Snell, 1992; Nelson et al., 2009). People who have become desensitized to emotional situations may therefore underestimate the intensity of their initial reactions to those situations. This desensitization blindness in self-judgments may produce desensitization blindness in emotional perspective taking.

In one test of this prediction, participants were randomly assigned to copy a moderately amusing, nonoffensive joke (Hodson, Rush, & MacInnis, 2010) either once in the control condition or five times in the desensitization condition (Campbell, O'Brien, Van Boven, Schwarz, & Ubel, 2013). Participants who copied the joke five times reported that it was less amusing than did those who copied the joke only once, indicating desensitization. People who copied the joke five times also estimated that other people would be less amused upon first hearing the joke than did people who copied the joke just once, an empathy gap in estimates of others' amusement. In other studies, people exhibited desensitization biases when estimating others' initial emotional reactions to shocking images (of pop singer Lady Ga Ga), awesome images (of motorcycle stunts), and annoying noises (of vacuum cleaners). People thus exhibited a cold-to-hot empathy gap that resulted from emotional overexposure rather than from emotional underexposure. These findings are important because they demonstrate that people exhibit empathy gaps even when they have direct, recent experience with emotional stimuli.

4.5. Summary

Studies have demonstrated empathy gaps in emotional perspective taking across various emotional situations and states: visceral drives, social anxiety and embarrassment, loss aversion, humor, and annoyance. These empathy gaps in emotional perspective taking closely coincide with and are

statistically explained by empathy gaps in self-judgments. That is, the tendency to underestimate the impact of emotional situations on other people is mediated by the tendency to underestimate the impact of emotional situations on the self.

The dual judgment model of emotional perspective taking was not only supported by mean differences, in which people in one (cold or hot) state underestimated the impact, on average, of being in a different (hot or cold) state, but also by structural analyses of the pattern of associations between self-judgments and social judgments. These analyses provide evidence for the dual judgment model that is not readily interpretable with standard models of social projection. Standard models would imply that the factors associated with people's immediate situation—such as the measures of experimental condition, self-reported feelings, and focus on emotional factors—should independently predict both self-judgments and social judgments. That is, if people adjust from the same anchor when estimating themselves and others, both self-judgments and social judgments should be associated with that anchor. We repeatedly found instead that the effect of being in an emotional versus nonemotional situation on social judgments—that is, the empathy gaps in emotional perspective taking—were entirely explained by the effect of being in an emotional versus nonemotional situation on self-judgments. These patterns are most consistent with the dual judgment model.



5. IMPLICATIONS FOR SOCIAL BEHAVIOR

Understanding others' reactions to different emotional situations should facilitate social behavior. Should I threaten to divorce him if he does not stop drinking? How aggressively should I pursue my romantic interest in her? How much should I offer to purchase the used mountain bike? How extensively should I criticize the student's first paper? The answers to such questions hinge on people's emotional perspective taking: predictions of a threat's effectiveness, romantic reciprocation, seller's highest buying price, and another's response to criticism.

If unbiased emotional perspective taking facilitates successful social behavior, empathy gaps in emotional perspective taking might undermine successful social behavior. Empathy gaps in emotional perspective taking can contribute to problematic social behavior in any number of ways, leading people to behave inappropriately, even destructively, toward others who are in different emotional situations. For example, a sober policy maker might fail to

appreciate the impact of craving on addicts' preference for drugs and therefore design policies that overemphasize punishment, which may have relatively little influence over addicts' craving-driven behavior in the "heat of the moment." A potential homebuyer might fail to appreciate how attached an owner is to her home (and how attached he would become to the home if he purchased it), and therefore make an insultingly low offer that is rejected. A middle-aged caretaker might fail to appreciate how much an elderly parent would want drastic measures taken to prolong life, and might therefore decline invasive procedures that the patient would prefer.

5.1. Behaving badly

Empathy gaps between owners and buyers offer a useful context in which to examine potentially costly behavior toward others. Because the values and preferences of owners versus buyers is expressed in dollars and cents, it is possible to create economic situations in which empathy gaps result in quantifiable, financially costly behavior. We designed a situation in which people who did not own an object, and were therefore not attached to it and were not in a state of loss aversion, would benefit monetarily from accurately estimating how much owners valued their possessions. These people were assigned to the role of "buyer's agent." A buyer's agent is a person whose job is to buy an object for someone else. Such agents are common in social exchange relationships, such as in real estate when buyer's agents inspect homes and make bids for their customers.

The ability of buyer's agents to secure a profit for themselves is tied to their ability to estimate owners' preferences and behavior. For example, a real estate buyer's agent who underestimated a seller's minimum selling price might make too low an offer, thinking that the owner will come down in price more than the owner will. If time is limited, there are other interested buyers, or if the seller takes offense at the "lowball" offer, the agent (and the buyer the agent represents) may forego an otherwise profitable transaction.

We created an analogous situation in the laboratory by assigning some participants to be owners and others to be buyer's agents (Van Boven et al., 2000, Study 4). Owners were given a coffee mug that retailed for approximately \$6, and were asked to indicate the lowest price at which they would sell their mug. Buyer's agents were told that they would act on behalf of a buyer (in fact, the experimenter) who gave them \$10 with which to purchase a mug for the buyer. The agents were to make a single offer to purchase the mug of a randomly selected owner. There was no communication between agents and owners, except for the written offers.

If the offer price was equal to or greater than the prespecified selling price, the offer was “accepted,” the owner received the money, the mug was returned to the experimenter, and the buyer’s agent kept whatever was left of the \$10. For example, an offer of \$8.00 that was randomly paired with a minimum selling price of \$7.00 would mean the offer was “accepted”: the owner would receive \$8.00, return the mug to the experimenter, and the buyer’s agent would receive \$2.00 (but not the mug). In contrast, an offer of \$6.00 paired with a minimum selling price of \$7.00 would be “rejected,” and the owner would keep the mug and the agent would return the \$10 to the experimenter, receiving no money.

In this situation, buyer’s agents maximize their expected earnings by making an offer that is equal to, or just above, the owner’s lowest selling price. Such offers reflect a trade-off between the amount of money earned if an offer is accepted (lower offers yield more money for the buyer’s agent) and the likelihood that an offer is accepted (lower offers are less likely to be accepted). We expected that, because buyer’s agents did not themselves own an object and experience loss aversion, they would experience empathy gaps, underestimate the mug’s value to its owner, and therefore make offers that were too low and unlikely to be accepted. Agents would therefore be left with less money than they could have earned if they had better appreciated owners’ selling prices and made higher offers.

Buyer’s agents in our study predicted that owners’ lowest selling prices would be lower on average (\$5.45) than they actually were (\$7.38). Agents also made offers on average (\$6.19) that were lower than owners’ lowest selling prices. Agents’ offers were substantially less than the expected payoff-maximizing offer of \$8.00, an offer that would have had a 75% chance of being accepted, and earning the agents an average of \$1.50. Instead, only 25% of agents’ offers were accepted, and agents earned an average of \$0.93. Agents’ empathy gaps thus caused them to behave toward owners in a way that was personally costly.

It is important to note that the offers of buyer’s agents were sensible given their estimate of owners’ selling prices. That is, agents behaved rationally given their expectations about owners’ selling prices. The problem was that buyer’s agents underestimated owners’ selling prices. Buyer’s agents’ empathy gap caused them to behave in ways that cost them money.

Another important context in which empathy gaps can produce costly behavior is surrogate medical decision making. Surrogate decision makers, usually relatives or loved ones, must make medical decisions for an

individual who is incapable of making decisions because of illness or injury (Baergen, 1995; Loewenstein, 2005). In such cases, “advance directives,” or living wills, are often ambiguous or incomplete. The challenge for the surrogate decision maker, then, is to honor the incapacitated person’s wishes, independent of, and possibly in spite of, the surrogate decision maker’s own current preferences (Ditto, 2006; Ditto & Hawkins, 2005). Yet, as we have seen, people tend to answer questions such as, “What kind of treatment would she want?” by asking instead, “What kind of treatment would *I* want if *I* was in her situation?” But if people experience empathy gaps when predicting their own medical preferences, they should also exhibit empathy gaps when acting as a surrogate decision maker (Loewenstein, 2005). These empathy gaps could cause people to make decisions based on their (erroneous) ideas about what they would want, not based on what the other person wants.

Several studies indicate that people exhibit empathy gaps when predicting their own preferences for medical procedures. In one, women expressed a preference for avoiding anesthesia during childbirth when surveyed 1 month before labor and in the early stages of labor; however, as women’s discomfort during labor increased, their preferences shifted strongly toward anesthesia (Christensen-Szalanski, 1984). In another study, cancer patients’ reported will to live was strongly correlated with transient feelings of pain, depression, and anxiety (Chochinov, 1999). Although depressed people’s will to live might justifiably be lower than nondepressed people’s will to live, it is less clear that short lived, transient feelings should influence people’s will to live, which obviously has long-term consequences. In a third study, researchers measured individuals’ willingness to trade off length of life for a high quality of death on dimensions such as pain and family support (Bryce et al., 2004). The median number of months respondents were willing to sacrifice in exchange for a higher quality of death differed dramatically as a function of age. Respondents younger than 40 were willing to sacrifice a median 21.6 months, almost 2 years, for a high quality of death, but median willingness to sacrifice for those older than 40 was 0—not even a single day. These results suggest that appreciation for the benefits of life, or the miseries of an early death, are weighed to a much greater extent when one comes closer to confronting the prospect of one’s own demise. More generally, these studies indicate that people exhibit empathy gaps when predicting their own preferences for medical treatment, and the dual judgment model of emotional perspective taking shows

how these intrapersonal empathy gaps lead to errors in predictions of others' preferences for medical procedures.¹

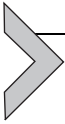
5.2. Behaving better by bridging empathy gaps

If empathy gaps in emotional perspective taking contribute to problematic social behavior, then helping people to bridge those gaps should improve social behavior. A host of investigations have linked self-reported empathic feelings with reduced aggression (Richardson, Hammock, Smith, Gardner, & Signo, 1994), increased satisfaction with and longevity of romantic relationships (Franzoi, Davis, & Young, 1985; Simpson, Ickes, & Blackstone, 1996), and increased prosocial behavior (Batson, Early, & Salvarani, 1997). Negotiators who characteristically try to see things from the other person's point of view are more likely to reach optimal settlements (Bazerman & Neale, 1992), and salespeople who can accurately discern the thoughts and feelings of customers tend to make more sales (Comer & Drollinger, 1999). In these cases, it is possible that perspective taking improves social interaction because it reduces empathy gaps between people who are in different emotional states—between, for instance, those who are angry and the potential targets of their aggression, or between those who are suffering and those who might help.

To examine more directly whether potentially problematic behavior stemming from empathy gaps in emotional perspective taking might be improved by bridging those empathy gaps, we conducted an intervention with buyer's agents. As described earlier, buyer's agents exhibit costly behavior due to empathy gaps in emotional perspective taking regarding ownership. The dual judgment model of emotional perspective taking implies that if buyer's agents were better able to appreciate the impact of loss aversion on owners' selling prices, they would make higher, and therefore more personally profitable, offers. This logic led to a simple intervention: we gave buyers' agents a mug of their own to keep. We reasoned that buyers' agents who personally owned mugs would better be able to introspect about what it would feel like to own, and face the prospect of selling, a mug.

¹ We should acknowledge that although the empathy gap analysis of end of life decision making may explain discrepancies between predicted and actual preferences, empathy gaps do not imply which preference is correct. Unlike other contexts, the costs of empathy gap-induced behavior are asymmetric in end-of-life decision making. Invasive treatments that the patient does not desire may produce unnecessarily prolonged pain and suffering, which can be alleviated. But desired treatments that are not delivered may produce unnecessary death, which cannot be alleviated.

We tested this prediction in a study in which all participants were assigned to the role of buyer's agent and were told their offer would be randomly paired with the selling price of an owner from a previous study (Van Boven et al., 2000, Study 5). To give them a better appreciation of the impact of loss aversion on owners' valuation of their mugs, some agents were given their own mug. These agents were told that they could not actually sell their mug, but were asked to predict what their selling price would be if they were able to sell their mug. As anticipated, agents who were given their own mug predicted that they would require more money to sell their mug if they were owners (\$5.91) than did agents who did not own a mug (\$5.06). Agents who owned a mug also made higher offers (\$6.24) to owners than did agents who did not themselves own a mug (\$5.36), and they made higher profits. Furthermore, the effect of owning a mug or not on agents' predictions of what their own selling prices would be if they were an owner statistically mediated the effect of owning a mug or not on agents' actual offers to owners. These results suggest that having a sample of emotional experience (but not too much) can reduce empathy gaps and improve social behavior.



6. IMPLICATIONS FOR SOCIAL JUDGMENT

If empathy gaps in emotional perspective taking can lead people to misbehave toward others who are in different emotional situations, they can also lead people to misinterpret the behavior of other people who are in emotional situations. Such misinterpretation can, of course, further contribute to misbehavior. As Adam Smith expressed in his *Theory of Moral Sentiments* (1759/2000: 160), “We either approve or disapprove of the conduct of another man, according as we feel that, when we bring his case home to ourselves, we either can or cannot entirely sympathize with the sentiments and motives which directed it.”

Consistent with Smith's observation when people observe the behavior of other people who are in different emotional situations than themselves, they are likely to misattribute those people's behavior as stemming from their underlying, stable dispositions rather than from their transient, situation-induced emotional states (Gilbert & Malone, 1995; Ross, 1977). This is because people explain others' behavior in different emotional situations partly by comparing their observations of others' behavior with their estimates of how people would behave in those emotional situations, which are, in turn, based on their predictions of how they would behave in those situations.

6.1. Correspondent inferences

Among social psychology's central insights is that people tend to assume that other people share their perceptions, preferences, and behaviors. People therefore tend to attribute any discrepancies in reactions or preferences between themselves and others to dispositional qualities possessed by other people (Asch, 1946; Gilbert & Malone, 1995; Icheiser, 1949; Piaget, 1926; Ross, 1977; Ross & Ward, 1995, 1996). Someone who chooses differently from oneself is usually thought to do so for reasons related to their personality or character, as when the person who orders a small green salad for dinner rather than the large linguini with cream sauce ordered by oneself is seen as a "self-presentational eater" (Pliner & Chaiken, 1990). The tendency to make dispositional inferences about others' discrepant behavior occurs in part because people use their own behaviors as norms when explaining others' behavior (Balcetis & Dunning, 2008; Dunning & Cohen, 1992; Dunning & Hayes, 1996). As Ross and colleagues observed, "The intuitive psychologist judges those responses that differ from his own to be more revealing of the actor's stable dispositions than those responses which are similar to his own" (Ross et al., 1977, p. 280).

Extending this reasoning about the egocentric nature of social judgment, empathy gaps in emotional perspective taking imply that social judgment may be influenced both by people's current responses as well as by the responses people *predict* they would have in a different emotional situation. Because people mispredict those responses to emotional situations, they tend to infer that others' reactions to emotional situations are caused by disposition more than situationally aroused emotion. That is, empathy gaps exacerbate the correspondence bias, or fundamental attribution error, when observing actors in emotional situations.

In one test of this prediction participants underwent a painful ice water manipulation that hindered their performance on a memory test (Nordgren, van der Pligt, & van Harreveld, 2006). Later, participants indicated the extent to which the pain as well as various dispositional factors had affected their performance. Crucially, some participants were again exposed to the painful ice water while they made their attributions, whereas others made their attributions pain free. Participants exhibited a retrospective cold-hot empathy gap: those who made their attributions in a cold state (i.e., pain free) underestimated the influence pain had on their performance. Only participants who made their attributions while experiencing pain accurately assessed its influence on their own performance. Subsequent experiments

found that this same process occurred when evaluating the impulsive behavior of others. Those who made their evaluation in a cold state explained impulsive behavior in terms of the dispositional traits of the actor, whereas those who made their attributions while experiencing the specific emotion that may have contributed to the impulsive behavior were more inclined to acknowledge emotion's role in the process.

6.2. Social evaluations

Empathy gap-induced attributions have important consequences not only for people's explanations of others' behavior but also for how they evaluate that behavior. Impulsive behavior, for example, is a common source of stigma (Crandall, 1994; Crocker & Major, 1989). The stigmatization of impulsiveness is surprising given the prevalence of impulsive behavior. Many people struggle with impulsivity at some point in their lives, and there is ample evidence that impulsive behavior is as much a product of situational factors as a consequence of personal choice.

People may stigmatize impulsive behavior partly because they fail to appreciate how much emotional situations influence others' behavior. Because people underestimate the motivational power of cravings for sex, drugs, food, and so forth, they perceive these impulses to be readily controllable. People who act on (ostensibly) controllable impulses are therefore blameworthy. In line with this reasoning, participants in one study who were not hungry made less favorable evaluations of impulsive eating than did participants who were in a state of hunger (Nordgren, van der Pligt, & van Harreveld, 2007). Evaluations of others' impulsive behavior were thus moderated by whether people were currently experiencing relevant cravings themselves.

The impact of empathy gaps on social evaluation is anecdotally illustrated by a passage from a controversial article by Stanton Peele (1987), "A moral vision of addiction: How people's values determine whether they become and remain addicts." In contrast with generally accepted view of addiction as a disease, Peele sees addiction as a moral failing. Peele describes how he:

... sat with an older woman watching a program in which a woman who directed a prominent treatment program described how, as an alcoholic in denial, she drank alcoholically throughout her years as a parent, thus raising six children who all either became substance abusers or required therapy as children of an alcoholic. . . .The woman I was sitting with clucked about how insidious the disease was that it could make a mother treat her children this way. I turned to her and asked: "Do you really think you could ever have gotten drunk and ignored

your children, no matter how delightful you found drinking or how it relieved your tension or however you reacted to alcohol genetically?" Neither she nor I could imagine it, given her values as a parent.

Peele, of course, attributes their joint inability to imagine neglecting their children to their higher moral values. An alternative explanation is that neither of them was an alcoholic actively craving alcohol, and thus both exhibited a cold-hot empathy gap.

6.3. Denigrating disabilities

Empathy gaps often exacerbate negative social evaluation through insufficient emotional experience. But negative social evaluations may result from *misleading* emotional experience. Just as when people who have become desensitized to emotional stimuli underestimate the intensity of others' initial reaction to those stimuli (Campbell et al., 2013), people may exhibit biased social evaluations when they have experienced misleading emotions. We have studied these effects in evaluations of the disabled.

One popular approach to mitigate negative attitudes toward the disabled is "experience simulation," in which people experience a brief sample of the disability. In seeming consistency with the dual judgment model, experience simulations are thought to give people an empathic appreciation of the disabled (e.g., Robinson & Rosher, 2001; Waldington, Elliot, & Kirylo, 2008). In a classic study, people who simulated paraplegia by sitting in a wheelchair reported more positive evaluations of a wheelchair-using experimenter and expressed greater willingness to volunteer for a disability-related cause, seemingly reducing prejudice toward the disabled (Clare & Jeffery, 1972).

Experience simulations can be misleading, however (Silverman, Gwinn, & Van Boven, 2012). Such simulations highlight the initial stages of disabilities, not the long-term experience of having adapted to a disability (Riis et al., 2005). Experience simulations may therefore have unintended consequences of exacerbating rather than undermining some forms of prejudice. We have found that although simulating disability increases sympathy and liking for disabled individuals (Clare & Jeffery, 1972), it does so at the expense of perceived competence of the disabled (Silverman et al., 2012). Simulating blindness may give people information about what it is like to *become* blind, but not to what it is like to live with blindness. By neglecting to simulate how experiences change over time, such simulations give people a sample of what it is like to *become* disabled, not what it is like to *be* disabled.

6.4. Public policy evaluation

Social judgments produced by empathy gaps can have important implications for the formation of, and our reactions to, public policy. In general, empathy gaps in emotional perspective taking may lead people to endorse social policies that give limited weight to emotional factors. This is well illustrated by people's definition of what constitutes torture, and the policy implications of that definition.

Nearly all nations condemn the use of torture. Most legal statutes involving torture define it in terms of the severity of pain the act produces, such as the "infliction of *severe* physical or mental pain or suffering (United Nations Convention Against Torture, 1984)." A prominent question in the United States is whether various forms of "enhanced interrogation," such as water boarding, constitute torture (Wolfendale, 2009). Because policy makers do not subject themselves to interrogation before assessing its permissibility, those who evaluate interrogation policies must predominantly rely on their subjective intuitions about how painful the experience would be. And because these policy makers are almost never actively experiencing the pain produced by these techniques when they evaluate them, the straightforward implication of empathy gaps is that policy makers will be excessively tolerant of enhanced interrogation.

In a series of experiments designed to directly address this prediction, participants were asked to evaluate three common interrogation techniques: exposure to cold temperatures, sleep deprivation, and solitary confinement (Nordgren, Banas, & MacDonald, 2011). In each experiment, participants were presented with a vignette describing an enhanced interrogation tactic and were asked to assess the level of pain induced by, and the ethicality of, the tactic. Some participants made the judgments without actually experiencing the distress of the interrogation tactic, whereas other participants made the judgments while experiencing a mild version of the pain produced by the tactic (i.e., fatigue, social exclusion, or coldness). In each case, people were more likely to classify a particular interrogation technique as torture, and to say that the practice should be forbidden, when they themselves were experiencing a small degree of that particular pain. Because those who make torture policy rarely subject themselves to interrogation tactics before assessing their permissibility, this suggests that such policies are misinformed by a systematic tendency to underestimate the pain produced by different practices.



7. EMPATHY GAP MODERATORS

We have thus far emphasized empathy gaps in self-prediction as a source of empathy gaps in emotional perspective taking. But the dual judgment model implies that the magnitude of empathy gaps may be moderated by the adjustments people make to self-predictions when making social predictions. There are, broadly speaking, two ways that people adjust their self-predictions. First, people may believe that they are systematically different from other people, and may adjust their self-predictions to reflect this belief. For example, people might believe that they tend to experience embarrassment more than other people, and so estimate that however much they would personally have to be paid to tell a joke in front of an audience, others would have to be paid some constant amount less. Second, people may sometimes believe their own behavior is uninformative as a basis for judging others, such that they may give self-predictions little weight when generating social predictions. We consider each form of adjustment, perceived differences between self and others, and minimally weighing self-predictions when making social predictions.

7.1. Perceived self-other differences

In many situations, people believe that their emotional reactions are systematically different from other people's reactions. People believe, for example, that they are more prone to social anxiety and embarrassment than other people (Miller & McFarland, 1987; Prentice & Miller, 1996; Sabini, et al., 1999, 2001; Van Boven, 2000). When predicting how someone else would react to an embarrassing situation, the belief that others are less prone to embarrassment implies that embarrassing situations should influence others less than the self, which, in our studies, is what we have generally found (Van Boven et al., 2005). In the data summarized in our "Super Freak" dancing study, people estimated that others would have to be paid less to dance in front of an audience compared with the self. Of course, people who were themselves in an embarrassing situation expected that others would be more impacted by the embarrassing situation, requiring more money on average to dance (\$19) than did people who were not currently in an embarrassing situation (\$13), a main effect of emotional state. But even when people were themselves in a real and immediate embarrassing situation, they expected that the situation would have less impact on other people

than on themselves (\$19 vs. \$53, for other and self, respectively) than when people were faced with a purely hypothetical performance (\$13 vs. \$21, respectively).

This pattern indicates something significant about people's belief that they experience (socially appropriate) emotion more intensely than other people. It suggests that this belief is exacerbated when people are in the "heat of the moment," that is, when those emotions are directly and immediately experienced. Specifically, the difference between self-predictions and social predictions was larger when the embarrassing situation was real and immediate ($\$53 - \$19 = \$34$) was greater than when the embarrassing situation was hypothetical ($\$21 - \$13 = \$8$). More generally in studies across several naturally occurring emotional situations—the space shuttle *Columbia* explosion, the September 11 terrorist attacks, and Hurricane Katrina—people estimated that their own emotional reactions to those situations were more intense than others' emotional reactions (White & Van Boven, 2012). This estimated difference in emotional intensity between self and others dissipated over time, as people's emotions subsided.

Of course, people do not always believe that they are more reactive to emotional situations than other people. In some circumstances, people might believe that their emotions are relatively less intense. In particular, whereas people generally believe that they are relatively more prone to socially appropriate, desirable emotions (such as embarrassment and empathic distress), they believe that they are *less* prone to socially questionable, undesirable emotions (such as self-interest), suggesting that intuitive belief about emotional experience is shaped by motivated reasoning (Balcetis & Dunning, 2008; Epley & Dunning, 2000; Fetchenhauer & Dunning, 2009). Somewhat ironically, then, because empathy gaps occur when people underestimate the impact of emotional situations, people may be more accurate when predicting others' reactions to socially questionable, undesirable emotions such as self-interest and inappropriate sexual desire than when predicting their own reactions to those situations.

7.2. Differential weighting of self-predictions

People may sometimes reduce the weight assigned to self-predictions in emotional perspective taking. When people have little confidence that their self-predictions are relevant to social predictions, the effective weight they place on their self-predictions is likely to be smaller. Such a pattern is

illustrated by the study of people's predictions of the visceral states of hikers who were of similar or dissimilar political orientation (O'Brien & Ellsworth, 2012). Participants were asked to eat various salty snacks, either with water (quenched condition) or without water (parched condition), and then to predict how unpleasant thirst would be to hikers lost in the woods. When the hikers were of similar political orientation as participants themselves, those in the parched condition estimated the hikers would be more bothered by thirst (71%) than did hikers in the quenched condition (20%). When the hikers were of dissimilar political orientation, however, the effect of condition was reduced, and the estimates more regressive (37% and 25% for the parched and quenched conditions, respectively). Participants might have reasoned that although they knew whether thirst would be particularly unpleasant to them if they were in the dissimilar hiker's situation, they might have viewed those predictions as uninformative about the feelings of politically dissimilar hikers.

Although not dealing specifically with emotional perspective taking, several studies have found that increasing perceived similarity leads to greater social projection (Ames, 2004a). For instance, participants at an urban university were asked to predict the cinematic preferences of a group of suburban adolescent males and females (Ames, 2004b). When participants had previously focused on similarities between their group and the target group, they were more inclined to project their own cinematic preferences onto others. However, when participants had previously focused on differences between their group and the target group, they were more likely to use gender-based stereotypes to predict others' preferences, estimating, for instance, that females would prefer stereotypically female films (emphasizing personal growth and relationships), whereas males would prefer stereotypically male films (emphasizing action, adventure, and nudity).

Beyond perceived similarity, another factor that influences the weighting of self-predictions in emotional perspective taking is whether the target is a specific individual (e.g., "how likely is it that a particular person will. . .") versus a group of individuals (e.g., "what percentage of a group will. . .," Critcher & Dunning, 2013). When predicting specific individuals, people are more inclined to consider other people's internal emotional dynamics. When predicting groups of individuals, people are more inclined to consider social norms and group pressures and less inclined to consider internal emotional dynamic. For example, people tend to estimate that specific individualized others (e.g., the person sitting adjacent to you) will exhibit greater risk aversion than the average person (Hsee & Weber, 1997). These patterns

imply that self-predictions may receive greater weight when taking the emotional perspective of a specific, individuated person than of a group of individuals.

Finally, there may be circumstances in which people become even more egocentric, placing greater weight on self-predictions. When social contexts are highly evaluative, people's motivation to manage those evaluations can exacerbate egocentric social judgment, as they become increasingly focused on themselves (Vorauer, 2013). In these highly evaluative contexts, and possibly in contexts where low-power individuals take the perspective of higher-power individuals, people may place even greater weight on self-predictions, potentially exhibiting even larger empathy gaps. For example, a student trying to appeal a grade from a professor whose manuscript has just been declined for publication might be overly focused on his or her own current predicament (appealing a grade), which may both impede accurate self-predictions and increase self-weighting in taking the professor's perspective.

7.3. Experience and expertise

Another factor that might moderate the magnitude of empathy gaps in emotional perspective taking is people's perceived or actual experience, and hence expertise, in interacting with other people who are in different emotional situations from themselves. Over time and with experience, people may learn that they want different things when they are thirsty, anxious, and sexually aroused than when they are hungry, relaxed, and sexually uninterested. One might therefore expect that people would be particularly adept at learning to anticipate empathy gaps regarding relatively mundane emotional situations with which they have personal experience. However, all the evidence reviewed here suggests that extensive experience from everyday life does not cause people to avoid empathy gaps in emotional perspective taking.

Empathy gaps have been robustly observed in situations in which people should have a surfeit of experience. For example, by the time a person reaches college age, they should have had much experience both asking for help and being asked for help. Research suggests, however, that people's intuitions about their own helping are substantially off the mark; they seem not to recognize just how difficult it is to ask for help, and so interpret the lack of requests by other people as representing a lack of need rather than awkwardness of seeking assistance (Bohns & Flynn, 2010). Conversely, people also underestimate how difficult it is to turn down a request for help, not

appreciating how awkward and discomfoting it is to refuse requests for help. As a consequence, they underestimate just how willing others are to help, provided the request is made directly, often missing that rate by up to 50% (Flynn & Lake, 2008).

Consistent with the difficulty of learning to anticipate, recognize, and avoid empathy gaps in emotional perspective taking, we have found that costly empathy gaps persist even in the face of prompt, accurate, clear feedback (Van Boven, Loewenstein, & Dunning, 2003). We used the context of buyer's agents and owners. As in earlier studies, buyer's agents made an offer to purchase an owner's possession (coffee mugs or other trinkets), and owners stated their lowest selling prices. In the first stage of the study, owners and agents repeated this exercise four times, each with a randomly selected person in the other role. Agents' offers increased over time; owners' selling prices remained stable. Agents thus appeared to have learned to correct their empathy gap-based behavior.

In a second stage of the study, owners and agents were told that the market for that particular commodity was finished, but that a new market had opened for a new commodity. Owners were given a second, different possession (an object of similar retail value as the first object), and agents and owners were told they would repeat the buying and selling procedure, exactly as before. Notice that this situation maximizes the possibility that buyer's agents will learn to anticipate owners' relatively high selling prices, and behave accordingly. The feedback was prompt, clear, and accurate. And agents were financially motivated to learn about the owners' different emotional situation and adjust their behavior accordingly.

What happened in the first round with the new commodity? If agents had learned that owners tend to value their possession because owners are in a different emotional state, then agents' first offers for the new commodity should resemble their final offers for the first commodity. In fact, agents exhibited no evidence that they had learned anything about owners' behavior. Agents' first offers for the second commodity were again substantially lower than owners' selling prices. Agents thus started at "square one," transferring little or none of their learning about owners' value of one commodity to owners' value of a (superficially different) second commodity. This finding is consistent with other research indicating that even when people learn to change their behavior to produce desired outcomes, they have difficulty understanding the psychological processes that produce the desired outcome so that superficial situational changes eliminate their learning (Bassok, Wu, & Olseth, 1995).

7.4. Culture

Another potential moderator of empathy gaps may be the cultural context in which emotional perspective taking occurs. There are at least two reasons to believe that empathy gaps might be diminished in more collectivist cultures relative to individualist cultures. First, collectivist cultural contexts place less emphasis on autonomy and agency within the self, and consequently may be more sensitive to emotional contexts and their effects on attitudes, preferences, and behaviors (Heine, Lehman, Markus, & Kitayama, 1999; Markus & Kitayama, 1991). For example, collectivist individuals tend to avoid the bias of saying they are better than others, both in terms of the attributes they hold (Endo, Heine, & Lehman, 2000; Heine & Lehman, 1995, 1997a,b) and the behaviors they will likely display (Balcetis, Dunning, & Miller, 2008). To the degree that people are more accurate in their self-judgments, they should be more accurate in emotional perspective taking.

Second, individuals in collectivist cultures may be more practiced and adept at recognizing that others have mental states that are different from their own. Individuals in collectivist cultures may consequently execute the task of perspective taking with greater care, attention, and skill (Wu & Keysar, 2007). For example, collectivist help seekers seem to understand better the emotional dynamics of being asked for help and do not make the prediction errors that American participants do about how many other people they will have to ask before finding a volunteer to help them (Bohns et al., 2011).

Whether collectivists exhibit smaller empathy gaps than individualists is an open question. We believe that the dual judgment model captures the psychological framework of emotional perspective taking among people in various cultural contexts. It is plausible, however, that culture moderates both judgments within the model—self-judgment and adjustments to self-judgment. As such, the time is ripe for an exploration of cultural moderators of empathy gaps in emotional perspective taking.



8. RELATED THEORETICAL PERSPECTIVES

Our emphasis has been on understanding how people predict the attitudes, preferences, and behaviors of other people who are in different emotional situations. The dual judgment framework may also have broader theoretical relevance for perspective taking in nonemotional settings and for affective forecasting more generally.

8.1. Nonemotional perspective taking

People routinely exhibit errors when predicting others' reactions to different nonemotional situations, such as when those with privileged information estimate the reactions of those without privileged information. Consider teaching. Among teachers, a central challenge is judging how much (or how little) the students know about the subject at hand. Students poorly versed in twentieth century European history can hardly be expected to understand comparisons of the stability of governmental structures in the United States and Europe. Students who have little understanding of probability can hardly be expected to appreciate concepts such as the law of large numbers or statistical inference. Similar differences in knowledge and perspective taking occur when giving directions, writing papers, and having conversations, all of which require judgments about the knowledge of other people who are in different informational situations from the self (Keysar, 1993, 1994; Keysar & Barr, 2002; Keysar, Barr, Balin, & Brauner, 2000).

Perspective taking across different levels of information is complicated by the fact that what is clear in hindsight was often less clear in foresight (Fischhoff, 1975; Fischhoff & Beyth, 1975; Hawkins & Hastie, 1991). The hindsight bias is conceptually similar to empathy gaps in self-predictions. Just as people in nonemotional states underestimate the impact of emotional arousal on themselves, people who have acquired new information, such as the outcome of an uncertain event, underestimate how much that information alters their perceptions, judgments, and beliefs, so they think that the now-known outcome was more obvious in foresight than it was.

The dual judgment model of emotional perspective taking provides a useful framework for understanding nonemotional perspective taking. Specifically, the hindsight bias in self-judgment (a self-judgment) may produce an analogous bias in social judgment. That is, people with privileged information may overestimate how obvious that information is to other, uninformed, people partly because they overestimate how obvious that information would have been to them if they did have privileged access to it. Several studies have demonstrated such a "curse of knowledge" (Camerer, Loewenstein, & Weber, 1989; Keysar, Ginzel, & Bazerman, 1995; Nickerson, 1999, 2001; Nickerson, Baddeley, & Freeman, 1987). In one, participants who observed a negotiation and were told the motives of one of the negotiators (e.g., to be assertive or to be accommodating) overestimated how clear those motives were to the other negotiator

(Vorauer & Claude, 1998). In another study, participants who were told the “true” meaning of archaic English idioms (e.g., “the goose hangs high”) overestimated how clear the meaning would be to uninformed participants (Keysar & Bly, 1995). We suspect that in these examples, people also overestimated how clear their intentions and disambiguated meanings would have been to them if they were not “in the know,” and that these biased self-judgments contributed to biased social judgments.

8.2. Affective forecasting

Emotional perspective taking is, fundamentally, an act of affective forecasting. People in various situations are asked to predict their reactions to being in a different emotional situation. On the face of it, empathy gaps in emotional perspective taking may seem at odds with the impact bias in affective forecasting (Gilbert & Wilson, 2007; Wilson & Gilbert, 2003). Whereas empathy gaps occur when people *underestimate* the impact of emotional situations on their attitudes, preferences, and behaviors, the impact bias occurs when people *overestimate* the impact of emotional situations on the intensity of their self-reported feelings.

We think that the contradiction between the impact bias and empathy gaps is more apparent than real. The two versions of affective forecasting, empathy gaps and the impact bias, emphasize different types of reactions to emotional situations (Van Boven & Kane, 2006). The impact bias occurs largely because people underestimate how much emotional situations that are associated with self-relevant outcomes evoke coping processes associated with a “psychological immune system,” dispelling negative feelings, often by “normalizing” the emotional event (Wilson & Gilbert, 2003). Empathy gaps occur largely because people underestimate how much emotional situations that are associated with distinct drives evoke attitudes, preferences, and behaviors that are aimed at reducing those drives (Loewenstein, 1996).

Understood this way, the impact bias and empathy gaps both reflect an underestimation of people’s reactions to emotional situations. Empathy gaps and the impact bias arise from failures to anticipate active coping reactions to emotional situations. Often, both processes may aid and abet each other—the intensity of emotions being reduced through “normalization” of emotional events, and directly diminishing emotions through changed preferences and behavioral inclinations. Faced with an embarrassing public performance, for example, people can dispel unpleasant feelings by

trivializing the situation (as a silly experiment) or by opting out of the situation (choosing not to perform).

Whether one observes an impact bias or empathy gaps may depend as much on what is measured (self-reported feelings in the case of impact bias, or attitudes, preferences, and behaviors in the case of empathy gaps). Which bias one observes may also depend on which strategy is more feasible in a particular context. Some situations might be more easily normalized via psychological reinterpretation than others, such as negative interpersonal feedback. Other situations may lend themselves more readily to behavioral escape, such as opting out of an embarrassing public performance or giving in to a craving.

Moreover, recent evidence suggests that when emotion-inducing situations naturally draw attention to emotion-amplifying features, people seem to underestimate rather than overestimate the intensity of emotions they would experience. People who have recently ended a romantic relationship, for example, underestimate how badly they will feel on Valentine's Day, which naturally draws attention to their lack of a romantic relationship (Lench, Safer, & Levine, 2011). When people choose not to gamble, they underestimate how displeased they would feel when finding out that they would have won (and thus made a poor choice), and they underestimate how pleased they would feel when finding out that they would have lost (and thus made a wise choice), because they underestimate how much their attention would be drawn to the counterfactual outcome (Andrade & Van Boven, 2010). It may be, then, that both empathy gaps and the impact bias reflect failure to anticipate how emotional situations influence attention. When attention is drawn to emotion-enhancing attributes, such as people evaluating one's public performance, people exhibit empathy gaps. When attention is drawn to emotion-reducing attributes, such as the mundane experiences and hassles that inevitably consume daily life, they exhibit the impact bias.



9. CONCLUSIONS

We have endeavored to show that biases and errors in people's attempts to imagine themselves in different emotion-inducing situations contribute to egocentric errors in interpersonal emotional perspective taking. That is, egocentric emotional judgment occurs in part because people lack emotional insight into themselves. Because people exhibit empathy gaps when estimating how they would react to being in a different

emotional situation, they exhibit corresponding empathy gaps when estimating the reactions of other people in a different emotional situation. Appreciation of this view has important implications for both personal and interpersonal behavior.

Taoist philosopher Lao Tzu wrote, “He who knows others is wise; he who knows himself is enlightened.” But our studies show that the wisdom of social knowledge is difficult to attain without the enlightenment of self-knowledge. That fact that enlightened self-judgment is central to wise social judgment, we believe, is a fundamental psychological fact.

ACKNOWLEDGMENTS

This work was supported by the National Science Foundation (grants 0552120, 0745806, 1049125, 1124486), Social Sciences and Humanities Research Council, the Center for Integrated Study of the Human Dimensions of Global Change at Carnegie Mellon University, and National Institute of Mental Health Grant RO1 56072.

REFERENCES

- Ames, D. (2004a). Inside the mind-reader’s toolkit: Projection and stereotyping in mental state inference. *Journal of Personality and Social Psychology*, *87*, 340–353.
- Ames, D. (2004b). Strategies for social inference: A similarity contingency model of projection and stereotyping in attribute prevalence estimates. *Journal of Personality and Social Psychology*, *87*, 573–585.
- Andrade, E., & Van Boven, L. (2010). Feelings not foregone: Underestimating affective reactions to what does not happen. *Psychological Science*, *21*, 706–711.
- Ariely, D., & Loewenstein, G. (2006). The heat of the moment: The effect of sexual arousal on sexual decision making. *Journal of Behavioral Decision Making*, *19*, 87–98.
- Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology*, *41*, 258–290.
- Ayduk, O., & Kross, E. (2008). Enhancing the pace of recovery: Self-distanced analysis of negative experiences reduces blood pressure reactivity. *Psychological Science*, *19*, 229–231.
- Baergen, R. (1995). Revising the substituted judgment standard. *Journal of Clinical Ethics*, *6*, 30–38.
- Balcetis, E., & Dunning, D. (2008). A mile in moccasins: How situational experience reduces dispositionalism in social judgment. *Personality and Social Psychology Bulletin*, *34*, 102–114.
- Balcetis, E., Dunning, D., & Miller, R. L. (2008). Do collectivists know themselves better than individualists? Cross-cultural studies of the holier than thou phenomenon. *Journal of Personality and Social Psychology*, *95*, 1252–1267. <http://dx.doi.org/10.1037/a0013195>.
- Bassok, M., Wu, L. L., & Olseth, K. L. (1995). Judging a book by its cover: Interpretive effects of content on problem-solving transfer. *Memory and Cognition*, *23*, 354–367.
- Batson, C. D., Early, S., & Salvarani, G. (1997). Perspective taking: Imagining how another feels versus imagining how you would feel. *Personality and Social Psychology Bulletin*, *23*, 751–758.
- Bazerman, M. H., & Neale, M. A. (1992). *Negotiating rationally*. New York: John Wiley & Sons.
- Beggan, J. K. (1992). On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology*, *62*, 229–237.

- Biss, R. K., & Hasher, L. (2011). Delighted and distracted: Positive affect increasing priming for irrelevant information. *Emotion, 11*, 1474–1478.
- Bohns, V., & Flynn, F. J. (2010). “Why didn’t you just ask?” Underestimating the discomfort of help-seeking. *Journal of Experimental Social Psychology, 46*, 402–409.
- Bohns, V., Handgraaf, M. J. J., Sun, J. M., Aaldering, H., Mao, C. G., & Logg, J. (2011). Are social prediction errors universal? Predicting compliance with a direct request across cultures. *Journal of Experimental Social Psychology, 47*, 676–680. <http://dx.doi.org/10.1016/j.jesp.2011.01.001>.
- Bouhuys, A. L., Bloem, G. M., & Grootius, T. G. G. (1995). Induction of depressed and elated mood by music influences the perception of facial emotional expressions in healthy subjects. *Journal of Affective Disorders, 33*, 215–226.
- Bryce, C. L., Loewenstein, G., Arnold, R. M., Schooler, J. W., Wax, R. S., & Angus, D. C. (2004). Quality of death: Assessing the importance placed on end-of-life treatment in the intensive-care unit. *Medical Care, 42*, 423–431.
- Buck, R. (1999). The biological affects: A typology. *Psychological Review, 106*, 301–336.
- Bullington, J. C. (1990). Mood congruent memory: A replication of symmetrical effects for both positive and negative moods. *Journal of Social Behavior & Personality, 5*, 123–134.
- Calvo, M. G., & Castillo, M. D. (1997). Mood-congruent bias in interpretation of ambiguity: Strategic processes and temporary activation. *Quarterly Journal of Experimental Psychology Section A—Human Experimental Psychology, 50*, 163–182. <http://dx.doi.org/10.1080/027249897392279>.
- Camerer, C., Loewenstein, G., & Weber, M. (1989). The curse of knowledge in economic settings: An experimental analysis. *Journal of Political Economy, 97*, 1232–1254.
- Campbell, T., O’Brien, E., Van Boven, L., Schwarz, N., & Ubel, P. (2013). *Emotional over-exposure: Desensitization blindness in emotional perspective taking*. Unpublished manuscript, Duke University.
- Carmon, Z., & Ariely, D. (2000). Focusing on the forgone: How value can appear so different to buyers and sellers. *Journal of Consumer Research, 27*, 360–370.
- Chochinov, H. M. (1999). Will to live in the terminally ill. *The Lancet, 354*, 816–819.
- Christensen-Szalanski, J. J. (1984). Discount functions and the measurement of patients’ values: Women’s decisions during childbirth. *Medical Decision Making, 4*, 47–58.
- Clore, G. L., & Jeffery, K. M. (1972). Emotional role playing, attitude change, and attraction toward a disabled person. *Journal of Personality and Social Psychology, 23*, 105–111.
- Cole, S. L., Balcetis, E., & Dunning, D. (2013). Affective signals of threat produce perceived proximity. *Psychological Science, 15*, 34–40.
- Comer, L. B., & Drollinger, T. (1999). Active empathetic listening and selling success: A conceptual framework. *Journal of Personal Selling and Sales Management, 19*, 15–29.
- Cosmides, L., & Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis, & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (pp. 91–115). (2nd ed.). New York: Guilford.
- Cosmides, L., & Tooby, J. (2004). Evolutionary psychology and the emotions. In M. Lewis, & J. M. Haviland-Jones (Eds.), *Handbook of emotions*. (2nd ed.). New York: Guilford.
- Cramer, L., & Antonides, G. (2011). Endowment effect for hedonic and utilitarian food products. *Food Quality and Preference, 22*, 3–10.
- Crandall, C. S. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology, 66*, 882.
- Critcher, C. R., & Dunning, D. (2013). Predicting persons’ goodness versus a person’s goodness: Forecasts diverge for populations versus individuals. *Journal of Personality and Social Psychology, 104*, 28–44.
- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review, 96*, 608.

- Cronbach, L. J. (1955). Processes affecting scores on “understanding others” and “assumed similarity”. *Psychological Bulletin*, *52*, 177–193.
- Davis, M. H., Soderlund, T., Cole, J., Gadol, E., Kute, M., Myers, M., et al. (2004). Cognitions associated with attempts to empathize: How do we imagine the perspective of another? *Personality and Social Psychology Bulletin*, *30*, 1625–1635.
- Dawes, R. M. (1989). Statistical criteria for establishing a truly false consensus effect. *Journal of Experimental Social Psychology*, *25*, 1–17.
- Dawes, R. M. (1990). The potential nonfalsity of the false consensus effect. In R. M. Hogarth (Ed.), *Insights in decision making: A tribute to Hillel J. Einhorn* (pp. 179–199). Chicago, IL: University of Chicago Press.
- Dennett, D. (1989). *The intentional stance*. Cambridge, MA: MIT Press.
- Derryberry, D. (1993). Attentional consequences of outcome-related motivational states: Congruent, incongruent, and focusing effects. *Motivation and Emotion*, *17*, 65–89.
- Derryberry, D., & Reed, M. A. (1998). Anxiety and attentional focusing: Trait, state, and hemispheric influences. *Personality and Individual Differences*, *25*, 745–761.
- Derryberry, D., & Tucker, D. M. (1994). Motivating the focus of attention. In P. M. Niedenthal, & S. Kitayama (Eds.), *The heart's eye: Emotional influences on perception and attention* (pp. 167–196). San Diego, CA: Academic Press.
- Dhar, R., & Wertenbroch, K. (2000). Consumer choice between hedonic and utilitarian goods. *Journal of Marketing Research*, *37*, 60–71.
- Ditto, P. H. (2006). What would Terri want? On the psychological challenges of surrogate decision making. *Death Studies*, *30*, 135–146.
- Ditto, P. H., & Hawkins, N. (2005). Advance directives and cancer decision making near the end of life. *Health Psychology*, *24*, S63–S70.
- Dunning, D., & Cohen, G. L. (1992). Egocentric definitions of traits and abilities in social judgment. *Journal of Personality & Social Psychology*, *63*, 341–355.
- Dunning, D., & Hayes, A. F. (1996). Evidence for egocentric comparison in social judgment. *Journal of Personality & Social Psychology*, *71*, 213–229.
- Endo, Y., Heine, S. J., & Lehman, D. R. (2000). Culture and positive illusions in close relationships: How my relationships are better than yours. *Personality and Social Psychology Bulletin*, *26*, 1571–1586. <http://dx.doi.org/10.1177/01461672002612011>.
- Epley, N., & Dunning, D. (2000). Feeling “holier than thou”: Are self-serving assessments produced by errors in self- or social prediction? *Journal of Personality & Social Psychology*, *79*, 861–875.
- Epley, N., & Gilovich, T. (2004). Are adjustments insufficient? *Personality and Social Psychology Bulletin*, *30*, 447–460.
- Epley, N., Keysar, B., Van Boven, L., & Gilovich, T. (2004). Perspective taking as egocentric anchoring and adjustment. *Journal of Personality and Social Psychology*, *87*, 312–326.
- Epley, N., & Waytz, A. (2010). Mind perception. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology*, Vol. 5, (pp. 498–541). New York: Wiley.
- Fetchenhauer, D., & Dunning, D. (2009). Do people trust too much or too little? *Journal of Economic Psychology*, *30*, 263–276.
- Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making*, *13*, 1–17.
- Fischhoff, B. (1975). Hindsight is not equal to foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance*, *1*, 288–299.
- Fischhoff, B., & Beyth, R. (1975). “I knew it would happen”—Remembered probabilities of once-future things. *Organizational Behavior and Human Performance*, *13*, 1–16.
- Flynn, F. J., & Lake, V. (2008). “If you need help, just ask”: Underestimating compliance with direct requests for help. *Journal of Personality and Social Psychology*, *95*, 128–143.

- Forgas, J. P., & East, R. (2008). How real is that smile? Mood effects on accepting or rejecting the veracity of emotional facial expressions. *Journal of Nonverbal Behavior*, *32*, 157–170.
- Fox, E., Russo, R., & Bowles, R. (2001). Do threatening stimuli draw or hold visual attention in subclinical anxiety? *Journal of Experimental Psychology: General*, *130*, 681–700.
- Fox, E., Russo, R., & Dutton, K. (2002). Attentional bias for threat: Evidence for delayed disengagement from emotional faces. *Cognition and Emotion*, *16*, 355–379.
- Franzoi, S. L., Davis, M. H., & Young, R. D. (1985). The effects of private self-consciousness and perspective taking on satisfaction in close relationships. *Journal of Personality and Social Psychology*, *48*, 1584–1594.
- Frederick, S., & Loewenstein, G. (1999). Hedonic adaptation. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 302–329). New York: Russell Sage Foundation.
- Frijda, N. H. (1986). *The emotions*. Cambridge, England: Cambridge University Press.
- Gable, P. A., & Harmon-Jones, E. (2011). Attentional consequences of pregoal and postgoal positive affect. *Emotion*, *11*, 1358–1367.
- Gard, D. E., Gard, M. G., Kring, A. M., & John, O. P. (2006). Anticipatory and consummatory components of the experience of pleasure: A scale development study. *Journal of Research in Personality*, *40*, 1086–1102. <http://dx.doi.org/10.1016/j.jrp.2005.11.001>.
- Gilbert, D. T., Gill, M. J., & Wilson, T. D. (2002). The future is now: Temporal correction in affective forecasting. *Organizational Behavior and Human Decision Processes*, *88*, 430–444.
- Gilbert, D. T., & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, *117*, 21–38.
- Gilbert, D. T., & Wilson, T. D. (2007). Propection: Experiencing the future. *Science*, *317*, 1352–1354.
- Gilovich, T. (1990). Differential construal and the false consensus effect. *Journal of Personality and Social Psychology*, *59*, 623–634.
- Giordano, L. A., Bickel, W. K., Loewenstein, G., Jacobs, E. A., Marsch, L., & Badger, G. J. (2002). Mild opioid deprivation increases the degree that opioid-dependent outpatients discount delayed heroin and money. *Psychopharmacology*, *163*, 174–182.
- Goldman, A. I. (1992). In defense of the simulation theory. *Mind & Language*, *7*, 104–119.
- Goldman, A. I. (1993). The psychology of folk psychology. *Behavioral and Brain Sciences*, *16*, 15–28.
- Griffin, D. W., & Ross, L. (1991). Subjective construal, social inference, and human misunderstanding. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 24, (pp. 319–359). San Diego: Academic Press.
- Groves, P., Glanzman, D., Patterson, M., & Thompson, R. (1970). Excitability of cutaneous afferent terminals during habituation and sensitization in acute spinal cat. *Brain Research*, *18*, 388.
- Hawkins, S. A., & Hastie, R. (1991). Hindsight: Biased judgments of past events after the outcomes are known. *Psychological Bulletin*, *107*, 311–327.
- Heine, S. J., & Lehman, D. R. (1995). Cultural variation in unrealistic optimism: Does the West feel more vulnerable than the East? *Journal of Personality and Social Psychology*, *68*, 595.
- Heine, S. J., & Lehman, D. R. (1997a). The cultural construction of self-enhancement: An examination of group-serving biases. *Journal of Personality and Social Psychology*, *72*, 1268–1283. <http://dx.doi.org/10.1037//0022-3514.72.6.1268>.
- Heine, S. J., & Lehman, D. R. (1997b). Culture, dissonance, and self-affirmation. *Personality and Social Psychology Bulletin*, *23*, 389–400. <http://dx.doi.org/10.1177/0146167297234005>.
- Heine, S. J., Lehman, D. R., Markus, H. R., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review*, *106*, 766–794. <http://dx.doi.org/10.1037//0033-295x.106.4.766>.

- Hoch, S. J. (1987). Perceived consensus and predictive accuracy: The pros and cons of projection. *Journal of Personality and Social Psychology*, *53*, 221–234.
- Hoch, S. J. (1988). Who do we know: Predicting the interests and opinions of the American consumer. *Journal of Consumer Research*, *15*, 315–324.
- Hodges, S. D., Kiel, K. J., Kramer, A. D. I., Veach, D., & Villaneuva, B. R. (2010). Giving birth to empathy: The effects of similar experience on empathic accuracy, empathic concern, and perceived empathy. *Personality and Social Psychology Bulletin*, *36*, 398–409.
- Hodson, G., Rush, J., & MacInnis, C. C. (2010). A joke is just a joke (except when it isn't): Cavalier humor beliefs facilitate the expression of group dominance motives. *Journal of Personality and Social Psychology*, *99*, 660.
- Hsee, C. K., & Weber, E. U. (1997). A fundamental prediction error: Self-others discrepancies in risk preference. *Journal of Experimental Social Psychology: General*, *126*, 45–53.
- Huber, M., Van Boven, L., McGraw, A. P., & Johnson-Graham, L. (2011). Whom to help? Immediacy bias in judgments and decisions about humanitarian aid. *Organizational Behavior and Human Decision Processes*, *115*, 283–293.
- Hume, D. (1739/2003). *A treatise of human nature*. New York: Dover Publications.
- Icheiser, G. (1949). Misunderstandings in human relations: A study in false social perception. *American Journal of Sociology*, *55*, 1–70.
- Igou, E. R. (2004). Lay theories in affective forecasting: The progression of affect. *Journal of Experimental Social Psychology*, *40*, 528–534.
- Johnson, E. J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology*, *45*, 20–31.
- Kahneman, D., Knetsch, J., & Thaler, R. (1990). Experimental tests of the endowment effect and the Coase theorem. *Journal of Political Economy*, *98*, 1325–1348.
- Kahneman, D., Knetsch, J., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and the status quo bias. *Journal of Economic Perspectives*, *5*, 193–206.
- Kahneman, D., Knetsch, J., & Thaler, R. (1993). The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, *5*, 193–206.
- Kahneman, D., & Snell, J. (1992). Predicting a changing taste: Do people know what they will like? *Journal of Behavioral Decision Making*, *5*, 187–200.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*, 263–291.
- Katz, C., & Allport, F. (1931). *Students' attitudes*. Syracuse, NY: Craftsman Press.
- Kelley, H. H., & Stahelski, A. J. (1970). Social interaction basis of cooperators' and competitors' beliefs about others. *Journal of Personality and Social Psychology*, *16*, 66–91.
- Keysar, B. (1993). Common sense and adult theory of communication. *Behavioral and Brain Sciences*, *16*, 54.
- Keysar, B. (1994). The illusory transparency of intention: Linguistic perspective taking in text. *Cognitive Psychology*, *23*, 165–208.
- Keysar, B., & Barr, D. J. (2002). Self-anchoring in conversation: Why language users don't do what they "should". In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 150–166). Cambridge: Cambridge University Press.
- Keysar, B., Barr, D. J., Balin, J. A., & Brauner, J. S. (2000). Taking perspective in conversation: The role of mutual knowledge in comprehension. *Psychological Science*, *11*, 32–39.
- Keysar, B., & Bly, B. (1995). Intuitions of the transparency of idioms: Can one keep a secret by spilling the beans? *Journal of Memory and Language*, *34*, 89–109.
- Keysar, B., Ginzler, L. E., & Bazerman, M. H. (1995). States of affairs and states of mind: The effects of knowledge on beliefs. *Organizational Behavior and Human Decision Processes*, *64*, 283–293.

- Knetsch, J. (1989). The endowment effect and evidence of nonreversible indifference curves. *The American Economic Review*, *79*, 1277–1284.
- Kross, E., Ayduk, O., & Michel, W. (2005). When asking “why” does not hurt. *Psychological Science*, *16*, 709–715.
- Krueger, J. (1998). On the perception of social consensus. In M. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 30, (pp. 163–240). San Diego, CA: Academic Press.
- Krueger, J. (2003). Return of the ego—Self reference information as a filter for social prediction: Comment on Karniol. *Psychological Review*, *110*, 564–580.
- Krueger, J., & Clement, R. W. (1997). Estimates of social consensus by majorities and minorities: The case for social projection. *Personality and Social Psychology Review*, *1*, 299–313.
- Latané, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help?* Englewood Cliffs, NJ: Prentice Hall.
- Leary, M. R., & Dobbins, S. E. (1983). Social anxiety, sexual behavior, and contraceptive use. *Journal of Personality and Social Psychology*, *45*, 1347–1354.
- Ledoux, J. (1996). *The emotional brain*. New York: Simon & Schuster.
- Lench, H. C., Safer, M. A., & Levine, L. J. (2011). Focalism and the underestimation of future emotion: When it's worse than imagined. *Emotion*, *11*, 278–285.
- Lerner, J., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, *81*, 146–159.
- Lerner, J., Small, D. A., & Loewenstein, G. (2004). Heart strings and purse strings: Carryover effects of emotions on economic decisions. *Psychological Science*, *15*, 337–341.
- Levine, L. J. (1997). Reconstructing memory for emotion. *Journal of Experimental Psychology: General*, *126*, 165–177.
- Levine, L. J., & Pizarro, D. A. (2004). Emotion and memory research: A grumpy overview. *Social Cognition*, *22*, 530–554.
- Lewin, K. (1951). *Field theory in social science*. New York: Harper.
- Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational Behavior and Human Decision Processes*, *65*, 272–292.
- Loewenstein, G. (1999). A visceral account of addiction. In J. Elster, & O. J. Skog (Eds.), *Getting hooked: Rationality and addiction*. Cambridge, England: Cambridge University Press.
- Loewenstein, G. (2005). Hot-cold empathy gaps in medical decision making. *Health Psychology*, *24*, S49–S56.
- Loewenstein, G. (2007). Defining affect (commentary on Klaus Scherer's “What is an Emotion?”). *Social Science Information*, *46*, 405–410.
- Loewenstein, G., & Adler, D. (1995). A bias in the prediction of tastes. *The Economic Journal*, *105*, 929–937.
- Loewenstein, G., Nagin, D., & Paternoster, R. (1997). The effect of sexual arousal on predictions of sexual forcefulness. *Journal of Crime and Delinquency*, *32*, 443–473.
- Loewenstein, G., O'Donoghue, T., & Rabin, M. (2003). Projection bias in predicting future utility. *Quarterly Journal of Economics*, *118*, 1209–1248.
- Loewenstein, G., & Schkade, D. (1999). Wouldn't it be nice? Predicting future feelings. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well being: The foundation of hedonic psychology* (pp. 85–108). New York: Russell Sage.
- Marks, G., & Miller, N. (1987). Ten years of research on the false consensus effect: An empirical and theoretical review. *Psychological Bulletin*, *102*, 72–90.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*, 224.
- Mayer, J. D., Gaschke, Y. N., Baverman, D. L., & Evans, T. W. (1992). Mood-congruent judgment is a general effect. *Journal of Personality and Social Psychology*, *63*, 119–132.
- Miller, D. T., & McFarland, C. (1987). Pluralistic ignorance: When similarity is interpreted as dissimilarity. *Journal of Personality and Social Psychology*, *53*, 298–305.

- Mintz, E. (1956). An example of assimilative projection. *Journal of Abnormal and Social Psychology*, *52*, 270–280.
- Nelson, L. D., & Meyvis, T. (2008). Interrupted consumption: Disrupting adaptation to hedonic experiences. *Journal of Marketing Research*, *45*, 654–664. <http://dx.doi.org/10.1509/jmkr.45.6.654>.
- Nelson, L. D., Meyvis, T., & Galak, J. (2009). Enhancing the television-viewing experience through commercial interruptions. *Journal of Consumer Research*, *36*, 160–172. <http://dx.doi.org/10.1086/597030>.
- Nickerson, R. S. (1999). How we know—And sometimes misjudge—What others know: Imputing one's own knowledge to others. *Psychological Bulletin*, *125*, 737–759.
- Nickerson, R. S. (2001). The projective way of knowing: A useful heuristic that sometimes misleads. *Current Directions in Psychological Science*, *10*, 168–172.
- Nickerson, R. S., Baddeley, A., & Freeman, B. (1987). Are people's estimates of what other people know influenced by what they themselves know? *Acta Psychologica*, *64*, 245–259.
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, *84*, 231–259.
- Nordgren, L. F., Banas, K., & MacDonald, G. (2011). Empathy gaps for social pain: Why people underestimate the pain of social suffering. *Journal of Personality and Social Psychology*, *100*, 120–128.
- Nordgren, L. F., van der Pligt, J., & van Harreveld, F. (2006). Visceral drives in retrospect. *Psychological Science*, *17*, 635–640.
- Nordgren, L. F., van der Pligt, J., & van Harreveld, F. (2007). Evaluating Eve: Visceral states influence evaluation of impulsive behavior. *Journal of Personality and Social Psychology*, *93*, 75–84.
- O'Brien, E., & Ellsworth, P. (2012). More than skin deep: Visceral states are not projected onto dissimilar others. *Psychological Science*, *23*, 391–396.
- Peele, S. (1987). A moral vision of addiction. *Journal of Drug Issues*, *17*, 187–215.
- Piaget, J. (1926). *The language and thought of the child*. London: Routledge and Kegan Paul.
- Pliner, P., & Chaiken, S. (1990). Eating, social motives, and self-presentation in women and men. *Journal of Experimental Psychology*, *26*, 240–254.
- Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences*, *1*, 515–526.
- Prentice, D. A., & Miller, D. T. (1996). Pluralistic ignorance and the perpetuation of social norms by unwitting actors. In M. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 28, (pp. 161–209). San Diego, CA: Academic Press.
- Read, D., & van Leeuwen, B. (1998). Time and desire: The effects of anticipated and experienced hunger and delay to consumption on the choice between healthy and unhealthy snack food. *Organizational Behavior and Human Decision Processes*, *76*, 189–205.
- Richardson, D. R., Hammock, G. S., Smith, S. M., Gardner, W. G., & Signo, S. (1994). Empathy as a cognitive inhibitor of interpersonal aggression. *Aggressive Behavior*, *20*, 275–289.
- Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., & Ubel, P. A. (2005). Ignorance of hedonic adaptation to hemodialysis: A study using ecological momentary assessment. *Journal of Experimental Psychology: General*, *134*, 3–9.
- Robinson, S., & Rosher, R. (2001). Effect of the “half-full aging simulation experience” on medical students' attitudes. *Gerontology and Geriatrics Education*, *21*, 3–12.
- Roseman, I. J., Wiest, C., & Swartz, T. S. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology*, *67*, 206–221.
- Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution process. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 10, (pp. 174–221). New York: Academic Press.

- Ross, L., Greene, D., & House, P. (1977). The “false-consensus effect:” An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology, 13*, 279–301.
- Ross, L., & Ward, A. (1995). Psychological barriers to dispute resolution. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 27, (pp. 255–304). San Diego, CA: Academic Press.
- Ross, L., & Ward, A. (1996). Naive realism in everyday life: Implications for social conflict and misunderstanding. In E. S. Reed & E. Turiel et al. (Eds.), *Values and knowledge* (pp. 103–135). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Rottenstreich, Y., & Hsee, C. K. (2001). Money, kisses, and electric shocks: On the affective psychology of risk. *Psychological Science, 12*, 185–190.
- Russo, R., Fox, E., Bellinger, L., & Nguyen-Van-Tam, D. P. (2001). Mood-congruent free recall bias in anxiety. *Cognition & Emotion, 15*, 419–433. <http://dx.doi.org/10.1080/0269993004200259>.
- Rusting, C. L. (1999). Interactive effects of personality and mood on emotion-congruent memory and judgment. *Journal of Personality and Social Psychology, 77*, 1073–1086. <http://dx.doi.org/10.1037//0022-3514.77.5.1073>.
- Sabini, J., Cosmas, K., Stepmann, M., & Stein, J. (1999). Underestimates and truly false consensus effects in estimates of embarrassment and other emotions. *Basic and Applied Social Psychology, 21*, 233–241.
- Sabini, J., Seipmann, M., & Stein, J. (2001). The really fundamental attribution error in social psychological research. *Psychological Inquiry, 12*, 1–15.
- Sayette, M. A., Loewenstein, G., Griffin, K. M., & Black, J. J. (2008). Exploring the cold-to-hot empathy gap in smokers. *Psychological Science, 19*, 926–932.
- Sherif, M., & Hovland, D. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. New Haven, CT: Yale University Press.
- Silverman, A., Gwinn, J., & Van Boven, L. (2012). *Stumbling in their shoes: Negative effects on simulating disability on disability attitudes*. Paper presented at the Society for Personality and Social Psychology, San Diego, CA.
- Simpson, J. A., Ickes, W., & Blackstone, T. (1996). When the head protects the heart: Empathetic accuracy in dating relationships. *Journal of Personality and Social Psychology, 69*, 629–641.
- Slovic, P., Finucane, M., Peters, E., & MacGregor, D. (2002). The affect heuristic. In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 397–420). New York: Cambridge University Press.
- Smith, A. (1759/2011). *The theory of moral sentiments*. New York: Empire Books.
- Thaler, R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior and Organization, 1*, 39–60.
- Tucker, D. M., & Derryberry, D. (1992). Motivated attention: Anxiety and the frontal executive functions. *Neuropsychiatry, Neuropsychology, and Behavioral Neurology, 5*, 233–252.
- Van Boven, L. (2000). Pluralistic ignorance and political correctness: The case of affirmative action. *Political Psychology, 21*, 267–276.
- Van Boven, L., Dunning, D., & Loewenstein, G. (2000). Egocentric empathy gaps between owners and buyers: Misperceptions of the endowment effect. *Journal of Personality and Social Psychology, 79*, 66–76.
- Van Boven, L., & Kane, J. (2006). Predicting feelings versus choices. In L. J. Sanna & E. C. Chang (Eds.), *Judgments over time: The interplay of thoughts, feelings, and behaviors* (pp. 67–81). Cary, NC: Oxford University Press.
- Van Boven, L., Kane, J., McGraw, A. P., & Dale, J. (2010). Feeling close: Emotional intensity reduces perceived psychological distance. *Journal of Personality and Social Psychology, 98*, 872–885.

- Van Boven, L., & Loewenstein, G. (2003). Social projection of transient drive states. *Personality and Social Psychology Bulletin*, *29*, 1159–1168.
- Van Boven, L., & Loewenstein, G. (2005a). Cross-situational projection. In M. D. Alicke, D. Dunning, & J. Krueger (Eds.), *The self in social perception* (pp. 43–64). New York: Psychology Press.
- Van Boven, L., & Loewenstein, G. (2005b). Empathy gaps in emotional perspective taking. In B. Malle & S. Hodges (Eds.), *Other minds* (pp. 284–297). New York: Guilford Press.
- Van Boven, L., Loewenstein, G., & Dunning, D. (2003). Mispredicting the endowment effect: Underestimation of owners' selling prices buy buyer's agents. *Journal of Economic Behavior and Organization*, *51*, 351–365.
- Van Boven, L., Loewenstein, G., & Dunning, D. (2005). The illusion of courage in social predictions: Underestimating the impact of fear of embarrassment on other people. *Organizational Behavior and Human Decision Processes*, *96*, 130–141.
- Van Boven, L., Loewenstein, G., Welch, N., & Dunning, D. (2012). The illusion of courage in self-predictions: Mispredicting one's own behavior in embarrassing situations. *Journal of Behavioral Decision Making*, *25*, 1–12.
- Van Boven, L., White, K., & Huber, M. (2009). Immediacy bias in emotion perception: Current emotions seem more intense than previous emotions. *Journal of Experimental Psychology: General*, *138*, 368–382.
- Vorauer, J. (2013). The case for and against perspective taking. In J. M. Olson & M. P. Zanna (Eds.), *Advances in experimental social psychology*, Vol. 47. San Diego, CA: Elsevier.
- Vorauer, J., & Claude, S. (1998). Perceived versus actual transparency goals in negotiation. *Personality and Social Psychology Bulletin*, *24*, 371–385.
- Waldington, E., Elliot, C., & Kirylo, J. (2008). The dyslexia simulation: Impact and implications. *Literacy Research and Instruction*, *47*, 264–272.
- Watkins, P. C., Vache, K., Verney, S. P., Muller, S., & Mathews, A. (1996). Unconscious mood-congruent memory bias in depression. *Journal of Abnormal Psychology*, *105*, 34–41. <http://dx.doi.org/10.1037//0021-843x.105.1.34>.
- Weaver, R., & Frederick, S. (2011). A reference price theory of the endowment effect. *Journal of Marketing Research*, *49*, 1–46.
- White, K., & Van Boven, L. (2012). Immediacy bias in social-emotional comparisons. *Emotion*, *12*, 737–747.
- Wilson, T. D. (2002). *Strangers to ourselves: Discovering the adaptive unconscious*. Cambridge, MA: Belknap Press of Harvard University Press.
- Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 35, (pp. 345–411). San Diego, CA: Academic Press.
- Wolfendale, J. (2009). The myth of “torture lite” *Ethics and International Affairs*, *23*, 47–61.
- Wu, S., & Keysar, B. (2007). The effect of culture on perspective taking. *Psychological Science*, *18*, 600–606.