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UNIVERSITY OF CALIFORNIA, SAN DIEGO

The Effects of Embarrassment on Cognition and Behavior

A dissertation submitted in partial satisfaction of the requirements for the degree
Doctor of Philosophy

in

Psychology

by

Frank Coffaro

Committee in charge:

Professor Christine R. Harris, Chair
Professor Nicholas Christenfeld
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2011

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University of California, San Diego

2011

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ABSTRACT OF THE DISSERTATION

The Effects of Embarrassment on Cognition and Behavior

by

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Doctor of Philosophy in Psychology

University of California, San Diego, 2011

Professor Christine R. Harris, Chair

Several studies have found that specific emotions can have distinct effects on decision making, however, very few include embarrassment. A few theoretical frameworks have been put forth to understand the effects of emotions on decisions. These frameworks are typically based off of research that investigates emotions that are unrelated to subsequent judgments or choices.

This dissertation presents findings that examine the effects of embarrassment on decision making. The results offer an alternative framework, emotion regulation, for

understanding the effects of embarrassment on a variety of judgments and choices that are both related (integral) and unrelated (incidental) to the embarrassing situation.

Chapter 2 presents data suggesting that incidental embarrassment has distinct effects on risk perception and risk taking compared to anger, fear, and neutral mood states, and that these effects may be driven by attempts to alleviate negative affect.

Findings from Chapter 3 suggest that medical embarrassment causes increased perceptions of cervical exam embarrassment and decreased screening intentions without influencing cancer risk perceptions. Data provide additional support for an emotion regulation framework. People tend to choose the route most likely to alleviate negative affect, particularly if it fulfills the motivation of the emotion.

Chapter 4 examines the effects of power as a moderator of subjective experiences of embarrassment and disgust. Rather than high power providing a buffer against negative affect, the evidence indicates that power increases negative emotion.

Chapter 5 argues that embarrassment has distinct effects on decision making and presents a framework for understanding such effects.

CHAPTER 1

INTRODUCTION

Embarrassment is a unique emotion that guides human behavior to remain within the boundaries of social and cultural norms. Despite its ubiquity and importance to social functioning, embarrassment's place in the psychological literature has often been in the shadows of guilt and shame, related self-conscious emotions of which embarrassment has frequently been considered a milder form. In more recent years there has been a surge of interest in emotions, which has led to embarrassment receiving renewed attention as a distinct emotion. This broader interest in emotions has also given rise to a significant number of studies that investigate the relationship between emotion, cognition, and behavior. These studies not only explore cognition and behavior associated with a particular emotional state but also their effects on subsequent judgments and decisions.

Dating as far back as Plato, scholars have suggested that emotions poison the decision-making process. Although there appears to be some empirical grounding to the notion that emotions can at times lead to damaging outcomes, recent emotion research provides evidence for the argument that emotions are generally adaptive phenomena that can improve decision making. Related to this research are an increasing number of studies that investigate patterns of emotional effects on a variety of judgment and decision-making tasks (e.g., attributions of responsibility, evaluations and attitudes, perceptions of risk, and risk preference). Additionally, a few studies have also explored potential mechanisms for these effects. However, certain emotions such as anger and fear have been investigated more than others, such as embarrassment.

This dissertation focuses on the effects of embarrassment on cognition and behavior across different judgments and choices, including risk perception, risk taking, and medical decision making. Furthermore, this dissertation explores some psychological variables that may influence embarrassment's effects on decision making and presents new data on potential moderators of the experience of embarrassment. Before discussing evidence for embarrassment as a distinct emotion, I begin this chapter with a brief definition of different emotion terms that are often used interchangeably in the emotion literature and then review relevant theoretical perspectives on emotion. While there are numerous theories of emotion, I focus on two approaches that are particularly influential in modern emotion research and have further implications for how emotional effects on decision making are often framed. Next, I introduce negative, self-conscious emotions and present findings that support the notion that embarrassment is a distinct emotion. I then review evidence for the role of affect in decision making, with a particular emphasis on data that illustrate the effects of specific emotions on judgment and choice. Finally, I provide an overview of the empirical studies presented in this dissertation.

Defining Emotion

Recent work has suggested that mood, affect, and emotion represent different psychological states and should therefore be distinguished from one another. Many emotion theorists argue that emotions are relatively short-lived states that are elicited when a stimulus is either consciously or unconsciously perceived and evaluated (appraised), triggering a coordinated set of behavioral responses, physiological changes, distinct facial expressions, and a subjective feeling state, designed to promote the attainment of survival goals (Ekman, 1992). Affect is generally described as a superordinate category for valenced states, including specific emotions, such that “good” emotions (e.g., happiness, joy, pride) are categorized as positively-valenced, whereas “bad” emotions (e.g., anxiety, fear, jealousy) are categorized as negatively-valenced (Gross, 1998a). Furthermore, affect may also occur regardless of consciousness, such as when one has a quick positive or negative feeling about a particular object. Moods typically last longer than emotions and may have no known cause. For example, you may not know why you are in a good or bad mood, whereas you likely know what caused you to be angry or sad.

Theoretical Perspectives on Emotion

From early theories to more recent empirical research, emotions have received a significant amount of attention in the psychological literature. This attention has led to theoretical and empirical debates, but there appears to be some cohesion among

researchers whose work is based upon the Darwinian notion that emotions have their roots in evolution and that emotional behaviors were selected for because they provided an inclusive fitness benefit. Darwin's hypotheses (1872/1965) have thus spurred research into identifying distinct emotions and their concomitant characteristics (e.g., facial expressions, physiological changes, cognitive appraisals, and motivations). Two approaches to studying specific emotions are particularly influential in the emotions literature, functional and cognitive appraisal approaches to emotions. The main difference between these approaches is that they focus on different components of the emotional experience (e.g., motivational versus cognitive), and therefore each has a different emphasis on which component is most likely to influence cognition and behavior.

Functional Approach to Emotions

Despite decades of psychological research and millennia of colloquial wisdom dictating that emotions are disruptive, modern emotion research is primarily built upon the notion that emotions serve functions (Keltner, Haidt, & Shiota, 2006). Even some researchers who hold different views on emotion, such as social constructionists who view emotional experiences and expressions as socially determined (Averill, 1980; Gordon, 1989; Lutz & White, 1986) and evolutionary theorists (e.g., Ekman, 1992; Tooby & Cosmides, 1990) who view emotional experiences as genetically influenced and universal, agree that emotions serve important functions. Furthermore, certain ethological studies (e.g., Eibl-Eibesfeldt, 1989; Krebs & Davies, 1993) and philosophical analyses (e.g., Wright, 1973) also converge upon the notion that there is considerable

merit to investigating why humans have emotions and the benefits they provide (Keltner & Gross, 1999).

The notion of function is at the heart of evolutionary theory (Oatley, Keltner, & Jenkins, 2006). According to emotion functionalists, emotions are goal-driven states that have evolved to efficiently address specific challenges or opportunities in the environment (Keltner, Haidt, & Shiota, 2006; Frijda, 1986; Keltner & Gross, 1999; Lerner & Tiedens, 2006; Levenson, 1992; Oatley & Johnson-Laird, 1997; Plutchik, 1980). The inclination to act in pursuit of a specific goal while in an emotional state has been labeled by some researchers as an “action tendency” (Frijda, 1986). For example, functional approaches to emotion have suggested that anger may be designed to prepare an individual to act in order to remove potential obstacles in the environment (Lerner & Tiedens, 2006). According to functionalists, this readiness to act may be accomplished by activating areas of the brain associated with approach behaviors (Harmon-Jones & Sigelman, 2001), increasing blood flow to extremities that are essential to combat, such as the hands (Ekman, Levenson, & Friesen, 1983), and directing cognition and attention toward the anger-eliciting stimulus (Johnson-Laird, & Oatley, 1992; Lazarus, 1991). Functional approaches, therefore, stress the swift orientation toward a challenge or opportunity in the environment and the organization of different systems that allow one to deal quickly with relevant environmental stimuli.

Cognitive Appraisal Approach to Emotions

Appraisal theories shift the focus of emotional research from emotions as functions to emotions as evaluation (Oatley, Keltner, & Jenkins, 2006). It is important to

note that most cognitive appraisal theorists support the notion that emotions evolved to serve adaptive functions (Smith & Ellsworth, 1985). However, instead of focusing on the goals of specific emotions, appraisal theorists concentrate on the cognitive determinants that elicit such emotions (Smith & Ellsworth, 1985). Specifically, appraisal theories focus on how an individual's goals and needs influence one's evaluation of a potentially emotional situation (Lerner & Keltner, 2000). In turn, according to appraisal theorists, those appraisals will then influence the specific emotion that will be felt. For example, imagine an armed hunter and an unarmed hiker walking together in the woods when they happen upon a large, hungry bear. According to appraisal theorists, the hunter may experience excitement or happiness because the bear represents an opportunity to gain a prized trophy. In contrast, the unarmed hiker may experience fear in response to the overwhelming physical danger that the bear presents (Lazarus, 1991). Appraisal theorists suggest that even though both individuals were in the same emotional situation, they experienced different emotions because they evaluated the situation differently.

There are different types of appraisal theories, but two approaches are frequently mentioned in the current emotion literature: discrete and dimensional. Discrete approaches emphasize the "core relational theme" of a specific emotion (Lazarus, 1991). The core relational theme is the central meaning of a specific emotion (Oatley, Keltner, & Jenkins, 2006). For example, according to Lazarus (1991), anger is triggered when one appraises an event as a demeaning offense against oneself or a valued other, sadness is felt when one experiences an irrevocable loss, and disgust is elicited when one takes in or is too close to an indigestible object or idea. Therefore, discrete approaches tend to focus on the themes and issues that surround and bring forth specific emotional experiences.

In contrast, dimensional approaches to emotion appraisals suggest that emotional situations are appraised along a fixed number of cognitive dimensions (Smith & Ellsworth, 1985). For example, Smith and Ellsworth found that each potentially emotional situation is appraised along at least six dimensions - pleasantness, anticipated effort, certainty, attentional activity, self-other responsibility/control, and situational control. According to these researchers, individual emotions are associated with a unique combination of appraisals along these dimensions. For instance, Smith and Ellsworth suggest that disgust is an unpleasant state involving considerable effort, moderately high levels of certainty, and a strong desire to avert attention away from a situation that is under another person's control. Whereas Lazarus (1991) characterized emotions by their core relational theme (e.g., sadness is specific to appraisals of irrevocable loss), dimensional theorists characterize emotions by their "central appraisal theme". For example, Smith and Ellsworth suggest that sadness is an unpleasant emotion, like anger or disgust, but is distinguished from other emotions by appraisals of situational control. According to Smith and Ellsworth, someone who is sad would appraise a situation along each of the six hypothesized dimensions, but the lack of human control (i.e., situational control) uniquely characterizes sadness. Furthermore, according to dimensional theorists, changes in appraisals along these dimensions predict the emotion that will be elicited in a given situation. These theorists also argue that associating emotions with a specific set of cognitive appraisals allows for the direct comparison of emotions based upon their associated appraisals.

Self-Conscious Emotions

Self-conscious emotions are social emotions that involve the evaluation of one's self and the comparison of one's actions to social standards or rules, in service of promoting social cohesion and maintaining compliance with social conventions, norms, and values (Fischer & Tangney, 1995; Keltner, 1995). Guilt, shame, and embarrassment are often labeled as negative, self-conscious emotions (Tangney, 1999). Although there has been some controversy regarding their distinctiveness, emerging evidence suggests that embarrassment may be its own unique emotion.

Embarrassment

According to several theorists, embarrassment evolved to motivate behavior that reduces or prevents negative social consequences in situations where a person has violated a social norm (Harris, 2006; Keltner & Buswell, 1997). The basic premise is that those who experience and express distress over concerns with others' impressions of them are more likely to remain connected to their group, thereby increasing their inclusive fitness. In contrast, flagrant disregard for social norms could lead to ostracism or worse (Harris, 2006). It has been suggested that embarrassment serves three basic functions. First, the dread associated with anticipating or experiencing embarrassment may serve as a deterrent from future behavior that could lead to feelings of embarrassment (Harris, 2006). Second, embarrassment may motivate reparative behaviors, such as verbal apologies, conciliatory actions, increased conformity to social rules and norms, and currying favor with those in front of whom the transgression was

made (Harris, 2006; Keltner & Buswell, 1997). In turn, this gesture may elicit sympathy or liking for the transgressor. For example, Semin & Manstead (1982) showed participants four versions of a video in which a man accidentally knocks over a toilet paper display in a grocery store. The man then displays embarrassment (or not) and fixes the mess (or not). Although the man who calmly rebuilt the display without expressing embarrassment was found to be the most “mature,” the man who displayed embarrassment was liked more, regardless of whether he restacked the toilet paper rolls or walked away. Third, embarrassment may serve as an appeasement gesture, an acknowledgment that the transgression was unintended and will not occur again in the future (Harris, 2006; Keltner & Buswell, 1997).

Keltner and Buswell (1997) have provided thorough evidence to support the notion that embarrassment is associated with a distinct unfolding of non-verbal behaviors. According to these researchers, embarrassment is associated with complex, non-verbal displays that occur over a short period of time. Specifically, the prototypical embarrassment expression involves a reliable pattern of gaze aversion, smile control, downward head movements, face touches and, sometimes, blushing (Harris, 2006). Based on past findings suggesting that the downward gaze, smile control, and face touching are less likely to vary across cultures (Keltner & Buswell, 1996), these features may be the core “theme” of an embarrassment display (Ekman, 1992).

Embarrassment may also be associated with a distinct physiological pattern. In Harris’ (2001) study on cardiovascular responses to embarrassment, results indicated that embarrassment may be associated with a substantial increase in blood pressure during the embarrassing incident. Further, blood pressure levels remained elevated even five

minutes after the embarrassing experience. While heart rate also rose significantly during the first minute embarrassment, it dropped back down in the second minute to pre-embarrassment levels. Harris suggests that this decoupling of heart rate and blood pressure may be a hallmark of cardiovascular reactivity during embarrassing experiences.

There are several types of situations that have been found to reliably elicit embarrassment (Keltner & Buswell, 1996). These include social (e.g., burping at a romantic dinner) or cognitive (e.g., forgetting an associate's name) blunders being the center of attention (e.g., having "Happy Birthday" sung to you in a crowded restaurant; Sabini, Siepmann, Stein, & Meyerowitz, 2000), or finding oneself in a "sticky situation" (e.g., asking a friend to repay an overdue loan). Relative to those involving guilt and shame, embarrassing incidents appear to be perceived as more surprising and accidental and lead more quickly to feelings of embarrassment without much private thought, dwelling, or rumination (Tangney, Miller, Flicker, & Barlow, 1996). Participants who recall embarrassing experiences also typically report feeling a significant amount of public exposure (Miller, 1996). However, this exposure does not necessarily lead to the same fears of moral condemnation that may be associated with guilt- or shame-eliciting events (Tangney et al., 1996). In fact, despite being an unpleasant and dreaded emotion, individuals report that many embarrassing situations are relatively benign and humorous (Miller, 2007).

In sum, there appears to be support for the assertion that embarrassment is distinct from guilt and shame, as well as other emotions.

Affect and Decision Making

As mentioned earlier, an increasing number of studies are being designed to investigate how cognition and behavior associated with a particular affective state influence decision making. Traditional theories of decision making have largely ignored emotion because of the assumption that humans make decisions by engaging in a rational evaluation of potential decision outcomes and then choosing the outcome that maximizes positive and minimizes negative consequences (Loewenstein & Lerner, 2003). More recently however, researchers have argued that decision-making models that incorporate emotion can more accurately predict decision-making behavior (Lopes, 1987; Mellers, Schwartz, Ho, & Ritov, 1997). In the emotion literature, an increasing number studies are being designed to investigate how emotion influences decision making, the types of judgments and decisions that may be influenced, and whether specific emotions can have distinct effects on decision making.

Emotional valence has often been considered one of the primary distinguishing components of an emotional state (DeSteno, Petty, Wegener, & Rucker, 2000; Russell, 1983, 1989). Various approaches to emotion and decision making have suggested that the specific effects of immediate emotion depend upon whether it is a positively- or negatively-valenced state (Schwarz & Clore, 1983; Johnson & Tversky, 1983). One of the most prominent valence-based approaches in the emotion and decision-making literature is Schwarz and Clore's (1983) affect-as-information model. According to this model, individuals consult their feelings heuristically when those feelings appear relevant

to the object of judgment. Schwarz and Clore provided evidence showing that participants in their study who were in a positive mood rated their life satisfaction higher than those who were in a negative mood, even though participants' feelings were unrelated to the judgment task. The authors suggest that instead of participants making complex estimates of different dimensions of their lives, they instead ask themselves, "How do I feel about it?" Other researchers, however, question whether valence can reliably predict emotional effects on decision making (DeSteno et al., 2000; Lerner & Keltner, 2000; Raghunathan & Pham 1999). Anger and sadness, for example, are both negatively-valenced emotions, but beyond valence, they appear to have little in common (e.g., cognition, physiology, action tendencies). These differences have led some researchers to question whether distinct emotions, including those of the same valence, might lead to different effects on subsequent judgment and choice.

Recent research provides evidence for the suggestion that specific emotions of the same affective valence can have distinct effects on judgment and decision making (DeSteno et al., 2000; Lerner & Keltner, 2000, 2001). One of the first such studies, conducted by Keltner, Ellsworth, and Edwards (1993), investigated the effects of anger and sadness on judgments of future events and whether those events would be caused by human or situational factors (e.g., missing an important flight, getting a great job, new car is a lemon). The authors found that angry participants were significantly more likely to attribute blame for future events on human factors, whereas sad participants were more likely to blame situational circumstances. The authors used an appraisal-based approach to explain their findings by citing past research suggesting that anger is associated with appraisal dimensions of human responsibility, whereas sadness is associated with

appraisals of situational responsibility (Smith & Ellsworth, 1985). In turn, according to the authors, those appraisals carried over to an unrelated judgment and influenced subsequent attributions. In another study, researchers investigated the effects of disgust and sadness on the endowment effect (the tendency for selling prices to exceed buying or “choice” prices; Lerner, Small, & Loewenstein, 2004). Despite both emotions being negatively-valenced, the investigators found that disgust reduced both selling and choice prices, whereas sadness reduced selling, but increased choice prices. The authors explained their findings by suggesting that disgust is associated with a motivation to expel (and thus a willingness to sell at a relatively low price and an unwillingness to buy at a relatively high price), whereas sadness triggers a goal to change one’s circumstances (and thus a willingness to sell at a relatively low price and buy at a relatively high price).

A considerable amount of attention in the emotion literature has been given to the effects of emotion experienced at the time of the decision, sometimes referred to as “immediate emotions” (Loewenstein & Lerner, 2003). Immediate emotions have been shown to influence a variety of judgments and choices, including economic decisions (Lerner, Small, & Loewenstein, 2004), social judgments (Bodenhausen, Sheppard, & Kramer, 1994; Goldberg, Lerner, & Tetlock, 1999; Keltner et al., 1993; Tiedens & Linton, 2001), consumer behavior (Argo, Dahl, & Morales, 2006), risk perception (Lerner & Keltner, 2001) and preference (Lerner & Keltner, 2001; Raghunathan & Pham, 1999). Furthermore, findings suggest that immediate emotions can influence decision making in several ways, such as by providing heuristic information to the decision maker (Schwarz & Clore, 1983), influencing appraisals of subsequent information and events (Tiedens & Linton, 2001), motivating certain types of behavior (Ragunathan & Pham,

1999), and overriding all other goals except those related to regulating one's affective state in emotionally intense situations (Loewenstein, 1996). Moreover, these effects have been shown to occur regardless of whether the emotion is related to the decision (described by some researchers as "integral" emotion, Loewenstein & Lerner, 2003) or unrelated (described by some researchers as "incidental" emotion, Loewenstein & Lerner, 2003). For example, if a job applicant experiences anxiety when deciding whether or not to take a job that offers a high annual salary, but low job security (integral emotion), the anxiety that he experiences while making the decision might prompt him to turn down the offer. In contrast, if he is in a good mood when making his decision because he just enjoyed a nice lunch with his wife (incidental emotion), the good mood might prompt him to accept the job, based on past research linking good moods to optimistic risk perceptions (Loewenstein, Weber, Hsee, & Welch, 2001). Thus, not all immediate emotions will lead to the same outcome, and predicting those outcomes based upon the characteristics of a specific emotional state has become the focus of much research.

Overview of the Dissertation

The present dissertation has several objectives. The primary goal is to examine the effects of embarrassment on decision making because embarrassment is virtually absent from research that investigates the role of affect in decision making. This may be primarily due to the fact that only recently has evidence been put forth suggesting that embarrassment is a distinct emotion. This work also explores a framework that may account for the effects of embarrassment on different judgment and choice tasks.

Second, this dissertation investigates the relationship between embarrassment and seeking medical care. Although there is a fair amount of correlational work suggesting that embarrassment is an affective barrier to medical treatment, there are no studies that examine the causal effects of embarrassment on intentions to seek medical exams. Finally, this dissertation goes beyond examining the effects of embarrassment to exploring psychological factors that may influence the experience of embarrassment itself. Specifically, power is examined as a potential moderator of the experience of embarrassment because a prominent theory of power proposes that high power is more likely to be associated with positive emotions whereas low power is more likely to be associated with negative emotions. The present research experimentally explores whether having power reduces the subjective experience of embarrassment, which has been characterized a low power emotion.

The remainder of the dissertation will be divided into four chapters. The focus of Chapter 2 is on the effects of embarrassment on risk perception and risk taking. The effects are examined in the context of prominent emotion and decision making frameworks used to understand some of the effects of specific emotions. Chapter 3 examines how embarrassment influences perceptions of cervical exam embarrassment, risk perceptions of getting cervical cancer, and future cervical exam screening intentions. The chapter also explores whether the framework proposed in Chapter 2 can be expanded to account for the effects of embarrassment that is related to subsequent judgments and decisions. Chapter 4 explores the influence of social power on the experience of embarrassment as well as disgust. The final chapter summarizes the results of the three

empirical chapters and discusses their findings in light of research on embarrassment and the role of affect in decision making.

CHAPTER 2

EMBARRASSMENT AND RISK

Embarrassment may be thought of as a relatively benign emotion compared to shame or guilt (Keltner & Anderson, 2000; Keltner & Buswell, 1997; Miller & Tangney, 1994; Parrott, Sabini, & Silver, 1988), but it also appears to have a darker side. A large correlational literature suggests that the discomfort of embarrassment can be so intense that people are willing to risk injury, and perhaps even death, to themselves and to others in order to avoid it. For example, embarrassment is frequently cited as an obstacle in delaying or failing to seek care for many types of medical conditions (Consedine, Krivoshekova, & Harris, 2007; Harris, 2006; Shinn et al., 2004) and can lead people to engage in risky sexual practices such as failing to obtain and use condoms (Leary & Dobbins, 1983; Moore, Dahl, Gorn, & Weinberg, 2006). Embarrassment has also been argued to be one of the major factors that causes people to neglect helping others who may be in serious need (Sabini, Siepmann, & Stein, 2001). The primary goal of the current work is to begin filling the void in the emotion and decision-making literature from which embarrassment is largely absent. In a series of five studies, embarrassment is induced and its effects on a variety of risk-related judgments and decisions are measured. Before turning to the current studies, research on the effects of emotions on risk perception and risk preference is reviewed, including findings that suggest embarrassment may also be one of the emotions to have such effects.

Affect, Risk Perception, and Risk Taking

As in general emotion and decision-making research, earlier research on the effects of emotion on risk perception and risk preference took a valence-based approach (for reviews see DeSteno, Petty, Wegener, & Rucker, 2000; Forgas, 1995; Lerner & Keltner, 2000, 2001). For example, Johnson and Tversky (1983) induced positive and negative affect and then measured risk perception by having participants estimate the number of yearly deaths from a variety of different causes (e.g., lightning strikes, heart disease). Results indicated that negative affect led to increased risk perception, whereas positive affect led to decreased risk perception. Over the years, differences between positively- and negatively-valenced affective states have been found on a variety of risk-related tasks (Gasper & Clore, 1998; Johnson & Tversky, 1983; Wright & Bower, 1992). However, as the focus in the general emotion and decision-making literature shifts from positive and negative affect to a specific emotions approach, so too do the studies on emotion and risk (Lerner & Keltner, 2000, 2001).

Results from a number of more recent studies on emotion and risk suggest that specific emotions, even those of the same overall valence, can have distinct effects on risk perception and risk taking (Fessler, Pillsworth, & Flamson, 2004; Lerner & Keltner, 2000, 2001). For example, Raghunathan and Pham (1999) manipulated sadness and anxiety and then measured risk taking using gambling and job-selection tasks. Results indicated that sad individuals were more likely to select the high-risk/high-reward options, whereas anxious individuals were more likely to choose the low-risk/low-reward options. The authors argued that these findings make sense when one considers that

different emotions provide a person with different types of information about the world and produce different motivations (Lazarus, 1991; Roseman, 1991). The experience of sadness implies that there is a loss or an absence of reward and primes the implicit goal of reward replacement. Therefore, according to Raghunathan and Pham, sadness led participants to focus on and then choose the option with a high reward, presumably because the attainment of better rewards would help repair their mood. In contrast, anxiety signals uncertainty and the goal of uncertainty reduction. Therefore, anxious participants avoided the more risky option and by doing so reduced their anxiety. Thus, one theoretical reason for expecting differences between specific emotions and their effects on risk is that they signal different states of the world and necessitate different actions from the individual.

The largest body of research on specific emotions and risk judgments and preferences has focused on differentiating the effects of fear and anger (DeSteno et al., 2000; Fischhoff, Gonzalez, Lerner, & Small, 2005; Lerner, Gonzalez, Small, & Fischhoff, 2003; Lerner & Keltner, 2000, 2001; Mackie, Devos, & Smith, 2000). For example, dispositionally fearful individuals were less likely to make riskier choices compared to dispositionally angry individuals when given the classic Tversky and Kahneman (1981) Asian-disease problem, in which people have to choose between two cures (Lerner & Keltner, 2001). In other work, naturally occurring anxiety over the 9-11 attacks was associated with greater perceptions of future risk while there was some hint that naturally occurring anger was correlated with lower perceptions of future risk (Lerner, Gonzalez, Small & Fischhoff, 2003). Similar findings have been reported in work that has experimentally induced fear and anger (Lerner et al, 2003; Lerner &

Keltner, 2001). In one such study, risk perceptions were assessed by having participants rate their optimism about a variety of future life events (e.g., having a car stolen, marrying someone wealthy). Results indicated that participants in the anger condition were relatively optimistic (perceived less personal risk), whereas fearful participants were relatively pessimistic (perceived greater personal risk).

In discussing such effects, Lerner, Keltner, and colleagues apply an appraisal framework based on theory as well as some research suggesting that fear is associated with uncertainty and a sense of situational control while anger is associated with a greater sense of certainty and with human control (Lerner & Keltner, 2000, 2001). Using what they refer to as “an appraisal tendency approach”, Lerner and Keltner (2000, 2001) suggest that the primary appraisals assumed to trigger an emotion can also create a predisposition to appraise future events in a similar fashion. These differing appraisal tendencies, they argue, can account for why fear leads to more pessimistic judgments and anger, to more optimistic judgments.

Embarrassment and Risk

Ironically, the strong discomfort of embarrassment that in many cases motivates one to refrain from behavior that could lead to future experiences of embarrassment (Harris, 2006; Keltner & Buswell, 1997) may, in other situations, be harmful to one’s own or others’ best interests. Embarrassment’s deterrence function may play an especially important role in cases where embarrassment produces irrational behavior. For example, Moore, Dahl, Gorn, and Weinberg (2006) found that embarrassment decreases

the likelihood of purchasing, carrying, keeping or using condoms and thus increases the possibility of risky sexual encounters. Thus, although embarrassment can have beneficial social effects, it also is associated with negative consequences in some situations, including those involving life or death. This makes exploration of its causal effects on risk judgments and choice all the more important.

There is only one study that has experimentally investigated effects of embarrassment on risk. Leith and Baumeister (1996) induced anticipated embarrassment in 48 male participants by leading them to believe that they were going to be recorded while singing a song in front of the experimenter. After feigning an equipment malfunction prior to the participants singing, the experimenter administered a low-risk/low-payoff vs. high-risk/high-payoff lottery scenario. Participants were also told that they would be subjected to aversive noise (three-minute tape of nails scratching a blackboard) if they lost the gamble. Significantly more participants in the anticipated embarrassment condition (86.7%) chose the riskier gamble relative to those in a positive mood condition (40 %). The authors interpret their findings as indicating that high arousal negative affect leads to greater risk taking and propose that it does so by impairing one's self regulation. This study is important because it provides the only experimental test of whether anticipation of embarrassment has causal effects on risk taking. Further examination of embarrassment and decision making is clearly needed, particularly because it is possible that the expectation of embarrassment may have different effects than the immediate experience of embarrassment.

In sum, there is a growing body of work that suggests that specific emotions can have some distinct effects on risk perception and risk taking and likely do so through a

number of possible routes including appraisal tendencies, motivations, goal-directed behaviors, and emotion regulation. Furthermore, such effects can carry over to judgments and behaviors that are not directly related to the stimulus that elicited the emotion, sometimes referred to as incidental effects (DeSteno et al., 2000; Fessler et al., 2004; Lerner & Keltner, 2000, 2001).

The Current Research

The goals of the current research are to determine if acute experiences of embarrassment have effects on risk perception and risk taking and, if so, to explore possible accounts for these effects. These goals are addressed in a series of five experiments. The first two experiments examine embarrassment's effects on risk perception and risk preferences for decisions involving the self. The next two studies investigate embarrassment's effects on non-personal risk perception and risky decisions involving others. The final study compares the effects found for embarrassment to those of two other negative emotions, fear and anger, and examines the possible role of appraisals in such effects.

Despite the paucity of research on embarrassment and risk, several tentative hypotheses can be proposed based on existing research. From Johnson and Tversky's (1983) work, sometimes referred to as the affective generalization hypothesis (Fessler et al., 2004), one might expect that since embarrassment is a negative emotion, it should increase perceptions of negative events, even ones that are unrelated to the embarrassing event. Therefore, embarrassment should lead to greater risk perception and, presumably,

decreased risk taking. An appraisal-tendency framework would likely make similar predictions but for different reasons. Studies that have directly compared the dimensional appraisals associated with specific emotions have not included embarrassment (Smith & Ellsworth, 1985; Roseman, 1991)¹. However, other research suggests that embarrassment is likely associated with an attribution of personal responsibility (Miller, 1996), momentary uncertainty about how to act (Miller, 1992; Parrott & Smith, 1991), and a sense that there is little one can do to control the situation (Keltner & Buswell, 1997, Table 3, p. 253). Given the apparent similarities between these appraisals and those noted for fear (i.e., uncertainty and low control), an appraisal framework might predict that embarrassment, like fear, would lead to perceptions of greater risk as well as a desire for less risky options.

Emotion regulation approaches would make different predictions. For example, Leith and Baumeister (1996) argue that embarrassment should lead to increased risk taking because people supposedly focus on the appeal of the high payoff without considering the risk, although their own findings were mixed on this point. Other emotion regulation models such as Isen's (1984) mood maintenance hypothesis, which emphasizes that people try to actively change negative moods, would also seem to suggest that negative affect could lead people to take greater risk in hopes of improving their mood through higher rewards.

¹ One exception is Tangney, Miller, Flicker & Barlow (1996), who compared the discrete, as opposed to dimensional, appraisals of embarrassment with those of shame and guilt

Experiment 2.1a

As noted above, although one study looked at anticipation of embarrassment, no work has experimentally manipulated embarrassment and assessed its effect on risk preferences. The purpose of the present study was to do so. One important difference between the present work and the study by Leith and Baumeister (1996) is that the current studies examine the effect of actual embarrassment as opposed to the effects of anticipation of embarrassment. Embarrassment was elicited using a paradigm designed in the lab. After viewing a series of slides, participants in the embarrassment condition were shown a final slide that purportedly displayed their eye scan patterns, which indicated they had been staring at the crotch of a man in tight bathing trunks. Participants then were given a risk preference measure similar to the one employed by Leith and Baumeister (1996) in which they had to choose between a high payoff, low probability option or a low payoff, high probability option.

The current work also included measures of risk perceptions, which have not been examined in previous experiments on embarrassment. There are several reasons to think that embarrassment might impact risk judgments. As noted above, other specific emotions can have different effects on risk perceptions; angered people tend towards more optimism relative to fearful people, who lean towards pessimism (Lerner & Keltner, 2001). There is also at least one correlational study from the behavioral medicine literature that suggests that across a variety of health hazards (drinking, breaking a bone, cancer) higher perceived embarrassment over the problem may be associated with lower perceptions of personal risk for it. However, that work did not manipulate

embarrassment and therefore the direction of the causal arrow is unknown (Weinstein, 1987). In the present work, risk perception was assessed with an optimism measure similar to ones used in the Lerner and Keltner (2001) studies of fear and anger.

Method

Participants. Seventy-six undergraduate men at the University of California, San Diego voluntarily participated in return for course credit. Participants were 19.8 years old on average, and their ages ranged from 17 to 26 years. Participant ethnicity was 65.8% Asian, 19.7% Caucasian, 6.6% Latino, 2.6% Pacific Islander, 1.3% Native American, and 3.9% other ethnicities.

Procedure. Participants were run individually and were randomly assigned to one of two conditions, neutral ($n = 38$) or embarrassment ($n = 38$)². In both conditions, the experimenter was female because previous work in the lab suggests cross-gender dyads elicit greater embarrassment. Participants in both conditions were told that the study consists of two parts, a study on organizational behavior and a pilot study consisting of different tasks, which was being developed for another experiment. Participants began with the purported pilot study, which first involved watching pictures on a computer screen. After participants viewed the pictures, they completed the dependent measures. The order of the presentation of the risk perception and risk preference measures were counterbalanced.

² Five participants were excluded from the analyses because they were either suspicious of the emotion manipulation, did not follow directions, or reported being preoccupied and emotional over events that occurred outside of the experiment.

Emotion Manipulation. In the embarrassment and control conditions, participants viewed four sequentially presented pictures on a computer screen. The first three pictures were the same across conditions (a person swimming, people walking on the beach, and a boat slip). Each picture appeared on the screen for approximately 10 seconds. After the last picture, the experimenter re-entered the room and told participants that their eye movements had been tracked and that the experimenter wanted to make sure the eye-tracking program worked properly. The experimenter then started a program that purportedly showed the participants' eye scan patterns. This depicted the image along with circles, representing fixation points (these were not real but had been created to mimic an actual eye-tracking program). In the embarrassment condition, the last picture was a close-up of three men standing on the beach in brightly colored tight bathing trunks. Embarrassment was elicited by pointing out to the participants that the majority of their eye-tracking lines and fixation points were covering the three men's crotches, particularly the man standing in the middle who was most prominently shown in the picture. In the neutral condition, the last picture showed a generic faucet, and the subsequent eye-tracking lines were not intended to elicit any emotion.

Measures

Personal risk perception. The personal risk perception task was adapted from Weinstein's (1980) measure of optimism, which asks participants to estimate their chances of experiencing a variety of future life events. The scale used in the present study contained ten statements, half of which were positive (e.g., "Having a good job offer before graduation" and "Living past 85 years-old") and the other half negative (e.g., "Being sued by someone" and "Getting my car stolen"). Positive items were reverse-

scored such that higher numbers in this study indicate greater risk perception.

Participants estimated their chances of experiencing these events on a 1 (Extremely unlikely) to 7 (Extremely likely) scale.

Personal risk preference. The personal risk preference task was adapted from Leith and Baumeister (1996). Participants were asked to choose between two different gambles. Gamble A (low risk/low payoff) offered a 70% chance of winning \$2, and Gamble B (high risk/high payoff) offered a 4% chance of winning \$25. Participants were also told that they might have additional opportunities in the experiment to earn actual money by performing similar types of gambles.

Manipulation check. After completing the dependent measures, participants rated their current levels of seven different emotions: anger, embarrassment, anxiousness, disgust, happiness, sadness, and fear (1 = Not at all, 5 = Very much).

Results and Discussion

Manipulation check. Embarrassed participants reported experiencing greater embarrassment ($M = 2.55$) than neutral participants ($M = 1.37$), $F(1, 75) = 25.20$, $p < .001$, indicating that the manipulation of embarrassment was successful. Further analyses showed that no other emotion was significantly different between the two conditions (all p values $> .13$).

Personal risk perception. A one-way analysis of variance (ANOVA) was performed with emotion condition as the independent variable and risk perception as the dependent variable. Items were scored such that higher values indicate greater perception of risk and were averaged to create a single risk perception factor. As shown in Figure 2.1,

participants in the embarrassment condition ($M = 29.37$) perceived significantly less risk than participants in the neutral condition ($M = 33.11$), $F(1, 75) = 7.61$, $p < .01$.

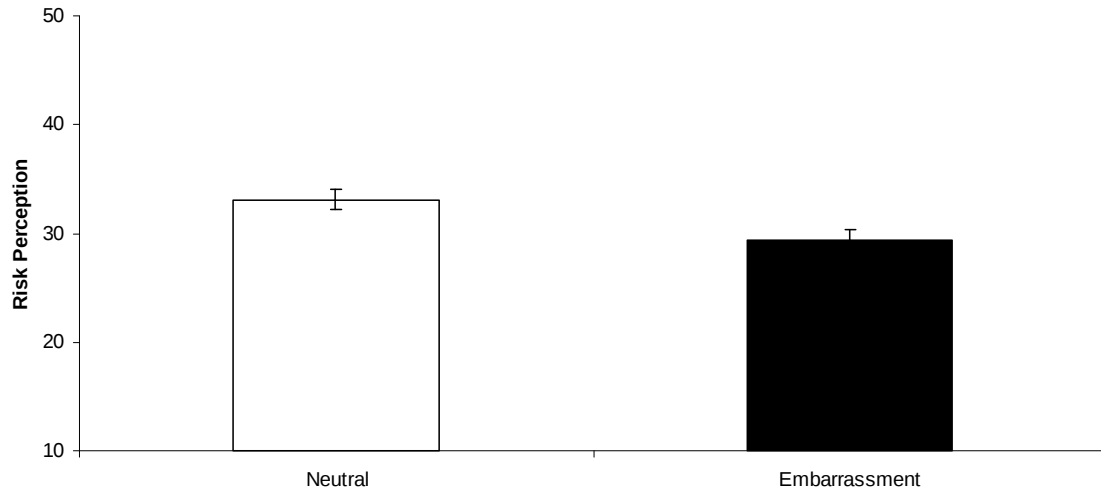


Figure 2.1: Risk perception means (with Standard Error bars) for men in Experiment 2.1a.

Personal risk taking. The next analysis examined whether the embarrassment condition, relative to the control condition, led people to prefer a low risk/low payoff option (Gamble A) over a high risk/high payoff option (Gamble B). A chi-square analysis of lottery choice did not reveal an effect of embarrassment on risk taking preferences, $\chi^2(1, N = 76) = 0.21$, *n.s.* (Gamble A was preferred by 53% of the neutral condition participants and by 58% of the embarrassment condition participants).

The results from Experiment 2.1a provide the first direct evidence that embarrassment can affect risk perception. Embarrassed males were significantly more optimistic about their future life events than non-emotional males. These findings contrast with valence-based models (e.g., Johnson and Tversky, 1983) that suggest that negative affect increases risk perceptions. The current results lend support to the

argument that different specific negative emotions can have different effects on risk perception.

The risk measures used here were similar to those used in previous work on fear and anger (Lerner & Keltner, 2001). Interestingly, the effects for embarrassment found here appear to be different than those reported for fear elsewhere. This is somewhat surprising given that fear and embarrassment appear likely to share some common core appraisal dimensions (uncertainty and low control). These data may suggest that in the case of embarrassment, appraisals tendencies are not what lead to the effects on risk perception. This issue will be explored more deeply in Experiment 2.3, which directly examines the issue of appraisals. What is clear from the present work is that valence-based models cannot account for the effects of all negative emotions.

The current risk perception findings might be accounted for by an emotion regulation model. Embarrassed participants were put in an intensely negative emotional state without any direct means to alleviate it. One way of coping with the negative emotion would be to imagine more positive consequences in some other domain. One suggestion is that, in the present study, this may have resulted in participants having a more optimistic outlook for their future.

Although embarrassment led to more optimistic perceptions of risk, it did not affect risk preferences in a lottery scenario. Embarrassed males were no more likely to prefer riskier options than their neutral mood counterparts. One possibility is that embarrassment did not affect preferences on the gamble because the probabilities were stated whereas on the risk perception measures probabilities were unknown and therefore

easier to influence. These issues will be returned to after the next experiment, which examines the robustness of these results.

Experiment 2.1b

The goal of the current study was to conceptually replicate and extend the findings from Experiment 2.1a using a female sample.³ To do so, a different embarrassment manipulation was used that was adapted from seminal work by Apsler (1975). Participants were instructed to act and talk like a five-year old child who wanted a stuffed animal back.

The examination of females' responses seems particularly important for several reasons. First, the previous work that experimentally induced embarrassment and assessed its effects on risk did not include female participants (Leith & Baumeister, 1996). Second, some research on the effects of other emotions on judgment and decision suggests that gender sometimes serves as a moderating variable (Fessler et al., 2004, Litvak & Lerner, 2009). For example, Fessler, et al. (2004) found that anger significantly increased risk taking in men but not women, while disgust significantly decreased risk taking in women but not men. Furthermore, additional work has shown that some of the gender difference in risk estimates can be explained by emotion differences in anger and fear (Lerner et al., 2003). Finally, there is correlational work that suggests that

³ Due to lab resources and participant availability, males and females were run during different academic quarters and therefore are presented separately.

embarrassment may be a stronger obstacle in women's decisions to seek or avoid medical care than in men's (Consedine, Krivoshekova, & Harris, 2007; Harris, 2006).

Method

Participants. Fifty-four undergraduate women at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.1 years on average and their ages ranged from 17 to 25 years old. Participant ethnicity was 61.1% Asian, 11.1% Caucasian, 11.1% Latino, 5.6% Pacific Islander, 3.7% African-American, and 7.4% other ethnicities.

Procedure. Participants were run one at a time and were randomly assigned to one of two conditions, neutral ($n = 27$) or embarrassment ($n = 27$)⁴. In both conditions, the male experimenter told participants that they would be doing two separate studies. One was a study on audio-visual perception that focused on voice perception, and the other a pilot study being conducted for a colleague that involved completing a few paper-and-pencil forms.

Emotion manipulation. An adaptation of Apsler's (1975) tantrum manipulation was used. The cover story was the lab was recording and analyzing voices in different types of situations in order to better understand voice perception. Participants were told that their voices would be recorded and analyzed using software set up on a computer in the same room and that those recordings would then be used in future studies. Participants were instructed to act as if they were a five year-old child throwing a temper

⁴ Two participants were excluded from the analyses because they were unable or unwilling to throw a temper tantrum.

tantrum over a toy being taken from them. The experimenter stressed that it was very important to be vocal and to really act as if they were a young child who wanted their toy back. They were also told that it might help to throw their hands in the air and to kick their feet in order to really get into it. The experimenter gave the participants a pink stuffed animal and then took it away, which signaled to the participant to begin the tantrum. Tantrums lasted for approximately ten to fifteen seconds. Immediately after, participants were told that they would now move on to the pilot study while the experimenter checked to make sure that the voice recording software worked. Participants completed questionnaires and then were fully debriefed.

Neutral condition participants expected to answer a few questions on voice perception after listening to someone singing the Star Spangled Banner. While the experimenter was supposedly setting up software needed to play the music, participants were asked to complete questionnaires for the pilot study. When the experimenter returned to collect the completed questionnaires from the participants, he used a cover story that the recording software required to play the song was not functioning properly and that the experiment would have to be cut short. Participants were then fully debriefed.

Measures

Personal risk perception. Risk perception was assessed with the same optimism measure used in Experiment 2.1a. Items were again scored such that higher numbers indicate greater perceptions of risk and were averaged into a single factor of personal risk perception.

Personal risk taking. The lottery measure used in Experiment 2.1a to measure risk taking was also used in the current study. Participants were asked to select either a lower-risk/lower-payoff gamble or a higher-risk/higher-payoff gamble.

Manipulation check. As in Experiment 2.1a, participants rated their emotions after completing the dependent measures, including anger, embarrassment, anxiousness, disgust, happiness, sadness, and fear (1 = Not at all, 5 = Very much).

Results

Manipulation check. As anticipated, participants in the embarrassment condition rated themselves as more embarrassed ($M = 2.96$) than in the neutral condition ($M = 1.33$), $F(1,53) = 39.70$, $p < .001$. No other emotion was significantly different between the two conditions (all p values $> .21$).

Risk perception. A one-way ANOVA was performed on risk perception with emotion condition (embarrassment vs. neutral) as a between-subjects factor. Similar to Experiment 2.1a, results indicated that embarrassed participants perceived less risk ($M = 30.93$) compared to neutral mood participants ($M = 35.40$), $F(1,53) = 5.41$, $p < .03$, (See Figure 2.2).

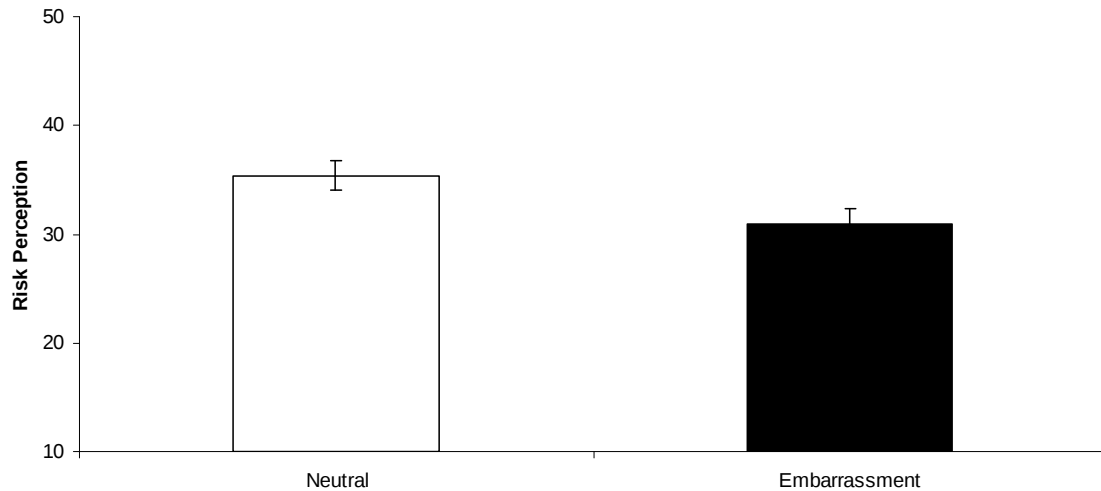


Figure 2.2: Risk perception means (with Standard Error bars) for women in Experiment 2.1b.

Risk preference. A chi-square analysis was performed to determine if embarrassment had an effect on the gambling tasks. Women in the embarrassment condition were significantly less likely to choose the risky gamble relative to women in the neutral mood condition, $\chi^2 (1, N = 54) = 5.08, p < .03$, as seen in Figure 2.3. This suggests that embarrassment caused women to be more risk averse compared to their neutral counterparts.

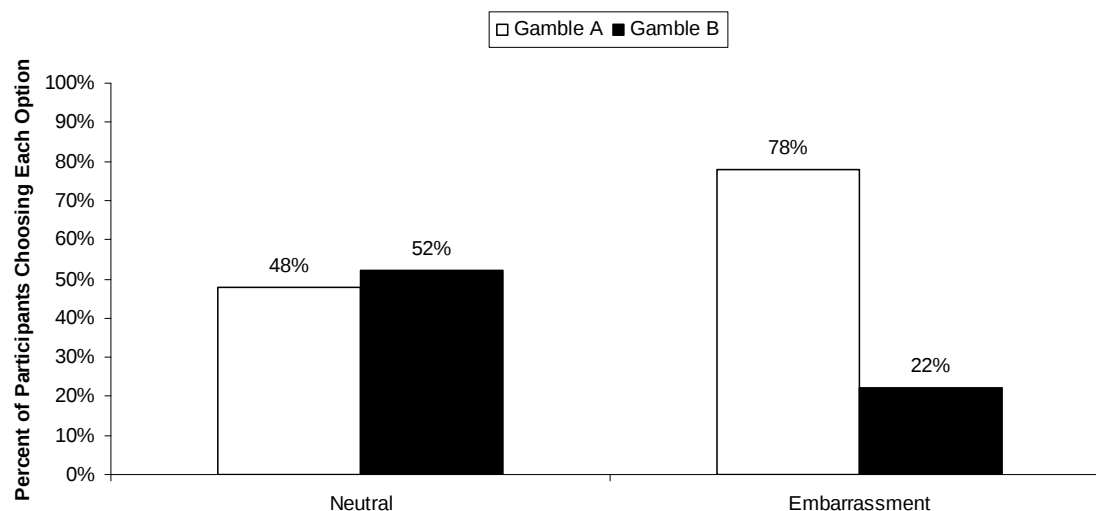


Figure 2.3: Percent of women choosing the safer (Gamble A) and riskier (Gamble B) gamble in Experiment 2.1b.

Discussion

Experiment 2.1b extends the risk perception findings from Experiment 2.1a in several ways. First, it confirms the suggestion that embarrassment leads to decreased risk perception. Embarrassed women were significantly more optimistic about future life events compared to neutral mood women, which is the same pattern found with males in the previous study. These results provide support for the argument that specific emotions even of the same valence can have different effects on risk perception. The risk perception measures used in Experiment 2.1a and 2.1b were similar to those used in previous research on fear and anger, and therefore can provide some sense of how embarrassment compares to these other emotions. Anger was found to decrease risk perception when compared to fear (Lerner & Keltner, 2001). This raises the possibility that embarrassment's effects on risk perception may be different than those of fear, which will be assessed more directly in Experiment 2.3.

Of interest, although embarrassment led both males and females to have more optimistic perceptions regarding their futures in Experiments 2.1a and 2.1b, it did not have a similar effect on their risk taking, at least as assessed by behavior on a personal gamble. In Experiment 2.1b embarrassment led to a preference for the less risky option among female participants. However, embarrassment appeared to have no effect on the gambling choices of male participants in Experiment 2.1a. One question this raises is why embarrassment did not have uniform effects on the risk perception measures and the gambling task (e.g., why it did not bias people toward seeing less risk and toward preferring more risky options). In Experiment 2.1a, the possibility was raised that embarrassment might not have had an effect on the gamble because the probabilities were known, and therefore just harder to influence. Implicit in this is the assumption that embarrassment would lead to greater risk taking if it had an effect. However, the fact that embarrassment led to *decreased* risk taking on the gamble for women in Experiment 2.1b while increasing future optimism suggests that the decoupling between risk perception and risk preference in these two studies may be meaningful.⁵ This is examined further in the next two studies.

A second intriguing finding is that embarrassment appeared to have different effects on male and female risk taking in the gambling task. There is a suggestion in the literature that some of the effects of different emotions on gambling preferences may vary by gender (Fessler et al., 2004). Specifically, Fessler and colleagues found that anger increased risk taking for men but not women, while disgust decreased risk taking in

⁵ It appears that most specific emotion studies have not examined risk perception and risk preferences in the same study. However, across studies there is some suggestion that an emotion that increases risk perceptions, also decreases preferences for riskier options (e.g., Lerner & Keltner, 2001).

women but not men.⁶ These authors argue that the effects of emotions that decrease risk taking should be more pronounced in women and those that increase risk taking should be more pronounced in men. One possibility, based on the Fessler et al. suggestion, is that the gender difference found in the present work suggests that embarrassment may be an emotion that leads to decreased risk taking. Whether the effects of embarrassment systematically vary by gender is examined in the next pair of studies.

Experiment 2.2a

Experiments 2.1a and 2.1b examined embarrassment's effects on decisions and judgments that had personal relevance. The next set of experiments (2.2a and 2.2b) investigated whether embarrassment's effects extend to perceptions and choices involving risks to others. Previous work with other emotions has been mixed on this point. Lerner and Keltner (2001) found that the relative effects of anger (optimism) and fear (pessimism) on risk judgments related to the self extended to decisions that did not involve the self (e.g., risk taking measured by the Asian disease problem). However, while Raghunathan and Pham (1999) found differences between the effects of sadness and anxiety on personal decisions, they did not see the same effects when people experiencing these states were asked to make decisions for others.

In the next two studies, female (Experiment 2.2a) and male (Experiment 2.2b) participants were randomly assigned to an embarrassment or neutral mood manipulation

⁶ These authors suggested that such differences may be due to differences in the importance of these emotions to men and women in the ancestral environment.

and then engaged in non-personal risk perception and risk taking tasks. Specifically, they were asked to judge the annual number of mortalities to a variety of causes such as lightening, electrocution, and lung cancer (Johnson & Tversky, 1983) and to make a risk preference on the classic Asian disease problem created by Tversky and Kahneman (1981). In this task, participants are asked to imagine that the United States is preparing for the outbreak of a disease that is expected to kill 600 people. Participants then choose between two alternative programs to deal with the outbreak. One of the programs provides an outcome that is certain (e.g., option A will save 200 people) and the other program offers an uncertain outcome expressed in probabilities (e.g., $1/3$ probability 600 people will be saved; $2/3$ probability that no one will be saved). The example provided above is referred to as a gain frame since the outcomes are stated in terms of lives saved. There is also a loss frame that provides the same information but frames it in terms of number of lives lost (400 people will die vs. $1/3$ probability that no one dies and $2/3$ probability that 600 people die). The classic finding with this scenario is that when framed in terms of lives saved, people want the sure thing, but when framed in terms of lives lost, they prefer the gamble. This dilemma has been used countless times in the literature, but the study most germane to the present work is that of Lerner and Keltner (2001). They found that dispositionally angry people preferred the riskier option relative to dispositionally fearful people. In the current work, these measures were used to test whether embarrassment has effects on risk preferences that impact others rather than the self and to also assess whether any such effects primarily occur when risk probabilities are not known (as in estimating the number of deaths due to various causes) or also extend to situations in which the probabilities are known (the Asian Disease problem).

Method

Participants. Sixty undergraduate women at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.4 years old on average and their ages ranged from 18 to 35 years old. Participant ethnicity was 71.1% Asian, 16.7% Caucasian, 10% Latino, and 1.7% other ethnicities.

Procedure. The procedure and emotional manipulation were identical to Experiment 2.1b. Participants were randomly assigned to either a neutral ($n = 30$) or an embarrassment ($n = 30$) condition.

Measures

Non-personal risk perception. The non-personal risk perception measure was Johnson and Tversky's (1983) "Perception of Risk Questionnaire," in which participants are asked to estimate the annual number of fatalities for 12 different causes of death based on the knowledge that 50,000 people in the United States die in car accidents each year. In accord with the Johnson and Tversky instructions, participants were asked to estimate as accurately as possible and to check their answers for consistency. As with previous research in the emotion and decision-making literature that also used this task as a risk perception measure for anger and fear (Lerner & Keltner, 2000), the participants were allowed change their answers in order for the relative frequencies to remain consistent across the entire set of fatal events.

Non-personal risk preference. Participants were given the Asian-disease problem (Tversky & Kahneman, 1981), but "Asian disease" was changed to a "foreign disease" in order to maintain cultural sensitivity. In the loss frame, the directions stated, "Imagine that the U.S. is preparing for the outbreak of an unusual foreign disease, which

is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows.” In the gain frame, the instructions stated, “If Program A is adopted, 200 people will be saved. If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.” In the loss frame the instructions stated, “If Program A is adopted, 400 people will die. If Program B is adopted there is 1/3 probability nobody will die, and 2/3 probability that 600 people will die.” After each frame, participants were asked, “Which of the two programs would you prefer?” In this between-subjects design, participants within each condition had an equal chance of completing the problem in a gain or loss frame. In both the gain and loss frames, Program A was the risk-averse choice and Program B the riskier choice. Participants were asked to rate their preference on a six-point scale (1 = Very much prefer Program A; 6 = Very much prefer Program B). Although the original Tversky and Kahneman study used a forced-choice measure, the current study used the same rating scale for preferences as Lerner and Keltner (2001).

Manipulation check. After completing the dependent measures, participants rated their current levels of different emotions using the same measure as in the previous studies.

Results

Manipulation check. The emotion manipulation was successful as participants in the embarrassment condition rated themselves as more embarrassed ($M = 2.87$) than in

the neutral condition ($M = 1.40$), $F(1,59) = 31.90$, $p < .001$. None of the other emotion terms revealed any differences between conditions (all p values $> .34$).

Non-personal risk perception. As suggested by Johnson and Tversky (1983), the risk perception data were logarithmically transformed before conducting an ANOVA. The results indicated that embarrassed participants estimated a lower number of fatalities from the 12 different causes of death (log-transformed, $M = 5.10$, $SD = 0.39$) than control participants (log-transformed, $M = 5.35$, $SD = 0.52$), $F(1, 58) = 4.54$, $p < .04$). Thus, for women, embarrassment creates more optimistic risk perception not only for personal judgments as in the previous studies but, also for judgments involving others.

Non-personal risk preference. The next analyses examined whether emotional state influenced whether participants made relatively risky or risk-averse choices on the Asian disease problem (regardless of gain or loss frame). An ANOVA with program choice as the outcome measure did not reveal a significant difference between the embarrassment ($M = 3.27$) and neutral conditions ($M = 3.40$), $F(1, 59) = 0.12$, $n.s.$

Tversky and Kahneman's (1981) Asian-disease problem is often used to illustrate the effects of framing on choice. This effect was replicated using an ANOVA with framing condition as the independent variable and preference for program choice as the outcome measure. Participants in the gain frame ($M = 2.67$, $SD = 1.32$) preferred Program A (risk-averse choice) more than participants in the loss frame ($M = 4.03$, $SD = 1.29$), who preferred Program B (riskier choice): $F(1, 59) = 16.04$, $p < .001$.

Discussion

In sum, embarrassed women were significantly more optimistic about all-cause mortality relative to non-emotional women. This provides preliminary data that embarrassment leads to optimistic risk judgments not only for risk perceptions involving the self but also for those involving others. However, this effect did not extend to risk preferences for others when probabilities are known as in the Asian disease problem. These findings will be further discussed after presenting the findings from Experiment 2.2b.

Experiment 2.2b

The goal of Experiment 2.2b was to determine if the effects found in Experiment 2.2a would extend to male participants. The same measures of non-personal risk used in Experiment 2.2a were employed here.

Method

Participants. Twenty-six undergraduate men at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.15 years on average and their ages ranged from 18 to 22 years old. Participant ethnicity was 65.4% Asian, 11.5% Caucasian, 15.4% Latino, and 7.7% Pacific Islander.

Procedure. The procedure and emotion manipulation were identical to Experiment 2.1a. Participants were randomly assigned to one of two conditions, neutral ($n = 13$) or embarrassment ($n = 13$).

Measures

Non-personal risk perception. Non-personal risk perception was measured using the same “Perception of Risk Questionnaire” (Johnson & Tversky, 1983) as in Experiment 2.2a.

Non-personal risk preference. The Asian-disease problem (Tversky & Kahneman, 1983) used in Experiment 2.2a to measure non-personal risk taking was also used in the current study. Participants within each condition were randomly assigned to the gain or loss frame. In both frames, Program A was the risk-averse choice and Program B the riskier choice.

Manipulation check. The same manipulation check used previously was employed here.

Results

Manipulation check. Participants’ self-reports indicated that individuals in the embarrassment condition rated themselves as more embarrassed ($M = 2.70$) than those in the neutral condition ($M = 1.00$, $F(1,24) = 30.25$, $p < .001$). None of the other emotion terms revealed any differences between conditions (all p values $> .09$).

Non-personal risk perception. As in Experiment 2.2a, the data from the risk perception questionnaire was logarithmically transformed and entered into an ANOVA as the outcome measure. Results indicated that participants in the embarrassment condition estimated a lower number of fatalities from the 12 different causes of death (log-transformed, $M = 5.06$, $SD = 0.30$) than participants in the neutral condition (log-

transformed, $M = 5.65$, $SD = 0.84$), $F(1, 25) = 5.70$, $p < .03$. Thus, embarrassment led to decreased risk perception on non-personal measures in men.

Non-personal risk preference. An ANOVA was performed with program choice as the outcome measure. Results did not reveal a significant difference in program choice between conditions ($F(1, 25) = 0.07$, *n.s.*). Thus, embarrassment did not affect non-personal risky decisions.

As in Experiment 2.2a, the framing effects on program choice were examined. An ANOVA was conducted with framing condition as the independent variable and program choice as the outcome measure. The results indicated that, as expected, participants in the gain frame ($M = 3.29$, $SD = 1.72$) were more likely to choose Program A (risk-averse choice) than participants in the loss frame ($M = 4.17$, $SD = .93$, $F(1, 25) = 2.48$, $p = .13$), although the difference did not reach statistical significance.⁷

In sum, embarrassed men had significantly more optimistic risk perceptions in a non-personal risk estimation tasks (estimated a significantly lower number of deaths from various causes) compared to neutral mood men. However, embarrassment did not appear to have an effect on non-personal risk taking when probabilities were known. Both of these results mirror those found for women in the previous study.

⁷ Framing effects were confirmed with a chi-square in which the continuous scale was coded into two categories (those preferring Program A vs. those preferring Program B), $\chi^2(1, N = 26) = 6.80$, $p < .02$. Only 1 of participants in the loss frame chose Program A (risk-averse choice), which replicates past findings that individuals are more likely to make a riskier selection when the programs are presented in terms of expected deaths.

Discussion

The previous four studies find consistent evidence that embarrassment created an optimistic bias in risk perceptions. This occurs in both men and women and was apparent not only in judgments involving the self but also in those involving others. In contrast, embarrassment did not appear to lead people to prefer riskier options over more certain options either when making decision for themselves or for others. When embarrassment did influence risk taking it was in the direction of preferring less risk (for women making a decision involving the self).

The possible decoupling of effects on risk perception and risk taking preference is interesting. One might imagine that if appraisal tendencies are responsible for the effects of embarrassment found here, that they would carry over and influence both risk gambling preferences as well as risk perceptions in similar ways. For example, Lerner and Keltner (2001) found that fear was associated with greater perceptions of risk and in one study with a preference for choosing less risky options. An appraisal tendency model suggests both these effects are being driven by appraisals of uncertainty, which are prominent in fear. On the face of it, an appraisal framework does not seem to as readily account for the embarrassment findings. The current findings on embarrassment might be most consistent with an emotion regulation account. Support for this possibility will be examined in greater detail in the General Discussion. First, however, is Experiment 2.3, which directly examines appraisals and their possible role in the effects of embarrassment on risk preferences and perceptions.

Experiment 2.3

In the previous four studies, the effects of embarrassment on risk perceptions were relative to a neutral emotional state. This is important because some effects of embarrassment were able to be identified in absolute terms (i.e., that embarrassment increases optimism relative to a nonemotional state). In the next study, the effects of embarrassment on risk were compared to those of other negative emotions (this appears to be the first experiment to do so). Since the effects of anger and fear on risk are relatively well-studied in the emotion and decision-making literature, their effects are directly compared to those of embarrassment. Doing so enabled the tentative conclusion that embarrassment appears to have different effects than fear holds up under direct testing.

As noted previously, an appraisal framework is one of the prominent theoretical approaches used to understand some of the effects of specific emotions, particularly fear and anger, on risk judgments (Lerner & Keltner, 2000, 2001). Therefore, another important goal of the next study was to examine the role that cognitive appraisals play in embarrassment's effects on risk behavior. As mentioned earlier, embarrassment is typically not included in studies that directly compare the appraisals associated with different emotions (e.g., Smith & Ellsworth, 1985). Therefore, some of the cognitive appraisals that may be associated with embarrassment in Experiment 2.3 were examined and tested to determine whether these appraisals mediate the effects of emotion on risk perception and risk taking.

Four appraisal dimensions were examined: responsibility (self vs. other), situational control (circumstances beyond anyone's control), human control (self vs. other person), and certainty/uncertainty. These particular dimensions were chosen because they include the appraisals that have been hypothesized to be most key for other specific emotions that have effects on risk (i.e., fear and anger), and also include some of the appraisals that are frequently assumed to be important in the elicitation of embarrassment.

Method

Participants. Sixty-six undergraduate women at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.70 years on average and their ages ranged from 18 to 26 years old. Participant ethnicity was 68.2% Asian, 16.7% Caucasian, 13.6% Latino, and 1.5% Pacific Islander.

Procedure. Participants were randomly assigned to one of three conditions, anger ($n = 22$), embarrassment ($n = 22$), or fear ($n = 22$). In all conditions, participants were told that the experimenters were interested in understanding what emotional experience is like for them. They were asked to recall and write about an emotional experience and then to answer questions about their experience. Each participant was told that their responses were confidential and that the person running the experiment would not be the one analyzing the data. After completing the recall and writing task, and answering the subsequent questions, participants were asked to put their responses in a sealed box that was placed next to their desk. Once finished, participants were fully debriefed.

Emotion manipulation. The emotion manipulation was adapted from Lerner and Keltner's (Study 4, 2001) investigation into fear, anger, and risk. The written emotion manipulation instructions asked participants to (1) describe three to five things that make them the most angry (embarrassed, fearful); and (2) describe in more detail one situation that made them the most angry (embarrassed, fearful), such that someone reading the description might even get mad (embarrassed, afraid) from just learning about the situation.

Measures

Risk perception. Risk perception was measured using the same optimism measure used in Experiments 2.1a and 2.1b.

Risk preference. Risk taking was measured using the same lottery measure used in Experiments 2.1a and 2.1b, except rather than use a forced-choice format, participants were asked to rate their preference for either the low-risk/low-payoff gamble or the high-risk/high-payoff gamble on a 1 (Very much prefer Gamble A) to 7 (Very much prefer Gamble B) scale.

Appraisal measures. Participants rated their emotional experiences on four appraisal dimensions: responsibility, situational control, human (self/other) control,⁸ and certainty. The appraisal measures for these dimensions are the same as those used in the seminal work by Smith and Ellsworth (1985) with a few minor wording changes (see Appendix A). Two items were used to measure responsibility, one item was used to measure situational control, two items were used to measure self/other control, and three

⁸ Situational control was separated from human control because analyses by Smith and Ellsworth (1985) suggest that these may be two different constructs.

items were used to measure appraisals of certainty. Each item was rated on a scale ranging from 1 (Not at all) to 11 (Extremely) scale. For dimensions with multiple measures, an overall mean was calculated in order to obtain a single measure.

Manipulation check. After completing the dependent measures, participants rated their current levels of various emotions as in the previous studies.

Results

Manipulation check. The manipulation checks showed that the emotion conditions were successful in eliciting the target emotions. Participants in the anger condition reported experiencing greater anger ($M = 3.50$, $SD = 1.06$) than participants in the embarrassment condition ($M = 1.91$, $SD = 1.27$), $t(42) = 4.52$, $p < .001$ and participants in the fear condition ($M = 1.86$, $SD = 1.08$), $t(42) = 5.07$, $p < .001$. Participants in the embarrassment condition rated themselves as more embarrassed ($M = 3.64$; $SD = 1.18$) than participants in the anger condition ($M = 1.77$, $SD = 1.15$), $t(42) = 5.31$, $p < .001$ and participants in the fear condition ($M = 1.77$, $SD = 1.07$), $t(42) = 5.51$, $p < .001$. Participants in the fear condition reported experiencing greater fear ($M = 3.68$, $SD 1.21$) than participants in the anger condition ($M = 1.32$, $SD = 0.65$), $t(42) = 8.08$, $p < .001$ and participants in the embarrassment condition ($M = 2.05$, $SD = 1.17$), $t(42) = 4.55$, $p < .001$.

Results also indicated that embarrassed participants reported greater anxiety ($M = 2.86$, $SD = 1.39$) than angry participants ($M = 1.86$, $SD = 1.08$), $t(42) = 2.66$, $p < .02$, and the same relationship was found between fearful ($M = 2.91$, $SD = 1.27$) and angry participants, $t(42) = 2.94$, $p < .01$. There was no significant difference in self-reports of

anxiety between fearful and embarrassed participants. In both the embarrassment and fear conditions, t-tests were conducted to determine if the target emotion in each condition (embarrassment and fear, respectively) were experienced more than anxiety. Results indicated that embarrassment ($M = 3.64$, $SD = 1.18$) was experienced more than anxiety ($M = 2.86$, $SD = 1.39$) in the embarrassment condition, $t(21) = 2.51$, $p < .03$, and fear ($M = 3.68$, $SD = 1.21$) was experienced more than anxiety ($M = 2.91$, $SD = 1.27$) in the fear condition, $t(21) = 3.04$, $p < .01$. Therefore, anger, embarrassment, and fear were the dominant emotions experienced in their respective conditions.

Risk perception. An ANOVA was conducted with personal risk perception as the dependent variable and emotion condition as the independent variable. As shown in Figure 2.4, results indicated that there was a significant difference in risk perception across the three conditions, $F(65) = 4.76$, $p < .03$. Planned comparisons of the fear and anger conditions revealed that angry participants perceived less risk than fearful participants, $t(42) = -2.29$, $p < .03$. Of particular interest, embarrassed participants perceived less risk than fearful participants, $t(42) = -2.47$, $p < .02$, but did not significantly differ from angry participants, $t(42) = -0.25$, *n.s.*

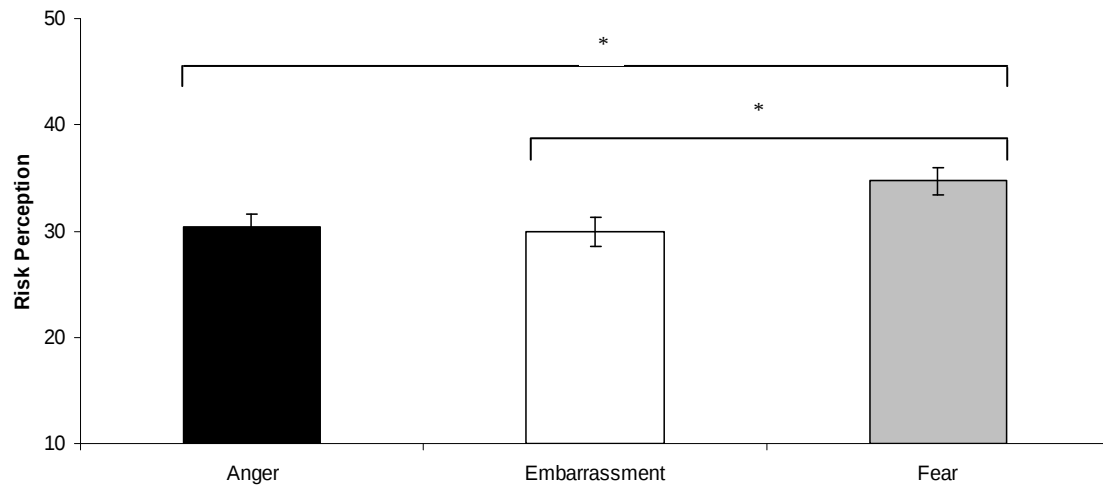


Figure 2.4: Risk perception means (with Standard Error bars) by emotion condition in Experiment 2.3
 * $p < .05$.

Risk preference. An ANOVA was conducted with risk taking as the dependent variable and emotion condition as the independent variable. As seen in Figure 2.5, results indicated that there was a significant difference in risk taking across the three conditions, $F(65) = 3.63$, $p < .04$. In a hypothetical gambling scenario where higher numbers indicate greater preferences for risk, the results showed that angry participants preferred the riskier gamble more than fearful participants, $t(42) = 2.73$, $p < .01$. Of particular interest, it was also found that embarrassed participants had higher preferences for the riskier gamble compared to fearful participants, $t(42) = 2.05$, $p < .05$. In contrast, there was no statistically significant difference in risk taking preference between embarrassed and angry participants, $t(42) = -0.62$, $p > .54$.

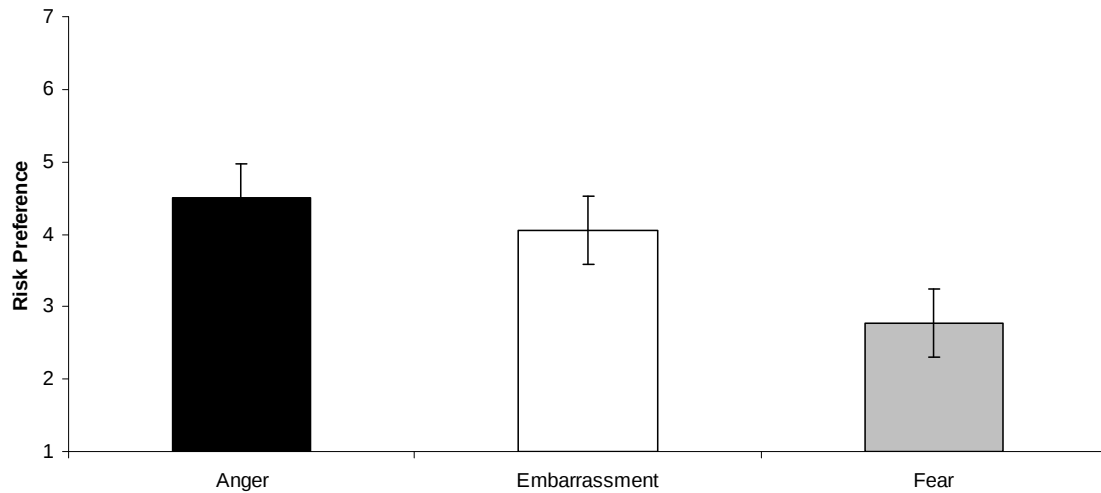


Figure 2.5: Risk preference means (with Standard Error bars) for participants in the anger, embarrassment, and fear conditions in Experiment 2.3.

Appraisal analyses. For each of the four appraisal dimensions, an ANOVA was conducted with emotion condition as the independent variable and the mean appraisal score as the dependent variable. First, a significant effect of emotion condition was found in the responsibility dimension (self vs. other), $F(65) = 18.09$, $p < .001$, with embarrassment activating the highest appraisals of self-responsibility ($M = 7.50$, $SD = 2.31$), followed by fear ($M = 5.80$, $SD = 2.05$), and then anger ($M = 3.82$, $SD = 1.69$). Follow up t-tests indicated that embarrassment activated higher appraisals of self-responsibility than fear, $t(42) = 2.59$, $p < .002$, and fear activated higher appraisals of self-responsibility than anger, $t(42) = 3.49$, $p < .002$.

Results from an ANOVA on situational control indicated a significant effect of emotion condition, $F(65) = 3.30$, $p < .05$. Fear ($M = 7.05$, $SD = 3.02$) activated the highest appraisals of situational control, a trend towards significantly higher than anger ($M = 5.14$, $SD = 3.36$, $t(42) = 2.00$, $p < .06$) and significantly higher than embarrassment,

($M = 4.77$, $SD = 3.09$, $t(42) = 2.47$, $p < .002$). Anger and embarrassment did not activate significantly different situational control appraisals ($t(42) = 0.37$, $n.s.$).

A different pattern emerged for appraisals of human control (self vs. other).

There was a significant effect of emotion condition, $F(65) = 9.36$, $p < .001$, with embarrassment ($M = 6.95$, $SD = 2.26$) activating higher appraisals of self control than anger ($M = 4.18$, $SD = 2.07$, $t(42) = 4.25$, $p < .001$) and fear ($M = 5.11$, $SD = 2.16$, $t(42) = 2.76$, $p < .01$). The effects of anger and fear on human control were not significantly different.⁹

Appraisals of certainty in the anger ($M = 6.42$, $SD = 2.28$), embarrassment ($M = 5.74$, $SD = 2.25$), and fear ($M = 6.00$, $SD = 1.79$) conditions were not significantly different from one another, $F(65) = 0.58$, $n.s.$

Analyses of the individual appraisal items are reported in Figure 2.6 because Cronbach's alphas suggested low internal consistency for the dimensions of responsibility ($\alpha = .40$), human control ($\alpha = .07$), and certainty ($\alpha = .44$).

⁹ Of interest, the appraisal profile for embarrassment found here is similar in some respects to those of two other moral emotions. Smith and Ellsworth (1985) found that high self-responsibility/control appraisals best distinguished shame and guilt from other emotions.

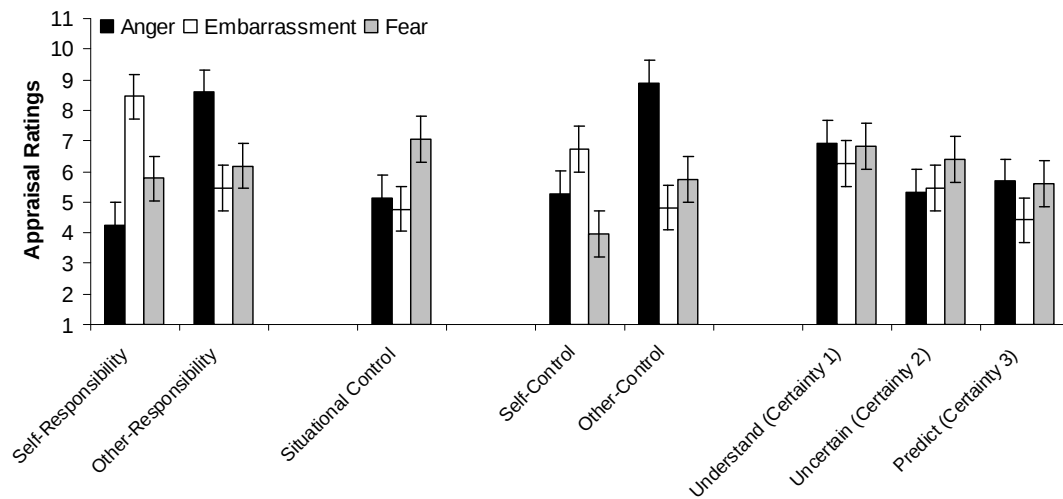


Figure 2.6: Individual appraisal item means (with standard error bars) for participants in Experiment 2.3.

In sum, in keeping with the anger profile reported by Smith and Ellsworth (1985), it was found that anger was primarily associated with high other responsibility, low situational control, and relatively high other human control. Fear was primarily associated with high situational control as in previous work (Smith & Ellsworth, 1985; Lerner & Keltner, 2001). Embarrassment, which has typically not been included in appraisal research that contrasts different emotions, was associated with particularly high self responsibility, high self control and relatively low situational control. There were no significant differences in certainty among the three emotions. This is likely due to the difficulty of measuring certainty, which will be discussed after presentation of the meditational analyses.

Mediational analyses. Possible mediation effects of appraisals were examined on risk perception and risk preference. For brevity's sake, the analyses of all of the steps

recommended by Baron and Kenny (1986) are not included here. Although appraisals of responsibility, situational control, and human control differed by condition, they were not significantly related to the dependent variables (risk perception and risk taking). In short, no evidence was found to support the notion that appraisals mediated the effects of emotion condition on risk preferences or risk perceptions. (Analyses of individual appraisal items also did not reveal any significant findings.)

Discussion

The present study examined the effects of embarrassment, anger, and fear on risk perception and risk taking. The results contribute to the literature in several ways. Comparisons of fear and anger provided further support for previous findings in the literature. Fear led participants to more pessimistic assessments of their future and to opt for the less risky option in a gambling task relative to anger. The latter result provides evidence that in comparison to anger, fear produces risk aversion for tasks not only involving choices for others as found in earlier work (Lerner and Keltner, 2001), but also for gambling choices involving the self.

Of particular interest in the current work were the comparisons of embarrassment to other negative emotions. Results indicated that embarrassed participants expressed significantly greater optimism about future life events and had riskier gambling preferences than fearful participants. However, embarrassment's effects on risk perception and risk taking were not significantly different than those of anger. These results bolster the mounting evidence that not all negative emotions lead to the same cognitive biases in judgment and decision making. They also support the hypothesis,

suggested by the previous studies, that embarrassment's effects on risk are clearly different than those of fear. At first blush, this finding might seem surprising given that extrapolation of various findings from the literature might suggest that embarrassment would share some key appraisals with fear such as high uncertainty and little personal control, and therefore would have similar effects on risk. However, no previous work has directly assessed the appraisals that accompany embarrassment and fear in the same study. The current work did so and suggests important differences between these emotions. Embarrassment was associated with greater attributions that the self was responsible and influenced the emotional event while fear was associated with greater appraisals that the event was out of anyone's control (high situational control). It is likely that when traditional research on embarrassment refers to little personal control, it is focusing on control of outcomes after the eliciting event whereas the present work may be picking up on antecedent appraisals (e.g., embarrassed people feel they did something to cause the embarrassment).

The current work attempted to assess whether an emotion appraisal framework might be able to account for the present findings. While several studies in the literature have documented effects of specific emotions on risk, it appears that only one previous study directly examined whether emotion appraisals mediated those effects (Study 4, Lerner & Keltner, 2001). That work produced mixed results: Appraisals of control mediated the effects of fear and anger on risk judgments, however, appraisals of certainty did not. An appraisal tendency account of the current findings appears somewhat untenable given the failure to find any correlation between appraisals and risk measures in the present study. However, such a conclusion needs to be drawn tentatively given

that appraisals can be quite difficult to precisely measure. Although the present study employed measures from classic appraisal research (Smith and Ellsworth, 1985), low reliabilities were found between the items used to assess the various appraisal dimensions. Lerner and Keltner (2001) confronted similar issues with their measures of certainty, which, they suggest, is why their meditational tests failed. Smith and Ellsworth also note that of the appraisal factors they uncovered in their research, the certainty dimension was the one with the least satisfactory solution, suggesting that participants found it difficult to rate this dimension consistently.¹⁰ Prominent theories suggest that appraisals likely often operate outside of awareness (Lazarus, 1991; Arnold, 1960). Therefore, it may be the case that appraisal tendencies are still active after the emotion-eliciting event, as argued by Lerner and Keltner, but have their effects on an unconscious level making documenting their role in risk perception even more challenging. However, it should be noted that although no evidence for mediation was found, there was evidence to suggest that the emotion manipulations influenced self-reported appraisals for three different dimensions, suggesting that at least some aspect of appraisals can be captured with the present measures.

General Discussion

The present investigation was the first to experimentally examine whether embarrassment has effects on risk judgments and preferences. Embarrassment produced

¹⁰ One issue to examine more thoroughly in follow-up research is to attempt to more carefully differentiate uncertainty over the past vs. the future, as Smith and Ellsworth (1985) also note.

more optimistic risk perceptions in men and women across a total of 5 separate studies and three different types of embarrassment manipulations. However, it did not overall increase the desire to take risky action. These results inform the understanding of embarrassment and its effects on risk in several ways. First, embarrassment's effect of decreasing risk perception compared to a neutral mood contrasts with the predictions of some valence-based approaches, which assumed that negative affect generally leads to increased risk perception (e.g., Johnson & Tversky, 1983). Second, embarrassment's effects on risk perception and risk taking were significantly different than those of fear, but not anger, an emotion with which fear's effects are often contrasted (Lerner & Keltner, 2001). These findings provide support for the suggestion that embarrassment's effects on risk can be significantly different than those of other negative emotions, and also provide further support for the specific-emotions approach to investigating emotional effects on decision making. Third, although embarrassment is a self-conscious emotion, it can create an optimistic bias in risk perception that extends beyond the self. It was found that embarrassed participants saw less risk in events not only related to themselves but to others as well. Fourth, there was little evidence to suggest that some appraisals, which are associated with embarrassment, mediate its effects on risk perception or risk taking. Instead, as discussed below, an affect regulation approach may best account for embarrassment's effects in this study.

Possible Mechanisms

Emotions have been shown to have effects on judgment and decision making that operate through a variety of routes (e.g., Isen, 1993, Lerner & Keltner, 2000). As others

have noted, (e.g., Raganathan & Pham, 1999), the question is not so much which route is correct, but rather which mechanism or process is most prominent under what circumstances. Most researchers working on specific emotions do so from the theoretical framework that emotions evolved as functional “programs” that are elicited by appraisals and create motivational tendencies accompanied by changes in physiological arousal and nonverbal behaviors. Where researchers have differed is primarily in which aspect of the emotion process they focus on (e.g., the appraisal or the motivational tendency).

Understanding the effects of specific negative emotions is complex not only because they are accompanied by different appraisals and action tendencies, but also because negative emotions produce the desire to escape the negative affect. Some researchers have even suggested that attempts to regulate the emotion are so integral to the experience of the emotion that one cannot meaningfully differentiate the emotion from the regulation of the emotion (Kappas, 2010). While not all theorists would agree with this view, it does highlight the importance of thinking of emotions as ongoing processes that include not only the eliciting event but also efforts to cope with that event (Lazarus, 1991).

The effects found here for embarrassment may be most likely due to people’s attempts to reduce their negative affect in these situations. One important distinction that is often neglected in emotion regulation accounts is whether the individual has the opportunity to engage in the behaviors that the particular emotion motivates. A basic assumption in most theories of specific emotions is that each emotion evolved because it elicited motivations or behaviors that on average tended to help solve the inclusive fitness problem that the organism was facing. For example, fear motivates one to avoid or flee

potential threat. Engaging in such behaviors removes the threat and thereby decreases the emotion, returning the organism to a state of equilibrium (Arnold, 1960; Frijda, 1986).

From this perspective, one form of emotion regulation, which is referred to as the “primary route”, occurs by fulfilling the motivations inherent in the emotional state. Presumably, this will often lead one to engage in behaviors that are correctly tailored to the situation (i.e., are useful in changing the emotion evoking situation and thereby reducing the emotion).

However, even a direct or primary route can sometimes produce carryover or incidental effects. A good example of this can be found in Raghunathan and Pham’s (1999) work on sadness. They found that elicitation of sadness in one situation led their participants to go for a higher payoff gambling option in another situation. They argue this is because sadness informs one that something is missing and motivates reward seeking. It is hypothesized that this effect is occurring via the primary emotion regulation route discussed above. This is the case even though there is a mismatch between the item that was sought (winning a better payoff) and that which was missing (mother who had died) because the effect is still driven by the primary motivational state created during sadness.

Emotion regulation can also have effects via a very different pathway, which is likely to occur when an individual does not have any way to fulfill the motives of the emotional state. This is referred to as the “secondary route”, which focuses on coping with the negative affect. It is easy to think of examples of this, particularly in highly social species. For example, an employee who feels angry at what he perceives as mistreatment by his boss may feel the impulse to engage in angry behaviors but choose

not to because the possible negative outcomes far outweigh the possible positive ones. Therefore, his attempts to cope with his negative feelings must take an indirect route. This type of emotion regulation is likely to be what Leith and Baumeister (1996) were tapping into when they found that what they considered to be highly arousing emotions produced increased risk taking in the form of preferring a long-shot gamble with higher payoffs over a more probable but lower payoff gamble. Focusing on the higher payoffs is one way, at least temporarily, to escape negative affect.

Two general routes by which emotion regulation may affect decision making and judgments were laid out above. It should also be noted that both could be exerting influences in parallel and may, depending on the specific emotion, interact in predictable ways. It seems likely that in the case of embarrassment both types of emotion regulation are at work. The present research repeatedly found that embarrassment led to an optimistic bias in risk perception, but did so without creating an accompanying preference for engaging in immediate risky action. One possibility is that this optimistic bias along with a tendency to not increase risky behavior may be functional in embarrassment. As noted in the introduction, embarrassment is an emotion that alerts oneself of a social mistake and notifies others that the breach of protocol or shared norms was not an intentional challenge (serves an appeasement function). What is at risk in embarrassment is social exclusion. Therefore, it would make sense that embarrassment should predispose an individual to not take additional risks since s/he is already in a precarious social situation. However, the optimistic bias likely induces hope and probably keeps the embarrassed person from completely fleeing the situation. Such optimism may be particularly likely to occur when other forms of remediation are not

possible (during secondary emotion regulation attempts) as in the current work where participants did not have the opportunity to restore their social esteem.

It is further suggested that such situations are not confined to social psychologists' laboratories but likely occur in many real world situations. One easy to imagine example is the morning after a party, waking up to recall all the embarrassing acts one performed the night before after imbibing too much liquor. In such situations, there is little one can do to actively undo the potential social damage. The current research suggests that one way people might attempt to cope with such situations is to increase their optimism about events in other realms. However, it would not lead them to prefer engaging in riskier behavior.

One potentially interesting avenue for future work would be to examine the effects of embarrassment on risky perceptions that are intrinsically a part of the emotion eliciting event. If it is correct that the effects found in this research are due to emotion regulation attempts, then it is possible that embarrassment could have different effects on judgments of risk in situations where one is afforded the opportunity to avoid future experiences of embarrassment, one of the argued functions of embarrassment.

Acknowledgment

This chapter, in part, is currently being prepared for submission for publication of the material. Coffaro, Frank; Harris, Christine R. The dissertation author was the primary investigator and co-author of this material.

Appendix A

Appraisal Items from Study 2.3

Items measuring responsibility appraisals (high scores indicated greater personal responsibility)

1. In the situation you described on the first page, how responsible did you feel for having brought about the event that were making you feel [angry/embarrassed/fearful]?
2. In the situation you described on the first page, how responsible did you think someone or something other than yourself was for having brought about the events that were making you feel [angry/embarrassed/fearful]? (reverse-scored item)

Items measuring situational control (high scores indicated greater situational control)

1. In the situation you described on the first page, to what extent did you feel that circumstances beyond anyone's control were controlling what was happening?

Items measuring human (self v. other) control (high scores indicated greater self control)

1. In the situation you described on the first page, to what extent did you feel that you had the ability to influence what was happening?
2. In the situation you described on the first page, to what extent did you feel that someone other than yourself was controlling what was happening? (reverse-scored item)

Items measuring certainty (higher scores indicated greater certainty)

1. In the situation you described on the first page, how well did you understand what was happening around you?
2. In the situation you described on the first page, how uncertain were you about what was happening? (reverse-scored item)
3. In the situation you described on the first page, how well could you predict what was going to happen?

CHAPTER 3

EMBARRASSMENT AND MEDICAL DECISION MAKING

Traditionally, much of the research in the emotion and decision-making literature has investigated the influence of incidental (or unrelated) emotions on judgments and choices (e.g., Lerner & Keltner, 2000, 2001; Lerner, Small, & Loewenstein, 2004; Raghunathan & Pham, 1999). Recently, however, there are an increasing number of studies that examine the effects of emotions that are integrally (or intrinsically) related to subsequent judgments and decisions (Ketelaar & Au, 2003). For example, it has been suggested that shame leads to negative behavioral consequences in situations unrelated to the shame-eliciting event (Tangney & Fischer, 1995). A recent study found that inducing shame in people with a prosocial orientation increased prosocial behavior in situations where shame was integrally related to the decision at hand, but not when the shame-inducing situation was unrelated to the decision task (de Hooge, Breugelmans, & Zeelenberg, 2008). This study highlights the notion that it may be important to study the integral effects of emotions on decision making because they may cause different effects than those of incidental emotions.

Correlational research suggests that embarrassment may be integral to certain medical decisions (Consedine et al., 2007; Harris, 2004; 2006; Meerabeau, 1999; Moore, Brodsgaard, & Rosenberg, 2004). In particular, the relationship between embarrassment and intentions to go for potentially embarrassing cancer screenings has received considerable attention in the

behavioral health literature (Consedine et al., 2007; Orbell, 1996; Taylor et al., 2002).

For example, researchers have noted that women of varied ages, ethnicities, educational backgrounds, and socioeconomic status levels may find cervical exams embarrassing (Sutton & Rutherford, 2005; Wee, Phillips, & McCarthy, 2005). Furthermore, additional research suggests that increases in perceived cervical exam embarrassment may be associated with decreased screening intentions (Najem, Batuman, & Smith, 1996; Shinn et al., 2004; Wee et al., 2005).

These findings may indicate that embarrassment could be integral to different judgments and decisions related to cervical exams. For example, women who are embarrassed by cervical exams may perceive relatively less risk of getting cancer, which in turn may lead to decreased screening intentions. Indeed, incidental embarrassment appeared to decrease risk perception across five studies in the previous chapter. However, given recent research indicating that incidental and integral emotions may have different effects, a fruitful area of research may be to examine the effects of embarrassment that is integrally related to judgments of risk in the medical domain in order gain purchase on whether incidental and integral embarrassment have different effects on risk perception.

The Current Research

The present investigation moved beyond the initial examination of whether embarrassment can have incidental effects on decision making to exploring decisions in which embarrassment may be integral. In Experiment 3.1, medical embarrassment was

primed to investigate its effects on perceived cervical exam embarrassment, risk perceptions of getting cervical cancer, and future cervical exam screening intentions. The primary goal was to investigate whether the integral effects of embarrassment on risky judgments may be different than the incidental effects found in the previous chapter. It was expected that results from Experiment 3.1 might help to determine whether the emotion regulation framework proposed in the previous chapter could be expanded to also account for the integral effects of embarrassment. Finally, investigating the integral effects of embarrassment on medical decision making also allowed for exploration of the causal relationship between embarrassment and cervical exam screening intentions. Experiments 3.2 and 3.3 were designed to explore the influence of social responsibility on screening intentions for embarrassing and non-embarrassing medical exams. These studies will be addressed in greater detail later in the chapter.

Experiment 3.1

In order to test the effects of embarrassment on judgments and decisions that are related to the embarrassing situation, medical embarrassment was primed by asking participants to write about an embarrassing medical experience. Embarrassment was primed in the current study to avoid potential ethical concerns and undue stress for the participants in an experiential manipulation of medical embarrassment. Research on emotional priming has found that unconsciously activating emotional concepts can influence judgment and behavior without eliciting a subjective feeling state (Winkielman, Berridge, & Wilbarger, 2005). Furthermore, recent studies have shown that it is possible

to unconsciously prime specific emotions as opposed to general positive or negative affect (Skandrani-Marzouki & Marzouki, 2010). After the priming manipulation, cervical exam embarrassment, risk perceptions of getting cervical cancer, and cervical exam screening intentions were measured. It was suggested in the previous chapter that embarrassment may motivate judgments or decisions that alleviate negative affect, particularly if they are in service of fulfilling an emotion-specific motivation, such as making amends or avoiding future instances of embarrassment. Embarrassment condition participants in the current study had such an opportunity by expressing their intentions to avoid a potentially embarrassing medical exam. Based on results in the previous chapter, embarrassment might also prompt one to regulate their affect by expressing greater optimism about one's risks for getting cancer. However, another possibility is that embarrassment will *not* influence perceptions of cancer risk because such perceptions would not provide a significant emotional benefit if participants had an opportunity to more efficiently regulate their negative affect by avoiding future embarrassment.

Method

Participants. Sixty-nine undergraduate women at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.7 years old on average, and their ages ranged from 18 to 33 years. Participant ethnicity was 39% Asian, 35% Caucasian, 7% Latino, 6% Pacific Islander, 3% African-American, and 10% other ethnicities.

Procedure. Participants were run individually and were randomly assigned to one of two conditions, neutral ($n = 36$) or embarrassment ($n = 33$). In both conditions, a female experimenter told participants that the study consists of two parts, a study on student health and a pilot study, which was being developed for another experiment. Participants began with the purported student health study that involved an autobiographical recall-and-write task. After participants finished the task, they completed the dependent measures.

Emotion Manipulation. Participants in the embarrassment condition were asked to write about their most embarrassing Pap smear or, if they never felt embarrassed while getting a Pap smear, then they were asked to write about their last Pap exam. If a participant never had a Pap exam, then they were asked to write about an embarrassing medical experience. In the neutral condition, participants were asked to write about the previous day's events, such as what they had for each meal and the main activities in which they engaged during the day. As mentioned earlier, priming manipulations may influence judgment and behavior without influencing subjective feelings of emotion (Winkielman, Berridge, & Wilbarger, 2005). Therefore, the current emotion manipulation was not expected to influence self-reported feelings of embarrassment.

Measures

The first questionnaire that participants completed was ostensibly a part of the student health study, and this questionnaire contained the following dependent measures: perceived cervical exam embarrassment, cervical cancer risk perceptions and cervical exam screening intentions.

Perceived embarrassment. Many of the studies in the behavioral medicine literature that measure the relationship between cervical exam embarrassment and future screening intentions rely on a single-item measure of embarrassment (Consedine et al., 2007). In this study, participants answered three questions regarding their feelings of embarrassment. These questions included, ‘How embarrassing do you generally find Pap tests?’, ‘How embarrassing do you find having your private parts touched by a doctor or a nurse?’, and ‘How embarrassing do you find being partly undressed while getting a Pap test?’

Risk perception. There were three risk perception questions, including, ‘What do you think the chances are that one of your next Pap tests will produce worrisome results?’, ‘How likely is it that you have been exposed to something that will increase your chances of developing cervical cancer?’, and ‘How likely is it that you are at risk for developing abnormal cells that can lead to cervical cancer?’.

Screening intentions. There were also three future screening intentions questions, including, ‘How likely are you to delay getting your next Pap test (reverse-scored)?’, ‘How likely is it that you will maintain regularly scheduled Pap tests as recommended by your gynecologist?’, and ‘How difficult is it for you to get an annual Pap test (reverse-scored)?’

All questions were rated on a 1 (Not at all) to 7 (Extremely) scale and were counterbalanced to minimize order effects. Responses within each category were averaged to create mean ratings for each of the three categories. Higher numbers indicated greater perceived embarrassment, risk perception, and screening intentions. The second questionnaire that participants completed was purportedly a part of the pilot

study. Therefore, this questionnaire was used to maintain the cover story and contained medically-related questions such as family history of cancer and birth control usage.

Subjective emotion ratings. After completing the first questionnaire, participants rated their current levels of seven different emotions: anger, embarrassment, anxiousness, disgust, happiness, sadness, and fear (1 = Not at all, 5 = Very much).

Results and Discussion

Subjective emotion ratings. An ANOVA was conducted with emotion condition as the between-subjects factor and each of the emotion terms as dependent variables. As expected, analyses showed no difference in subjective emotions for six of the seven emotion terms (all p values $> .08$). Unexpectedly, neutral participants reported experiencing greater anger ($M = 1.86$, $SD = 1.49$) than embarrassed participants ($M = 1.15$, $SD = 0.44$), $F(1, 68) = 6.87$, $p < .02$. It is possible that neutral condition participants may have encountered incidents in the previous day that made them relatively angrier than those recalling a past embarrassing medical experience.

Perceived embarrassment. An ANOVA with average perceived embarrassment as the outcome measure and emotion condition as the between-subjects factor revealed that participants in the embarrassment condition reported greater perceived embarrassment over receiving a cervical exam ($M = 5.03$, $SD = 1.50$) than participants in the neutral condition ($M = 3.99$, $SD = 1.52$), $F(1, 68) = 8.13$, $p < .01$. These results may indicate that priming medical embarrassment influenced perceptions of cervical exam embarrassment.

Risk perception. The effect of integral embarrassment on risk perception was of particular interest. An ANOVA with average risk perception as the outcome measure and emotion condition as the between-subjects factor did not reveal a significant difference between embarrassment ($M = 2.67$, $SD = 1.39$) and neutral conditions ($M = 2.28$, $SD = 1.19$), $F(1, 68) = 1.55$, $p = .22$. Therefore, priming medical embarrassment did not appear to influence perceptions of cervical cancer risk.

Screening Intentions. An ANOVA was performed on average screening intentions with emotion condition as the between-subjects factor. The results indicated that participants in the embarrassment condition reported being less likely to obtain cervical exams ($M = 4.16$, $SD = 1.74$) than participants in the neutral condition ($M = 5.04$, $SD = 1.70$), $F(1, 68) = 4.53$, $p < .04$. These data suggest that priming medical embarrassment may have caused decreased screening intentions for embarrassing medical exams relative to a neutral condition.

Mediational analyses. Following the recommendations of Baron and Kenny (1996), the next analyses tested whether the observed differences in perceived embarrassment mediated the effects of emotion condition on screening intentions. Screening intentions were regressed on emotion condition and perceived embarrassment. Figure 3.1 displays the standardized beta coefficients for these relations. Emotion condition (neutral vs. embarrassment) predicted perceived embarrassment, $t(68) = 15.83$, $p < .01$; perceived embarrassment predicted screening intentions, $t(68) = -5.13$, $p < .001$; and the once-significant path from emotion condition to screening intentions, $t(68) = -2.13$, $p < .04$) fell to insignificance when the perceived embarrassment factor was introduced into the same equation, $t(68) = -0.78$, $p > .05$.

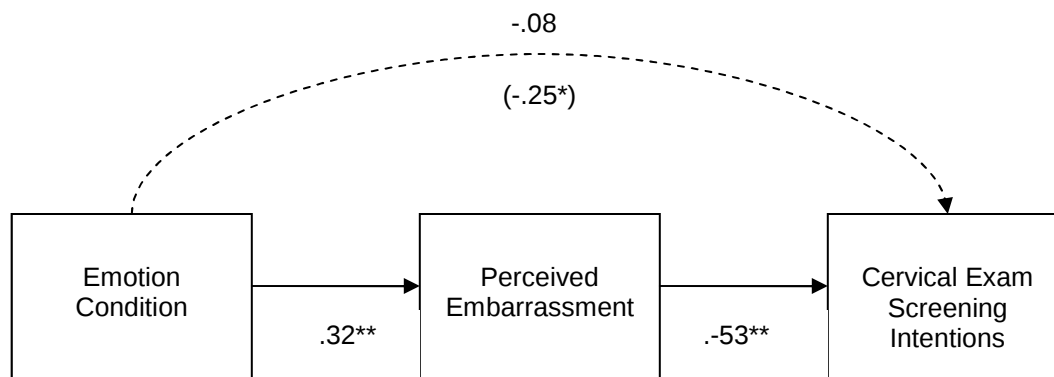


Figure 3.1: Perceived embarrassment appeared to mediate the effect of emotion condition on cervical exam screening intentions. The dashed line indicates that the once-significant path from emotion condition (Neutral = -1; Embarrassment = 1) to screening intentions fell to insignificance when the mediating variable was entered into the equation. The values are standardized beta coefficients * $p < .05$ ** $p < .01$.

The purpose of Experiment 3.1 was to examine the effects of integral embarrassment on judgments of cervical cancer risk. In turn, this study also afforded opportunities to investigate the causal effects of embarrassment on cervical exam screening intentions and to explore whether an emotion regulation framework could account for subsequent findings. The main findings were that medical embarrassment did not appear to significantly influence perceptions of cancer risk compared to a neutral condition. Medical embarrassment did, however, seem to cause a relative increase in perceived embarrassment of cervical exams and a relative decrease in cervical exam screening intentions. Further, perceptions of cervical exam embarrassment mediated the effect of emotion condition on screening intentions.

The risk perception findings add to a growing body of work that investigates the effects of integral emotion on judgments and decisions (de Hooge et al., 2008; Ketelaar & Au, 2003). Results from the current study suggest that integral and incidental

embarrassment may lead to different risk judgments. Unlike results in the previous chapter, the current study provides no evidence to suggest that participants in the embarrassment condition were more optimistic than those in the neutral condition. This supports the notion that it is important to investigate both integral and incidental effects of emotions (de Hooge et al., 2008). This suggestion may be particularly important to investigations of embarrassment because, as the results suggest, it may have serious effects on judgments and decisions that have real-world implications.

The emotion regulation framework proposed in the previous chapter may also account for the integral effects of embarrassment found in the current study. As expected, embarrassment condition participants were relatively less likely to express intentions of going for a cervical exam. Further, there was no significant effect of emotion condition on risk perceptions of getting cancer. A suggestion is that embarrassment condition participants in the current study were able to alleviate their negative affect by directly achieving a proposed function of embarrassment (removing future threats of embarrassment). As other researchers have noted, some prominent emotion and decision making frameworks, such as Lerner and Keltner (2000, 2001), and colleagues' (Lerner & Tiedens, 2006) appraisal tendencies framework, are based off of studies on incidental emotions (Lerner, Han, & Keltner, 2007). Results from the current study may therefore add to the literature by providing an initial indication that an emotion regulation framework of embarrassment and decision making may possibly account for both the incidental and integral effects of embarrassment on judgments and choices found in the current work.

Finally, as mentioned earlier, correlational research suggests a relationship between embarrassment and cervical cancer screening intentions. However, there do not appear to be any studies that investigate the causal path between the two variables. Results from the current study may provide the first direct evidence for the notion that embarrassment may be an affective barrier to treatment (Consedine et al., 2007). Further, these effects did not appear to be influenced by perceptions of cervical cancer risk. Recall that past findings have indicated that higher perceived embarrassment of a particular health hazard may be associated with lower perceived risks for it (Weinstein, 1987). Based on an emotion regulation framework, it may be possible that if participants in the current study had no avoidance option, then they may have attempted to alleviate negative affect by expressing decreased cancer risk perceptions. However, the current study did not find evidence to suggest that medical embarrassment causes decreased risk perceptions of cervical cancer.

Priming medical embarrassment in the previous study was associated with decisions that could lead to potentially harmful consequences not only for the individual avoiding the exam but also for those who have a vested interest in their well being. However, embarrassment has also been associated with prosocial behavior (Miller, 1996). For instance, acute embarrassment has been shown to increase helping even if help is requested by someone who did not witness the embarrassing event (Apsler, 1975). Some research on trait embarrassment also indicates that embarrassment may be connected with concerns about maintaining social esteem. For example, trait embarrassment has been associated with conscientiousness, sensitivity to others' evaluations, and social responsibility (Miller, 1996). A potential implication of this work

is that priming thoughts of one's responsibility to family and friends to maintain good health may be one way to influence screening intentions for embarrassing medical exams. This may be especially true since past research suggests that one way for embarrassed individuals to avoid negative social evaluations is by engaging in behaviors that assure others of one's prosocial intentions (Frijda & Mesquita, 1994; Harris, 2006). Experiment 3.2 explores this possibility.

Experiment 3.2

The purpose of the current study was to explore the effects of social responsibility on intentions to go for an embarrassing medical exam, namely cervical exams. Participants in the social responsibility condition read a passage stating that friends and family expect their loved ones to be socially responsible by going for regular cervical exams. The same measures of perceived embarrassment, risk perception, and screening intentions used in Experiment 3.1 were also used in the current study. Further, two new measures were added. One was a perception of social responsibility measure that asked women how much they agreed with the suggestion that their loved ones expected them to go for cervical exams. The second measure added was a single-item measure of embarrassment. In line with previous research, women were asked to rate their level of cervical exam embarrassment compared to similar-aged others.

Social responsibility was expected to influence screening intentions in one of two ways. First, priming social responsibility may increase perceived cervical exam embarrassment and, in turn, decrease screening intentions. Embarrassment may be

increased because an intimate and potentially embarrassing medical exam is being associated with friends and family. Second, social responsibility may decrease perceived cervical exam embarrassment and, in turn, increase screening intentions. Although cervical exams may generally be perceived as embarrassing, having a social responsibility to obtain an exam may decrease some of the negative affect typically associated with cervical exams.

Participants in the social responsibility condition were not expected to be able to completely alleviate their negative affect by expressing either relatively increased or decreased screening intentions. For example, decreased screening intentions may elicit negative affect associated with going against the wishes of one's family. Similarly, increased screening intentions may indicate a willingness to fulfill one's obligation to family and friends, but it may also lead to negative affect associated with an embarrassing medical exam. One way of alleviating negative affect associated with either going or not going for the exam would be to report relatively decreased perceptions of cervical cancer risk. Therefore, social responsibility participants were expected to report lower perceptions of cancer risk than neutral participants.

As in Experiment 3.1, participants completed a second questionnaire that was purportedly a part of the pilot study in order to maintain the cover story. The questions were the same as those used in the first experiment.

Method

Participants. Seventy-five undergraduate women at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.01

years old on average, and their ages ranged from 18 to 24 years old. Participant ethnicity was 45% Asian, 32% Caucasian, 15% Latino/Hispanic, 2% Pacific Islander, 3% African-American, and 3% other ethnicities.

Procedure. Participants were run individually and were randomly assigned to one of two conditions, social responsibility ($n = 37$) or control ($n = 38$). In both conditions, a female experimenter told participants that the study consists of two parts, a study on student health and a pilot study that was being developed for another experiment. Participants began with the purported student health study, which involved reading three separate passages and after each passage participants answered a series of questions.

Measures

Participant survey. The “Participant Survey” was separated into three sections: immunizations, cervical exams, and dental exams. The dependent measures were in the cervical exam section. This section was always in the middle of the immunization and dental exam sections to minimize suspicion.

Each of the three sections began with a short statement followed by a series of questions. In the control condition, the cervical exam statement read, “Doctors recommend that young women get screened for cervical cancer by having regular Pap smears.” In the social responsibility condition, the first sentence was the same as the neutral condition. However, the social responsibility condition contained an additional sentence that served as the social responsibility manipulation. The sentence read, “Family members and friends also expect their loved ones to be socially responsible by getting screened for cervical cancer in order to detect it early.” The immunization and

dental exam statements were the same in both the control and social responsibility conditions. The immunization statement read, “Immunization (also known as vaccination) is the process by which an individual is exposed, usually through an injection, to an agent that is designed to strengthen his or her immune system against that agent. When the human immune system is exposed to a disease once, it can develop the ability to quickly respond to a subsequent infection.” The dental exam statement read, “On average, seeing a dentist twice a year works well for most people. A few people can get away with fewer visits; others may need more frequent visits.”

In the cervical exam section, the perceived embarrassment, risk perception, and screening intentions questions were the same as those used in Experiment 3.1. Averages for each of the three types of questions were again calculated with higher numbers indicating greater perceived embarrassment, risk perception, and screening intentions. The social responsibility measure check asked, “Do you think that most people who are important to you expect you to go in for regular Pap tests?” Participants rated their agreement on a 1 (Not at all) to 7 (Extremely) scale. A single-item measure of relative embarrassment was also added. The question asked, “As compared to other women your age, how embarrassing do you find pap tests?” Participants responded on a 1 (Much less embarrassing) to 5 (Much more embarrassing) scale. The dental exam and immunization sections each contained six questions that were used in order to keep participants from seeing that the study was specifically examining embarrassment. The questions were similar to the cervical exam questions (e.g., “How uncomfortable are you during a dental exam?”, “How likely is it that you will go in for a vaccination if it is recommended by your doctor?”) and answered on the same seven-point response scale

Medical Questionnaire. The “Medical Questionnaire” was the same as Experiment 3.1.

Results and Discussion

Perceptions of social responsibility. An ANOVA was run with perceptions of social responsibility as the outcome variable and social responsibility condition as the between-subjects factor. Results indicated that participants in the social responsibility condition were *less* likely to agree with the notion that important people in their lives expect them to go in for cervical exams ($M = 4.03$, $SD = 1.65$) than participants in the control condition ($M = 4.87$, $SD = 1.69$), $F(1, 74) = 4.71$, $p < .04$. These data suggest that priming social responsibility for an intimate medical exam may have led participants to disagree with the suggestion that their loved ones expect them to go for cervical exams.

Perceived embarrassment. An ANOVA was run with average perceived embarrassment as the dependent measure and social responsibility condition as the between-subjects factor. Results indicated no significant differences in average perceived embarrassment between the social responsibility ($M = 5.02$, $SD = 1.60$) and control conditions ($M = 4.77$, $SD = 1.98$), $F(1, 74) = 0.35$, *n.s.* A second ANOVA was run with the single-item measure of comparative embarrassment as the dependent variable and social responsibility condition as the between-subjects factor. Participants in the social responsibility condition reported being more embarrassed by Pap tests compared to women of the same age ($M = 3.19$, $SD = 1.19$) than those in the control condition ($M = 2.66$, $SD = 1.09$), $F(1, 74) = 4.01$, $p < .05$. These results indicate that priming one’s responsibility to family and friends may not lead to significant differences

in general perceptions of cervical exam embarrassment compared those who were not primed. However, when asked to judge one's embarrassment relative to women of the same age, priming social responsibility appears to cause greater comparative embarrassment compared to a control condition.

Risk perception. An ANOVA was run with average perception of cancer risk as the outcome measure and social responsibility condition as the between-subjects factor. Results indicated that participants in the social responsibility condition perceived significantly less risk of getting cervical cancer ($M = 2.19$, $SD = 0.96$) compared to control condition participants ($M = 2.76$, $SD = 1.33$), $F(1, 74) = 4.36$, $p < .05$. Therefore, the data suggest that priming one's responsibility to family and friends to receive an embarrassing medical exam caused women to perceive less risk of getting cervical cancer compared to a control condition.

Screening intentions. The effects of social responsibility on intentions to receive an embarrassing medical exam were of particular interest. Results indicated that participants in the social responsibility condition were significantly less inclined to get a cervical exam ($M = 3.83$, $SD = 1.63$) compared to those in the control condition ($M = 4.70$, $SD = 1.94$), $F(1, 74) = 4.41$, $p < .04$. Thus, after being primed with the notion that family and friends expect their loved ones to get a Pap smear, women were less likely to plan on getting a cervical exam compared to controls.

Mediational analyses. The next analyses tested whether ratings of comparative embarrassment or judgments of risk perception mediated the effects of social responsibility on screening intentions. Baron and Kenny's (1996) recommended steps to establishing mediation were again followed. In the first set of analyses, screening

intentions were regressed on social responsibility condition and comparative embarrassment. Figure 3.2 displays the standardized beta coefficients for the relationship between social responsibility condition, comparative embarrassment, and screening intentions. Social responsibility condition predicted comparative embarrassment, $t(74) = 2.00, p < .05$; comparative embarrassment strongly predicted screening intentions, $t(74) = -4.27, p < .001$; and the once-significant direct path from social responsibility condition to screening intentions, $t(74) = -2.09, p < .04$ fell to insignificance when the comparative embarrassment factor was introduced into the same equation, $t(74) = -1.34, p > .05$. Comparative embarrassment also explained a significant proportion of the variance in screening intentions, $R^2 = .20, F(1,74) = 18.23, p < .01$. A similar pattern emerged for the risk perception factor, but the full pattern of links required to show mediation did not reach significance.

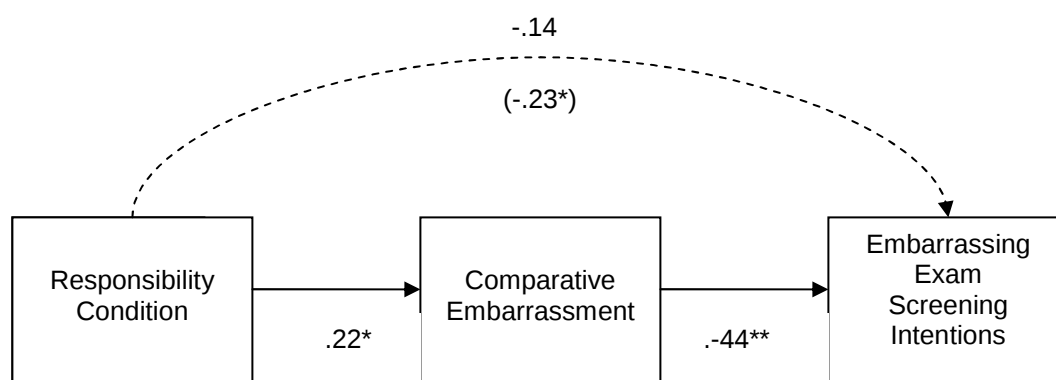


Figure 3.2: Comparative embarrassment appeared to mediate the effect of responsibility condition (Control = -1; Social Responsibility = 1) on cervical exam screening intentions. The dashed line indicates that the once-significant path from responsibility condition to screening intentions fell to insignificance when the mediating variable was entered into the equation. The values are standardized beta coefficients * $p < .05$ ** $p < .01$.

The goal of Experiment 3.2 was to explore the effects of social responsibility on intentions to go for an embarrassing medical exam. The main findings were that priming social responsibility appeared to decrease screening intentions compared to a control condition. General perceptions of cervical exam embarrassment were not significantly different between conditions, but social responsibility participants rated their comparative embarrassment significantly higher than those in the control condition. Moreover, comparative embarrassment mediated the effect of social responsibility condition on screening intentions.

Associating an intimate medical exam that involves touching genitalia and possible sexual undertones with family and friends may have heightened negative affect. Data from the perceived embarrassment measures appear to indicate that women in the social responsibility condition did not perceive cervical exams as generally more embarrassing than controls. However, priming social responsibility did appear to increase comparative embarrassment. One possibility is that social responsibility participants imagined that going for a cervical exam at the behest of one's family and friends would be more embarrassing compared to their peers who may be under no such obligation. One might expect that pairing family with cervical exams may also create dissonance. In order to reduce this dissonance, one possibility is that social responsibility participants rated their family and friends as less likely to expect them to go for a cervical exam compared to controls. In sum, these results and data indicating that participants in the social responsibility condition were less likely to express cervical exam screening

intentions might suggest that going for a cervical exam elicited greater negative affect than not going for the exam.

Priming social responsibility also decreased cervical cancer risk perceptions compared to a control condition. In Experiment 3.1, it was suggested that avoiding cervical exams may have alleviated participants' negative affect without activating additional attempts to regulate emotion. However, it is possible that social responsibility participants in the current study also felt negative affect from not going for the exam. The risk perception results may therefore indicate that social responsibility participants were attempting to relieve the negative affect associated with not going for the exam by perceiving less risk and, in turn, less need to go for an exam. These results are intriguing because they may indicate that two potential sources of negative affect (going for an intimate exam that is associated with family and friends and not going for an exam despite the expectations of family and friends) may lead to separate attempts at emotion regulation. However, risk perception did not mediate the effect of condition on screening intentions. Thus, the negative affect associated with going for an embarrassing medical exam may have been greater than the potential dissonance that social responsibility participants felt by avoiding cervical exams.

Experiment 3.3 examined the effects of social responsibility on intentions to go for a non-embarrassing medical exam, namely dental exams. If priming social responsibility increases intentions to go for a non-embarrassing medical exam, then such findings may provide support for the notion that it is the embarrassing nature of the exam that may influence intentions to seek medical care when social responsibility is primed.

Experiment 3.3

The goal of the current study was to examine the effects of social responsibility on intentions to seek non-embarrassing medical care. Based on findings from the previous study, it is possible that priming social responsibility leads to a general decrease in intentions to seek medical care, including care that is typically not perceived as embarrassing. In contrast, if it can be shown that social responsibility increases intentions to seek non-embarrassing medical exams, then such findings might provide additional support for the suggestion that embarrassment can influence intentions to seek medical care. Participants in the current study read a passage stating that friends and family expect their loved ones to be socially responsible by going for regular dental exams. Perceived embarrassment of dental exams, dental risk perceptions, and intentions to go for a dental exam were measured. Priming social responsibility was expected to increase screening intentions for a non-embarrassing medical exam without influencing dental exam embarrassment or dental risk perceptions compared to a control condition.

Method

Participants. Fifty-one undergraduate women at the University of California, San Diego voluntarily participated in return for course credit. Participants were 20.41 years old on average, and their ages ranged from 18 to 28 years old. Participant ethnicity was 67% Asian, 22% Caucasian, 5% Latino/Hispanic, 1% Pacific Islander, 1% African-American, and 4% other ethnicities. The procedure was the same as Experiment 3.2.

Procedure. Participants were run individually and were randomly assigned to one of two conditions, social responsibility ($n = 25$) or control ($n = 26$).¹¹ The remainder of the procedure was the same as Experiment 3.2.

Measures

Participant Survey. The “Participant Survey” contained questions on the same three types of medical care as described in Experiment 3.2. However, the main dependent measures in the current study were in the dental exam section. This section was always in the middle of the immunization and cervical exam sections to cover the purpose of the study.

As in the previous study, each of the three sections began with a short statement. In the control condition, the dental exam statement read, “Dentists recommend that young women go for regular dental exams to maintain oral health and to identify possible risks for serious medical conditions such as cancer.” In the social responsibility condition, the first sentence was the same as the control condition but it contained an additional sentence that served as the social responsibility manipulation. The social responsibility statement read, “Family members and friends also expect their loved ones to be socially responsible by getting dental exams in order to detect medical conditions early.” The immunization and cervical exam statements were the same in both the control and social responsibility conditions. The immunization statement was the same as Experiment 3.2. The cervical exam statement read, “Doctors recommend that young women get screened for cervical cancer by having regular Pap smears.”

¹¹ Three participants were excluded from the analyses because of language difficulties, two participants were excluded because they did not follow directions, and two participants were excluded because they heard about the experiment prior to participating.

In the dental exam section, participants were asked about their perceived embarrassment of dental exams, risk perceptions of dental disease, and intentions to go for a dental exam. The perceived embarrassment questions included, ‘How embarrassing do you generally find dental exams?’, ‘How embarrassing do you find having your mouth open while a dentist or dental assistant checks your teeth?’, and ‘How embarrassing do you find your face and mouth being looked at while you are lying down in a dentist’s chair?’ Risk perception questions included, ‘What do you think the chances are that one of your next dental exams will produce worrisome results?’, ‘How likely is it that you have been exposed to something that will increase your chances of developing gum disease?’, and ‘How likely is it that you are at risk for developing swollen or bleeding gums or oral sores?’. Future screening intentions questions included, ‘How likely are you to delay getting your next dental exam? (reverse-scored)’, ‘How likely is it that you will maintain regularly scheduled dental exams as recommended by your dentist?’, and ‘How difficult is it for you to get regular dental exams? (reverse-scored)’. Questions were rated on a 1 (Not at all) to 7 (Extremely) scale. An average was created for each question type such that higher numbers indicated greater perceived embarrassment, risk perception, and screening intentions. The immunization section contained six questions. The questions were similar to the dental exam questions (e.g., “How likely is it that you will go in for a vaccination if it is recommended by your doctor?”) and answered on the same response scale. Cervical exam questions were the same as those used in Experiment 3.2. As mentioned above, immunization and cervical exam statements were the same in both conditions. Therefore, no response differences between conditions were expected or found.

Medical Questionnaire. The medical questionnaire was the same as the previous experiment.

Results and Discussion

Perceived embarrassment. An ANOVA with average perceived embarrassment as the outcome measure and social responsibility condition as the between-subjects factor did not reveal a significant difference between conditions, $F(1, 50) = 0.72, n.s.$ As expected, priming social responsibility to go for a dental exam did not influence perceived embarrassment of dental exams.

Risk perception. An ANOVA was run with average risk perception as the outcome measure and social responsibility condition as the between-subjects factor. Results indicated that judgments of dental risk did not differ between conditions, $F(1, 50) = 1.60, n.s.$ Thus, as expected, priming social responsibility did not influence dental risk perceptions.

Screening intentions. Average screening intentions was the primary measure of interest. As shown in Figure 3.3, results from an ANOVA with screening intentions as the outcome measure and social responsibility condition as the between-subjects factor showed that participants in the social responsibility condition reported greater intentions to go for a dental exam ($M = 5.40$) than participants in the control condition ($M = 4.53$), $F(1, 50) = 4.19, p < .05$. Thus, women who were primed with the notion that friends and family expect their loved ones to go for a dental exam expressed increased intentions to go for the exam compared to a control condition.

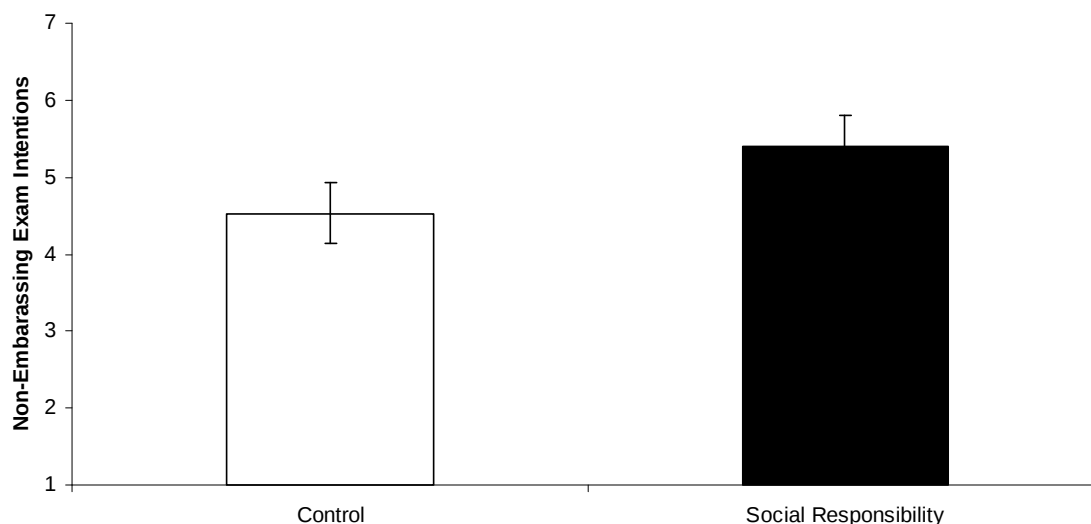


Figure 3.3: Mean intentions (with Standard Error bars) to go for a non-embarrassing (dental) exam.

The current results support the hypothesis that priming one's social responsibility to family and friends may increase intentions to seek medical care when the exam is not embarrassing. As expected, there was no evidence that social responsibility influenced perceptions of dental exam embarrassment or perceptions of dental risk. The data from Experiments 3.2 and 3.3 provide support for the suggestion that the embarrassing nature of the exam may influence screening intentions when social responsibility is primed.

General Discussion

The present investigation began with an examination of the integral effects of embarrassment on medical decision making. In Experiment 3.1, priming medical embarrassment did not influence perceptions of cervical cancer risk. However, medical embarrassment increased perceptions of cervical exam embarrassment, which in turn

decreased screening intentions. Experiments 3.2 and 3.3 explored the effects of social responsibility on embarrassing and non-embarrassing medical exams. Social responsibility increased comparative embarrassment of cervical exams, which in turn decreased screening intentions. Further, social responsibility decreased perceptions of cervical cancer risk. However, cancer risk perceptions did not mediate the effect of social responsibility condition on screening intentions. In Experiment 3.3, social responsibility increased screening intentions without influencing perceived embarrassment of dental exams or dental risk perceptions.

Integral Versus Incidental Effects of Embarrassment

The effects of integral embarrassment on risk perception in Experiment 3.1 were different than those of incidental embarrassment in the previous chapter. Unlike participants in Chapter 2, participants in Experiment 3.1 had an opportunity to express avoidance of a future threat of embarrassment (by avoiding cervical exams), which is an argued function of the emotion (Harris, 2006). In turn, an emotion regulation framework would predict that, by fulfilling a motivation inherent to embarrassment en route to achieving an emotion-specific goal, participants would be able to efficiently regulate their negative affect. As such, it was predicted that there would be a decreased likelihood of other, less direct routes being activated, which would mean relatively decreased perceptions of risk. This is because the most efficient route to emotion regulation would be to fulfill the motivation inherent to embarrassment and simply avoid future embarrassing exams.

Some researchers have suggested that testing the effects of incidental emotions on decision making helps to isolate the causal effects of a specific emotion on the decision making (Han, Lerner, & Keltner, 2007). Indeed, this paradigm was followed in the previous chapter. However, results from the current work show that incidental emotional effects may not necessarily generalize to integral emotional situations, particularly if an emotion-specific goal can be achieved. Since one of the major objectives of emotion and decision-making research is to predict behavior based upon one's emotional state, these results may add to the literature by providing some indication that embarrassment may have different effects on risk perception if one can avoid the threat of future embarrassment.

Social Responsibility and Medical Exams

The effects of social responsibility were intriguing for several reasons. First, results from Experiment 3.2 seem to indicate that not only did priming social responsibility for an intimate exam fail to increase screening intentions, it had the opposite effect. This finding may be useful to research investigating some factors that may influence the uptake of preventative exams, particularly exams that may be perceived as embarrassing. Second, the effects of social responsibility on screening intentions for an embarrassing exam may have provided additional support for the emotion regulation framework. Participants in Experiment 3.2 seemed to face two potential sources of negative affect (going for an embarrassing exam and avoiding an embarrassing exam despite family and friends' expectations). Therefore, whether participants in the social responsibility chose to go for cervical exams or not, they still

faced negative affective repercussions. In turn, participants appeared to do what participants in Experiment 3.1 did not have to do, which is explore related routes to emotion regulation (decreased risk perceptions). Third, results from Experiment 3.3 may have provided some support for the suggestion that the embarrassing nature of the exam can have a (negative) impact on treatment uptake for potentially embarrassing exams even when – rather, especially when - social responsibility is primed.

In the current investigation, it has been shown that embarrassment can influence choices that have serious, real-life consequences. Moreover, when attempting to influence behavior relating to a potentially embarrassing experience, even family and friends may fail to help one overcome the effects of embarrassment. Based on the current results, one might wonder what, if anything, could possibly overpower the experience of embarrassment. According to some recent work, there is reason to believe that one aspect of social life may have the power to overcome embarrassment. Namely, power itself.

Acknowledgment

This chapter, in part, is currently being prepared for submission for publication of the material. Coffaro, Frank; Harris, Christine R. The dissertation author was the primary investigator and co-author of this material.

CHAPTER 4

THE EFFECTS OF POWER ON NEGATIVE EMOTIONS

The present chapter explores how power influences the subjective experience of negative emotion. There has been a recent resurgence of interest in power and its effects on cognition and behavior. Particularly relevant is research indicating that power has implications for the experience of emotion, and one of the emotions that has been specifically linked to power is embarrassment.

Power is frequently defined as relative control over another's valued resources and the capacity to dispense rewards and punishments (Anderson & Berdahl, 2002; Emerson, 1962; Fiske & Berdahl, 2007; French & Raven, 1959). Much of the work on power and emotion stems from the approach/inhibition theory of power (Keltner, Gruenfeld, & Anderson, 2003). This theory, in part, puts forth the notion that high power is associated with increased positive affect and increases the likelihood of positive, approach-related emotions, such as happiness and pride. In contrast, low power is suggested to be associated with negative affect and increases the likelihood of negative, inhibitory emotions, such as embarrassment and fear. As Keltner et al. (2003) note, most of the studies used to support their propositions are correlational. There appears to be only one published whose a priori goal was to investigate the causal relationship between power and emotion.

Berdahl and Martorana (2006) manipulated power by assigning one (high power) participant in a three-participant group the responsibility of moderating a discussion on an emotional topic (causes of poverty). Each participant was told that there would be a

\$300 lottery at the end of the experiment and the group leader was responsible for determining how much money each of the members would receive if their group won the lottery. The results indicate that high-power participants experienced and expressed more positive emotion and less anger than low-power participants during the emotional discussion. There was, however, no difference between high- and low-power participants on a general measure of negative affect.

This study is important because it provides noncorrelational evidence that differences in power cause different emotional reactions. However, this means that causal evidence rests upon a single manipulation of both power and emotion. Further, since there was no difference between high- and low-power participants on a general measure of negative affect, the investigators and their findings suggest future investigations of power's effects on specific emotions.

The goal of the current work was to experimentally manipulate power and to examine its effect on specific emotions as well as to provide insight into the mechanisms responsible for such effects. Based on the literature, there is a possibility that high power increases the likelihood of experiencing positive affect because high power leads individuals to appraise a situation differently than those in low power (see Scherer, 1999 for an overview). For instance, Scherer (1999) suggests that if a situation is controllable, meaning that the course of events can be influenced, then appraised power, defined as having the ability to control the outcome of the situation, will determine subsequent emotion. Imagine a situation in which a person puts forth an idea during a business meeting that receives little support from other attendees. If in a lower-power role, that person lacks the power necessary to push the idea forward and is left with little control

over the professional consequences. The individual's lack of power provides little protection from feeling sadness over the idea being eschewed, embarrassment at having put forth an idea that was disregarded by colleagues, or even fear of having made a career limiting move. However, in this same situation, but a high-power role, the person may know that they have the resources necessary (money, organizational power, influence) to reward others in return for their support (e.g., salary increases) or punish those who do not provide support (e.g., poor job evaluations) in order achieve their goal and reap the subsequent rewards. Therefore one possibility is that appraisals associated with a position of high power may provide high-power individuals with a cognitive buffer against experiencing negative emotions and increase the likelihood that positive emotions will be felt. Thus, the cognitive threshold for triggering negative emotions would be relatively high for those in high-power positions, whereas the threshold for triggering such emotions would be relatively low for those in low-power positions.

The Current Research

The main goal of the current chapter is to investigate the causal effects of power on the experience of specific negative emotions – embarrassment (Experiment 4.1) and disgust (Experiment 4.2). Although past studies on power have included measures of emotion, most have not placed high- and low-power participants in situations that would be expected to elicit emotion (Anderson & Berdahl, 2002; Briñol, Petty, Valle, Rucker, & Becerra, 2007; Galinsky, Gruenfeld, & Magee, 2003; Smith & Bargh, 2008; Smith & Trope, 2006). The results across many of these studies indicate that there are minimal or

null effects of high or low power on emotion in the absence of an emotion-provoking situation. As mentioned previously, Berdahl & Martorana (2006) did create an emotional situation, but the emotion induction and power manipulation were inherently intertwined. Therefore, high- and low-power people were likely not experiencing an identical emotional situation.

To extend the literature on power and emotion, the current studies experimentally manipulated power, and placed high- and low-power individuals in exactly the same emotional context, which was designed to elicit a specific emotion in order to measure how it was affected by power. Specific emotions were induced to (1) determine whether correlational findings extend to laboratory manipulations of acute power and state emotions; (2) clarify the types of negative emotions on which power has an effect; and (3) shed light on the mechanism responsible for these effects. Based on the power as a psychological buffer hypothesis, one would predict that high-power participants will experience less embarrassment and disgust than low-power participants when exposed to the same emotion inducing situations.

Experiment 4.1

The first study examined the effect of power on the experience of embarrassment. Different methods of manipulating power have been used successfully in past research, including experientially. In this study, structural power was manipulated using a scenario similar to other studies that have randomly assigned participants to either a high- or low-power role (Anderson & Berdahl, 2002; Berdahl & Martorana, 2006; Galinsky,

Gruenfeld, & Magee, 2003). Individuals in both the high- and low-power conditions were then placed in an identical emotional situation. Embarrassment was chosen because it has been described as an inhibitory and submissive emotion that is more likely to be experienced by those in low power (Keltner et al., 2003; Mondillon et al., 2005). Based on correlational research (Keltner et al., 2003), one might expect that inducing an emotion that is so strongly associated with low power would cause low-power individuals to feel significantly more embarrassment than those in high power. This would not only support some of the research on emotion and power but also provide evidence for the emotional benefits of high power in negative emotional situations.

Method

Participants. Participants were 85 undergraduates (46 male, 39 female) from the University of California, San Diego who participated for course credit. Their ages ranged from 17 to 30 years ($M = 19.68$, $SD = 1.66$). The sample was 66% Asian, 15% Hispanic, 13% Caucasian, and 6% other.

Design and Procedure. Participants were randomly assigned to one of two power conditions (high or low) and one of two emotion conditions (neutral or embarrassment). The four groups were high power/neutral ($n = 20$), high power/embarrassment ($n = 21$), low power/neutral ($n = 22$), and low power/embarrassment ($n = 22$).¹² All male participants were run by the same female experimenter, and all female participants were run by the same male experimenter since

¹² Five participants were excluded from the analyses because they were either suspicious of the power or emotion manipulation, did not follow directions, or reported being preoccupied and emotional over events that occurred outside of the experiment

previous work in the lab suggests cross-gender dyads elicit greater embarrassment. Participants were told that they would be participating in two experiments, the first an organizational behavior study (power manipulation), and the second, an experiment piloting a task for future studies (emotion manipulation).

Power manipulation. The organizational behavior study ostensibly involved investigating hiring situations. Participants in the high-power condition were told that they were going to conduct an online interview of two actual lab applicants and that they would have the power to decide which applicant would move on to a second round of interviews. They were given a binder containing background information on the position, a job description, and a list of 21 possible interview questions from which they were asked to pick ten. High-power participants were told that they were on an online conference chat with both applicants and were instructed to ask each question one at a time until all of the questions were answered. They were asked to select the applicant that they believed to be best suited for the job based upon all of the applicants' answers. In reality, the experimenter responded to the questions for both applicants, using answers that were previously written. Low-power participants were told that they and another supposed participant were going to be interviewed by an actual lab employee, who had the power to decide which participant would remain in the lab for the rest of the experiment to work on quick, interesting tasks, and which participant would be sent down to the basement to work on long, boring tasks. They were instructed to wait for the questions to appear on the computer screen and to answer each question until the interviewer indicated that the interview was complete.

Emotion manipulation. The emotion manipulation was the same manipulation used in Experiments 2.1 and 2.2 in Chapter 2. As mentioned in the previous chapter, participants in each condition viewed four pictures, presented sequentially on a computer screen. The first three pictures each had an aqueous theme (a person swimming, people walking on the beach, and a boat slip) and were the same for both emotion conditions. Each picture appeared on the screen for approximately 10 seconds and then a new picture appeared. After the fourth picture, the experimenter re-entered the room. Participants were told that their eye movements had been tracked while viewing the pictures and that the experimenter wanted to make sure the eye-tracking program worked properly. The experimenter then started a program that purportedly showed the participants' eye-tracking lines along with circles, representing fixation points (these in fact were not real but had been created to mimic an actual eye-tracking program). In the embarrassment condition, the last picture was a close-up of three men standing on the beach in brightly colored tight bathing trunks. Embarrassment was elicited by pointing out to the participants that the majority of their eye-tracking lines and fixation points were covering the three men's crotches, particularly the man standing in the middle who was most prominently featured in the picture. In the neutral condition, the last picture showed a generic faucet, and the subsequent eye-tracking lines were not intended to elicit any emotion.

Dependent measures. After the picture task, participants completed several measures, including rating their current levels of different emotions: anger, embarrassment, anxiousness, disgust, happiness, sadness, and fear (1 = Not at all, 7 = Very much). Embedded amongst other questions, were two power manipulation checks

(“I had the most power during the first experiment” and “I controlled the outcome of the first experiment”) rated on a 1 (Disagree strongly) to 5 (Agree strongly) scale.

Participants were fully debriefed at the end and informed of the deception regarding the eye-tracking.

Results

There were no gender differences in Experiment 4.1. Therefore, results were collapsed across gender.

Power manipulation check. High-power participants reported having significantly more power ($M = 4.10$, $SD = 1.04$) than low-power participants ($M = 3.41$, $SD = 0.92$), $F(1, 84) = 10.41$, $p < .003$, and feeling significantly more in control ($M = 4.15$, $SD = 1.04$ vs. $M = 3.41$, $SD = 0.97$) during the interview, $F(1, 84) = 11.43$, $p < .002$, indicating that the power manipulation was successful.

Effects of power on embarrassment. To examine the effects of power on embarrassment, a 2 (Power Condition: high vs. low) by 2 (Emotion Condition: embarrassment vs. neutral) ANOVA was conducted. As expected, embarrassed participants reported feeling significantly more embarrassment ($M = 3.00$, $SD = 1.23$) than participants in the neutral condition ($M = 1.14$, $SD = .42$), $F(1, 84) = 87.62$, $p < .001$. As seen in Figure 4.1, there was no significant main effect of power on embarrassment, $F(1, 84) = 2.88$, $p > .05$. However, of particular interest was the significant interaction, $F(1, 84) = 4.49$, $p < .04$, between power condition and emotion condition. Contrary to the predictions of the buffering hypothesis, high-power individuals ($M = 3.33$, $SD = 1.02$) reported significantly greater embarrassment than low-

power individuals ($M = 2.60$, $SD = 1.33$) in the embarrassment condition, as confirmed with a follow-up t -test, $t(41) = 2.05$, $p < .05$. This finding provides evidence that high power may increase feelings of embarrassment in a potentially embarrassing situation.

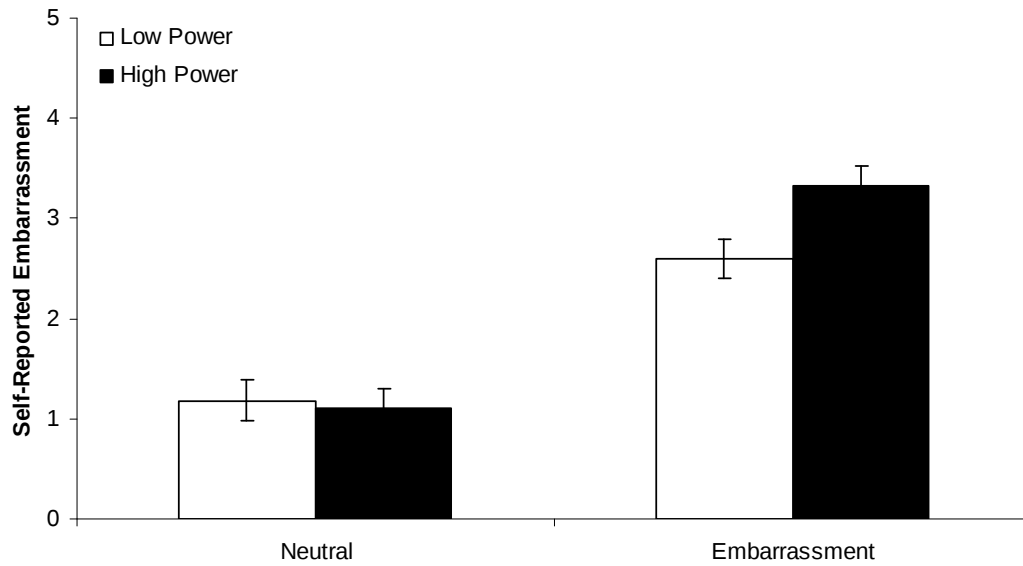


Figure 4.1: Mean ratings (with Standard Error bars) of self-reported embarrassment for high- and low-power participants in the neutral and embarrassment conditions.

As noted above, the embarrassment manipulation was successful in eliciting embarrassment relative to the neutral condition. Two other emotions also were greater in the embarrassment condition: anger ($M = 1.40$, $SD = 0.76$), $F(1, 84) = 9.87$, $p < .003$, and disgust ($M = 1.60$, $SD = 0.91$), $F(1, 84) = 16.84$, $p < .001$. However, additional analyses revealed that embarrassment was significantly greater than anger, $t(42) = 7.67$, $p < .001$, and disgust, $t(42) = 7.18$, $p < .001$, in the embarrassment condition, which suggests that embarrassment was the primary emotion experienced during the task.

Discussion

The power buffer hypothesis would predict that low-power participants should experience more embarrassment than high-power participants when confronted with the same emotion-inducing situation. However, contrary to this view, participants in the high-power condition reported significantly greater embarrassment than those in the low-power condition. When state power was manipulated and participants were subsequently placed in an acute emotional situation, the present findings suggest that not only did high power fail to buffer participants from embarrassment, it actually intensified their experiences.

The findings indicating that power caused an increase in embarrassment contrast with data from correlational studies, which suggest that embarrassment is more frequently experienced by those with low power. One possible explanation, not yet discussed, of the intriguing link between high power and greater embarrassment in the current work has to do with the social nature of the power and embarrassment inductions. The high-power manipulation elevated participants' social standing (e.g., made them the person with the authority to purportedly determine two other people's fates). One of the major threats in embarrassment is fear of negative social evaluation or the loss of face (Miller, 1996). Therefore, high-power subjects may well have had more to lose when their social images were threatened by the embarrassment manipulation. In a sense, the higher one is socially, the further one can fall. If this account is correct, then it would suggest that the link between greater power and greater negative emotion would not generalize to other negative emotions, but would be unique to embarrassment (or at least to emotions that threaten social image). The next study examines this possibility.

Experiment 4.2

The findings in Experiment 4.1 could indicate that power provides no benefit across negative emotional situations of which embarrassment is just one example. It is also possible that power can provide a buffer against some negative emotions, particularly in cases where the negative emotion does not directly threaten power. To test this latter possibility, a second negative emotion, one not intrinsically connected to the power manipulation was examined, namely disgust. Disgust is experienced in nearly all cultures and can be elicited across a variety of contexts, from contaminated food, to blood and gore, to perceived socio-moral transgressions (Haidt, Rozin, McCauley, & Imada, 1997). Disgust was elicited by having participants view a picture of a bloody gunshot victim. Power was manipulated using the same methods employed in Experiment 4.1.

If the “higher you are, the further you fall” account of the embarrassment findings is correct, then one would not expect power to have a similar enhancing effect on feelings of disgust. Furthermore, if power can provide a buffer against negative emotion, then individuals with high power should experience less emotion when confronted with disgust stimuli.

Method

Participants. Participants were 64 undergraduates (32 male; 32 female) from the University of California, San Diego who participated for course credit. Their ages ranged from 18 to 25 years ($M = 20.06$, $SD = 1.70$). The sample was 65% Asian, 16% Caucasian, 6% Hispanic, 2% African-American, 3% Pacific Islander, and 8% other.

Design and Procedure. The procedure for the second study was similar to the first study in this chapter. Participants were randomly assigned to one of two power conditions (high or low) and one of two emotion conditions (disgust or neutral). The four groups were high power/neutral ($n = 17$), high power/disgust ($n = 14$), low power/neutral ($n = 18$), or low power/disgust ($n = 15$).¹³ The same cover story was employed here as in Experiment 4.1.

Power manipulation. The power manipulation was the same as in Experiment 4.1.

Emotion manipulation. Participants looked at a series of pictures using the same program described in the previous study. The first three pictures shown in each emotion condition were of an abstract painting, a mountain, and a cluttered office. The last picture in the disgust condition, however, was designed to elicit disgust by showing a close-up photograph of a gunshot victim who had suffered serious facial injuries (Lang, Bradley, & Cuthbert, 2008) while the fourth picture in the neutral condition was of a wooden chair.

Dependent measures. The emotion measures from Experiment 4.1 were used in this study. Since the successful power manipulation used in the previous study is identical to the one used in this study, the questions for the power manipulation check were eliminated in the interest of time.

¹³ Four participants were excluded from the analyses because they did not follow directions or reported being preoccupied and emotional over events that occurred outside of the experiment.

Results

There were no gender differences in Experiment 4.2. Therefore, results were collapsed across gender.

Effects of power on disgust. To examine the effects of power on disgust, a 2 (Power Condition: high vs. low) by 2 (Emotion Condition: disgust vs. neutral) ANOVA was conducted. Disgusted participants reported feeling significantly more disgust ($M = 3.34$, $SD = 1.52$) than participants in the neutral condition ($M = 1.00$, $SD = 0$), $F(1, 63) = 96.04$, $p < .001$. There was a significant effect of power on disgust, $F = 5.47$, $p < .03$, which was qualified by a significant interaction, $F(1, 63) = 5.47$, $p < .03$. Means are presented in Figure 4.2. As in Experiment 4.1, high power did not buffer negative feelings. Instead, high-power individuals ($M = 3.93$, $SD = 1.14$) reported significantly greater disgust than low-power individuals ($M = 2.80$, $SD = 1.66$) in the disgust condition, as confirmed with a follow-up t-test, $t(27) = 2.12$, $p < .05$. This finding provides additional evidence that high power may increase feelings of negative emotion in potentially negative emotional situations.

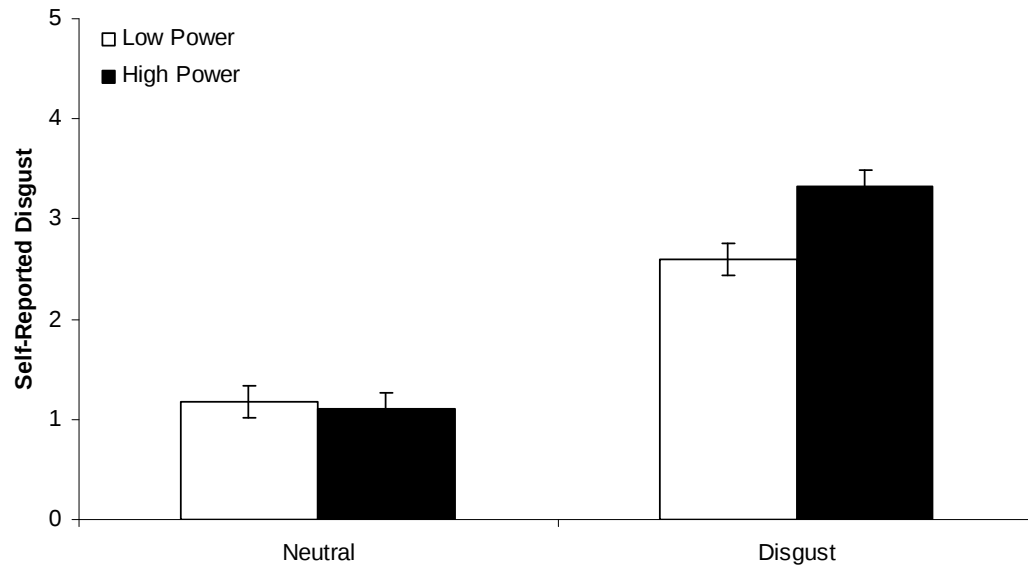


Figure 4.2: Mean ratings (with Standard Error bars) of self-reported disgust for high- and low-power participants in the neutral and disgust conditions.

Self-reports of other emotions were examined, besides disgust, and results indicate that people in the disgust manipulation reported significantly greater levels of anger ($M = 1.50$, $SD = 0.74$), $F = (1,63) = 10.32$, $p < .01$, embarrassment ($M = 1.55$, $SD = 0.95$), $F = (1,63) = 5.74$, $p < .03$, sadness ($M = 2.40$, $SD = 1.18$), $F = (1,63) = 29.68$, $p < .01$, and fear ($M = 2.56$, $SD = 1.50$), $F = (1,63) = 24.71$, $p < .01$, relative to those in the neutral condition. Disgust was, however, the most intensely experienced emotion as confirmed by t-tests comparing it to each of the other emotions.

Discussion

Results from Experiment 4.1 left open the possibility that power can provide an emotional benefit in negative emotional situations, but that those benefits would be more

likely to occur when the emotional situation does not threaten one's power. To test this hypothesis, disgust was induced in both high- and low-power participants. Findings indicate that high power leads to significantly greater disgust, as it did with embarrassment. Findings from both studies provide no evidence for the power buffer hypothesis. Power did significantly affect negative emotion, but in the direction opposite of the buffer hypothesis.

Another interpretation of the results in Experiment 4.1 is that the powerful experience increased feelings of embarrassment compared to those with less power because high-power individuals have more to lose, and thus further to fall, in an embarrassing situation. Results from Experiment 4.2 do not support the further-to-fall hypothesis because disgust does not pose a threat to power, yet high-power individuals still experience more disgust than low-power individuals. Overall, results from both studies appear to indicate that power does not provide a buffer in potentially negative situations irrespective of whether power is threatened.

General Discussion

The current research appears to be the first to experimentally manipulate power while also experimentally inducing specific emotions. This approach allowed for exploring the effect of power on emotional experience when the emotion inducing situation is the same for both high- and low-power participants. Experimentally manipulating both power and specific emotions provided the best opportunity to isolate the causal effects of power on the experience of specific emotions. Experiment 4.1

focused on embarrassment, which is frequently described as an emotion typically associated with low power (Keltner et al., 2003; Mondillon et al., 2005), whereas disgust was elicited in Experiment 4.2, which is an emotion not typically associated with high or low power.

The findings suggest that when high-power individuals are placed in an acute, negative emotional situation, power provides little benefit in reducing the experience of negative emotion and may actually be detrimental in such situations. There was no evidence to support the notion that power raises the threshold for experiencing negative emotions. In fact, contrary to a buffer hypothesis, when confronted with an embarrassing and disgusting situation, high power caused *greater* embarrassment and disgust compared to low power. In non-emotion inducing situations, the findings are consistent with past research and indicate that state power does not have a significant effect on emotion.

The findings add to the literature in that they provide support for the suggestion that power can have a causal effect on specific emotions. However, at least in the case of embarrassment and disgust, the causal effect is different than what one might anticipate from past research. As noted in the introduction, most correlational studies and many theories suggest that individuals with high power experience less negative affect relative to those with low power. The current work suggests that this relationship is not due to power providing a cognitive buffer against negative emotional experiences. So what mechanism might account for these correlational findings?

One explanation is that powerful individuals do not find themselves in the same types of negative situations as the less powerful. For one, being powerful enables an individual to have greater options in choosing situations to enter into. Interestingly,

situation selection is one of the key strategies discussed in models of emotion regulation (Gross, 2001). A large body of research suggests that the best way to reduce negative emotional responding is to engage in behaviors that prevent the emotion from occurring in the first place, commonly referred to as antecedent strategies rather than trying cope with the emotion once it has occurred (e.g., Gross, 1998b; Gross, & Levenson, 1993; Harris, 2006). Avoiding negative emotional situations may be what the powerful are particularly strong at doing.

Even situations that may on first blush, appear similar for high- and low-power individuals could actually be inherently different. This suggestion fits with Keltner's work on teasing and embarrassment (Keltner, Young, Heerey, Oemig, & Monarch, 1998). High-power fraternity members showed less embarrassment than low-power fraternity members when they were the object of teasing interactions. However, they also did not receive the same types of teasing. For example, the jokes made at the expense of high-power members were more prosocial (more polite and less hostile) than those targeted at low-power fraternity members. An interesting implication of the current work is that, had the high-power fraternity members been teased to a similar extent, they may have experienced even greater embarrassment than low-power fraternity members did. The findings suggest that high-power individuals may be less able to regulate emotion once it occurs.

In closing, additional experimental work is needed to determine if the effects of power on embarrassment and disgust are unique, or whether power is also associated with greater experience of other specific negative emotions. The area of power and emotion is

a rich area for research and the hope is that this work inspires further research in this domain.

Acknowledgment

This chapter, in part, is currently being prepared for submission for publication of the material. Coffaro, Frank; Harris, Christine R. The dissertation author was the primary investigator and co-author of this material.

CHAPTER 5

CONCLUSIONS

This dissertation has been concerned with embarrassment and its effects on cognition and behavior. A primary focus has been on examining the effects of embarrassment on judgments and decisions that are both related and unrelated to the embarrassment eliciting situation. Before reviewing the findings from the empirical studies presented in Chapters 2 through 4, I will briefly review two prominent theoretical perspectives on emotion, as well as basic findings from emotion and decision-making research that are, in part, understood in light of these perspectives.

Functional and cognitive appraisal approaches to emotions are mostly built around the theoretical framework that specific emotions are functional states elicited by appraisals that create motivational tendencies, accompanied by physiological arousal and nonverbal behavior in a coordinated effort to address specific challenges or opportunities in the environment. These approaches differ on the aspect of the emotion process on which they focus. Functional approaches focus on action tendencies (Frijda, 1986), specific goal-driven behaviors said to quickly mobilize an organism to deal with relevant stimuli. Appraisal approaches focus on appraisal themes, either as discrete thoughts or as a unique set of appraisals along specific dimensions, that elicit emotions and act as lenses through which the world is understood and acted upon. Each of these perspectives has been used to identify and understand specific emotions, including embarrassment.

Although only recently considered to be a distinct emotion by some, embarrassment may serve critical functions in maintaining adherence to social norms and

preventing ostracism. Fears of being negatively evaluated appear to be central to the elicitation of embarrassment, which may, in part, be caused by social transgressions, cognitive errors, or the focus of unwanted or unexpected attention. Embarrassment may in turn motivate expressions of appeasement, prompt reparative behaviors, and act as an affective deterrent from future embarrassing behavior, all in service of allowing an individual to remain connected to the group, thus increasing inclusive fitness. Evidence that may support the argument for embarrassment as a distinct emotion is not only important in understanding embarrassment as the sum of its parts, but also to understanding how those parts may influence judgment and behavior and whether that influence is unique from other emotions.

Emotions have typically been excluded from traditional decision-making models. However this approach has been challenged by recent research, as an increasing number of studies indicate that emotion may play an important role in decision making. While general positive and negative affect received most of the early attention in emotion and decision-making research, the literature is now evolving toward a specific emotions approach. Anger, fear, sadness, and disgust, among others, have been shown to have distinct influences on a variety of different judgment and decision-making tasks. These effects are often framed in terms of functional or cognitive appraisal approaches to emotions. According to some appraisal theorists, for example, fear may lead to increased risk perception and decreased risk taking due to appraisals of situational control and uncertainty (Lerner & Keltner, 2000, 2001; Lerner & Tiedens, 2006). Other researchers have suggested that sadness may increase risk taking, not because sadness is inherently

associated with risky tendencies per se, but rather sadness may motivate reward-seeking behavior (Raghunathan & Pham, 1999).

Recent research suggests that embarrassment may also have distinct appraisals, motivations, and goal-driven behaviors. Its effects, however, are relatively unexplored in the emotion and decision-making literature. Therefore, the two main questions this dissertation seeks to address are whether embarrassment has distinct effects on judgment and choice and, if so, do cognitive appraisals associated with embarrassment or proposed functions of embarrassment influence subsequent decision making.

A Review of the Findings:

Does Embarrassment Have Distinct Effects on

Decision Making?

I turn now to the findings presented in the previous chapters and how they bear on the relationship between embarrassment and decision making.

Measures of risk perception and risk taking have been used to investigate the effects of emotion on decision making from earlier valence-based studies (Johnson & Tversky, 1983; Tversky & Kahneman, 1981) to more recent specific emotions research (Leith & Baumeister, 1996; Lerner & Keltner, 2000, 2001; Lerner et al., 2003; Raghunathan & Pham, 1999). According to some researchers, incidental emotions may be particularly useful in these examinations (Han, Lerner, & Keltner, 2007). For instance, Han, Lerner, and Keltner (2007) stated that “incidental emotions [as opposed to integral emotions] can be experimentally manipulated independently from the judgments

and decisions at hand, allowing one to test the causal effects of emotions on judgments and choices”.

In Experiments 2.1(a/b) and 2.2(a/b), the effects of incidental embarrassment on risk perception and risk taking were examined. Using two different embarrassment manipulations and two different risk perception measures that have been used in past research, the results suggest that incidental embarrassment decreases risk perception compared to a neutral mood. These results are interesting because they are the first to show the effects of embarrassment on risk perception. Furthermore, this effect of embarrassment was identified in comparison to a nonemotional state, thus allowing the results to be identified in absolute terms. However, many studies in the emotion and decision-making literature compare the effects of specific negative emotions to one another (e.g., Lerner & Keltner, 2000, 2001; Raghunathan & Pham, 1999). In Experiment 2.3, therefore, the effects of embarrassment were compared to those of anger and fear. The resulting data suggest that embarrassment may also have distinct effects from those of fear. Specifically, embarrassment appears to decrease risk perception and increase risk taking compared to fear, but the effects of embarrassment do not appear significantly different than those of anger.

In sum, incidental embarrassment appears to have distinct effects on risk perception compared to both a neutral mood and a fearful state. Additionally, while embarrassment may increase risk taking compared to fear, the overall pattern of risk taking results suggests that embarrassment does not motivate risky choices.

Data from Experiment 3.1 suggest that integral embarrassment may also have distinct influences on judgments and decisions. Results indicate that medical

embarrassment may lead to increased perceived cervical exam embarrassment and decreased cervical cancer screening intentions compared to a neutral condition.

Perceived embarrassment also appears to mediate the effect of emotion condition on screening intentions. These results may provide the first causal evidence to support correlational research that suggests that embarrassment may be a barrier to seeking certain types of medical care. Unlike findings from Chapter 2, participants in the embarrassment condition do not rate themselves as being at less risk for cervical cancer than those in the neutral condition. Therefore, incidental effects of embarrassment on risk perception might not extend to its integral effects. Potential reasons for this difference are discussed in the next section.

Social responsibility was manipulated in Experiment 3.2 in order to explore its effects on intentions to seek embarrassing (cervical exam) medical exams. Social responsibility was investigated because some research suggests that it is a potentially adaptive motivation that may be associated with embarrassment. One possibility is that priming one's social responsibility to obtain an embarrassing medical exam may increase screening intentions. However, data from Experiment 3.2 suggest that priming one's social responsibility to family and friends to go for a cervical exam does not increase screening intentions. In fact, participants in the social responsibility condition report being significantly *less* likely to plan on getting a cervical exam than control condition participants. Furthermore, priming social responsibility does not appear to influence general perceptions of cervical exam embarrassment compared to a control condition. Therefore, there appears to be a negative effect of social responsibility on intentions to go

for a cervical exam, but this effect does not seem to be influenced by general perceptions of cervical exam embarrassment.

Results from Experiment 3.2 may indicate that priming social responsibility decreases screening intentions for certain types of embarrassing medical exams. A possibility is that priming social responsibility decreases screening intentions for all types of medical exams, including those that are typically not perceived as embarrassing. In Experiment 3.3, the effects of social responsibility on non-embarrassing medical care were examined. In contrast, to results from Experiment 3.2, data from Experiment 3.3 suggest that priming social responsibility may increase screening intentions for non-embarrassing medical exams compared to a control condition. This finding may provide some indication that social responsibility could have different effects on medical screening intentions depending upon the embarrassing nature of the exam. In turn, findings from Experiment 3.2 and 3.3 could provide additional support for the notion that embarrassment may influence medical decision making, including situations in which one's responsibilities to family and friends are evoked.

Based upon the findings presented above, the empirical work reported in Chapters 2 and 3 provide some of the first evidence to support the assertion that embarrassment may have distinct effects on judgments and decisions.

Is There a Framework That Accounts for the Effects of Embarrassment on Decision Making?

As mentioned earlier, cognitive appraisal and functional accounts of emotions have been used to understand emotional effects on judgment and choice. One of the main goals of this dissertation was to explore whether these approaches could also be used to account for embarrassment's effects on decision making. Based upon findings from some of the current studies, the results appear mixed.

Experiment 2.3 specifically examined whether an appraisal framework (e.g., Lerner & Keltner, 2000, 2001; Lerner & Tiedens, 2006) could be used to understand the incidental effects of embarrassment on risk perception and risk taking found in Chapter 2. It was also designed to replicate some of the past appraisal and decision-making findings from studies that investigated the effects of anger and fear on risk-related decisions (Lerner & Keltner, 2000, 2001). There is work that suggests that embarrassment is associated with appraisals of self-responsibility (Miller, 1996), uncertainty, and lack of control (Keltner & Buswell, 1997). Past research also suggests that anger is characterized by central appraisals of certainty and human control, whereas fear is characterized by uncertainty and situational control (Lerner & Keltner, 2000, 2001). Furthermore, findings from one study suggest that control appraisals may mediate the effects of anger and fear on risk perception (Lerner & Keltner, 2001, Study 4). Therefore, four appraisal dimensions were measured (responsibility, situational control, human control, certainty/uncertainty) for each of the three emotions in order to examine

whether emotional differences in cognitive appraisals may account for the effect of emotion condition on risk perception and risk taking.

Results indicate that three of the four self-reported appraisal dimensions (responsibility, situational control, and human control) were significantly influenced by the emotion manipulations. These findings may provide some support for the assertion that specific emotions may differ across certain appraisal dimensions (e.g., Smith & Ellsworth, 1985). However, the appraisal differences did not appear to mediate the effects of emotion condition on risk perception or risk taking. Thus, it does not seem that a cognitive appraisal approach can account for the effects of incidental embarrassment on risk perception or risk taking that were found in Chapter 2.

The first experiment in Chapter 3 was designed to examine the integral effects of embarrassment on decision making. Similar to the Chapter 2 studies, Experiment 3.1 also contained a risk perception measure, which may allow for a comparison between the effects of incidental and integral embarrassment on judgments of risk. Furthermore, participants in Experiment 3.1 also had an opportunity to judge the likelihood of avoiding future instances of embarrassment. As mentioned earlier, it has been suggested that this is a behavior that embarrassment may motivate (Harris, 2006). The opportunity to judge one's likelihood of avoiding future instances of embarrassment may be important because fulfilling an argued motivation associated with embarrassment could provide some insight into whether a functional approach can help to account for such judgments.

Results from Experiment 3.1 indicate that embarrassment condition participants reported being less likely to go in for future cervical exams than those in the neutral condition. These results may thus provide some initial support for the suggestion that a

functional account of embarrassment may help predict embarrassment's effects on judgments and decisions in which there is an opportunity for a person to fulfill a motivation associated with embarrassment. Results from Experiment 3.1 also indicate that participants in the embarrassment condition did not judge themselves as being less likely to get cervical cancer than those in the neutral condition. Thus, integral embarrassment does not appear to have the same effects on risk perception as did incidental embarrassment, at least when using the measures that were given in the current set of studies.

In sum, a functional approach to emotional decision making may help to understand the decreased screening intentions for embarrassment condition participants in Experiment 3.1. However, since the risk perception and risk taking measures used in Chapter 2 did not provide participants with an opportunity to exercise one of the argued motivations associated with embarrassment, a functional approach does not seem to account for the incidental effects of embarrassment on risk that were found in Chapter 2. Further, results from Experiment 2.3 suggest that an appraisal approach may also not be able account for such effects. In turn, neither functional nor appraisal approaches seem to account for differences in risk perception findings between Chapter 2 (embarrassment decreases risk perception) and Experiment 3.1 (no effect of embarrassment on risk perception). This may indicate that there may be other routes through which emotions can influence judgment and decision making. A mechanism or process that helps to understand some of the effects of embarrassment that were found in the current dissertation, particularly findings that do not appear to be accounted for by appraisal or functional frameworks, is therefore of particular interest.

Emotion Regulation Framework

Emotion regulation may be one process through which some of the current findings may be understood. As mentioned earlier, some investigators have suggested that emotions allow one to quickly deal with challenges or opportunities in the environment (Frijda, 1986; Keltner & Gross, 1999; Levenson, 1994; Oatley & Johnson-Laird, 1996). Additionally, it has been suggested that once these challenges or opportunities are successfully handled, one can then return to the emotional state that existed prior to the event (Lerner & Tiedens, 2006). A possible implication of these suggestions is that emotions may not only function to prompt judgments and choices that allow for the most efficient handling of an emotional situation, but also those that provide the quickest route to re-establishing one's pre-existing emotional state. For example, it was mentioned earlier that embarrassment condition participants in Experiment 3.1 fulfilled a proposed function of embarrassment by expressing a relatively greater likelihood of avoiding a future potentially embarrassing experience (cervical exams). In this situation, making such a judgment may also be the most direct route to regulating negative affect and restoring the pre-existing emotional state.

An emotion regulation approach may also account for the effects of social responsibility on embarrassing and non-embarrassing medical exams in Experiments 3.2 and 3.3, respectively. It was suggested in Chapter 3 that participants in Experiment 3.2 may have reacted negatively to pairing family and friends with an intimate medical exam. One possibility is that avoiding cervical exams was the quickest route to alleviating negative affect, as opposed to going for the exam and fulfilling one's social responsibility to family and friends. In contrast, participants in the social responsibility condition in

Experiment 3.3 may have more effectively regulated their affect by fulfilling their social responsibility to family and friends and going for a relatively non-embarrassing dental exam.

An important point to note, and one that is particularly relevant to findings in Chapter 2, is that emotional situations may not always provide opportunities to directly deal with the emotional event. For instance, an example was given earlier in which a subordinate who is angry at his boss may not be able to directly act upon his anger without jeopardizing his career. Similarly, certain laboratory studies on incidental emotions may not provide opportunities to fulfill a proposed function of a specific emotion (e.g., Leith & Baumeister, 1996; Lerner & Keltner, 2000, 2001). For example, the studies in Chapter 2 contained dependent measures that did not provide an opportunity to fulfill any argued functions of embarrassment, such as avoiding future instances of embarrassment. An interesting question is whether individuals in these situations make judgments and decisions that may be understood within an emotion regulation framework. For instance, the risk taking findings in Chapter 2 may indicate that embarrassed participants were no more likely to take risks than neutral participants in order to prevent any further degradation in mood. However, embarrassed participants may have been relatively more optimistic about their own future and others' well being because such judgments may have provided emotion regulatory benefits. In the absence of judgments or choices that allowed embarrassed participants to fulfill a potential motivation associated with embarrassment, an emotion regulation framework might suggest that this specific pattern of risk perception and risk taking findings reflects an unconscious attempt at regulating one's affective state. This argument is similar to the

one put forth by Leith and Baumeister (1996) in which the authors stated that embarrassed participants in their study, who also did not have an opportunity to fulfill an embarrassment-specific function, made choices consistent with the perception that high-risk/high-reward options would be the most effective in improving participants' emotional state compared to participants in a good mood. An emotion regulation framework may also be able to account for the differences in risk perception findings between the studies in Chapter 2 and those from Experiment 3.1. Specifically, embarrassed participants in Experiment 3.1 may not have been significantly more optimistic regarding their chances of getting cervical cancer because they were able to more efficiently regulate their affect by fulfilling a motivation associated with embarrassment (i.e., avoiding cervical exams).

In sum, the emotion regulation framework put forth above predicts that specific emotions will motivate judgments and choices that may lead to fulfilling an emotion-specific motivation. These judgments and choices may be adaptive because they allow one to most efficiently handle the emotional event and might also be the quickest route to re-establishing one's emotional state prior to the event. In the absence of an opportunity to fulfill such motivations, then individuals may be expected to make judgments and choices that are perceived as being most likely to alleviate negative affect or, at the least, not exacerbate it.

It has also been suggested that certain psychological or situational variables may influence the likelihood of experiencing certain affective states, including specific emotions such as embarrassment. For example, Keltner, Gruenfeld, and Anderson (2003) suggest that individuals in lower levels of social power are more likely to experience

embarrassment compared to those in higher levels of power. This suggestion may indicate that high power may be another route toward alleviating or preventing negative affect associated with an embarrassing event. Experiment 4.1 was designed to test this suggestion.

Embarrassment and Power

Emotions have been experientially manipulated in the emotion and decision-making literature, and social power has been manipulated in the power literature. However, Experiments 4.1 and 4.2 are one of the few studies in which power and emotion are both manipulated. Further, these experiments may be the only studies in which people in different levels of power are placed in the exact same emotional situation. This is important because it allows for isolating the causal effect of power on emotion. In Chapter 4, the power buffer hypothesis was presented, which predicts that power may raise the threshold of experiencing negative emotion and thus help to explain why people in high-power positions ostensibly experience less negative emotion than those in relatively low-power positions.

Experiment 4.1 was of particular interest because it examined the effects of power on embarrassment. The study was inspired by work suggesting that embarrassment is an emotion typically associated with low power (Keltner et al., 2003). Based on recent work, one hypothesis is that high-power participants would experience less embarrassment than low-power participants. However, data from Experiment 4.1 suggest the opposite. Specifically, not only did power fail to provide a buffer from self-reported

embarrassment, it appeared to exacerbate it. It was mentioned above, however, that embarrassment has been specifically linked to low-power positions. Therefore, one possibility is that power may not have provided a buffer against self-reported embarrassment because the high-power participants may have felt that they had more to lose in an embarrassing situation. The implication is that power may provide a buffer against certain negative emotions, but the emotions from which high-power individuals will most likely be buffered are those that may not threaten one's level of power.

Disgust is not typically associated with specific levels of power and therefore represented an opportunity to again test the power buffer hypothesis but with an emotion that is unlikely to threaten one's power or result in a loss of face. Results from Experiment 4.2, however, also indicate that high-power participants were more likely to report greater feelings of disgust compared to their low power counterparts. Therefore, even in emotional situations that do not appear to have any power implications, power failed to provide any protection against them. Indeed, power again increased self-reported negative emotions. Thus, the powerful may have further to fall, but they appear to do so regardless of whether an emotion is tied to power.

Based on the above data there may be other fruitful avenues of exploration. For example, it is possible that power may buffer negative emotions but that the powerful are not used to being in situations where negative emotions are likely to be experienced, and thus have difficulty coping with them. Another possibility is that the powerful are generally more emotional. For example, it would be interesting to explore the possibility that placing high-power participants in positive emotional situations may also result in greater self-reports of positive emotion compared to low-power participants. Lastly, the

powerful may have more positive expectations for situations in which they are about to enter and therefore unexpectedly negative situations represent a greater violation of expectations for high- compared to low-power individuals. One area that may be worth exploring is to manipulate expectations as well as power in order to determine whether similar expectations among high- and low-power participants eliminates the effect of power on negative emotion.

General Conclusion

This dissertation had two primary objectives. The first was to examine the relatively unexplored effects of embarrassment on decision making, and the second was to explore what framework might account for any such effects. Based on current results, there appears to be some support for the notion that embarrassment may have distinct effects on judgment and choice. Embarrassment may therefore be able to join the ranks of other negative emotions, such as anger and fear, which have been shown to uniquely and predictably influence decision making. Importantly, findings in this dissertation also suggest that otherwise adaptive motivations that have been proposed to be associated with embarrassment may sometimes lead to harmful behavior, such as avoiding important medical exams.

Although appraisal and functional approaches have been used to account for specific emotional effects on decision making, the effects of embarrassment in the current studies reveal a complex emotion that may require multiple explanations to help understand embarrassment's influence on decision making. One framework that may

deserve increased attention is an emotion regulation framework. The framework may be particularly useful in situations where appraisal and functional accounts of emotions do not appear applicable. One aspect of embarrassment, however, does appear clear – embarrassment appears to be a unique and complex emotion whose potentially life-altering effects appear worthy of continued experimental investigation. This investigation may not only illuminate the effects of a relatively unexplored emotion in the literature, it may also lead to new discoveries that add to our overall understanding of emotional effects on judgment and choice.

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