



6-8-2018

Pride's Influence on Perception of Control and Risky Decision-Making

Andrea Sanders

DePaul University, andrealianasanders@gmail.com

Recommended Citation

Sanders, Andrea, "Pride's Influence on Perception of Control and Risky Decision-Making" (2018). *College of Science and Health Theses and Dissertations*. 266.

https://via.library.depaul.edu/csh_etd/266

This Thesis is brought to you for free and open access by the College of Science and Health at Via Sapientiae. It has been accepted for inclusion in College of Science and Health Theses and Dissertations by an authorized administrator of Via Sapientiae. For more information, please contact wsulliv6@depaul.edu, c.mcclure@depaul.edu.

Pride's Influence on Perception of Control and Risky Decision-Making

A Master's Thesis

Presented to

The Department of Psychology

DePaul University

By

Andrea L. Sanders

May 29, 2018

Thesis Committee

Verena Graupmann, Ph.D., Chairperson

Joseph Mikels, Ph.D.

Biography

The author was born in Kokomo, Indiana, on June 23, 1994. She graduated in 2012 from Connections Academy High School in San Clemente, CA. She received her Bachelor of Arts degree in Psychology and Bachelor of Science degree in Professional Writing from Taylor University in 2016.

Table of Contents

Thesis Committee	ii
Biography.....	iii
Table of Contents	iv
List of Tables	vi
Abstract.....	1
Introduction.....	2
Emotion and Risk	2
Valence-Based Models	2
Appraisal Theory of Emotion	4
The Importance of Control.....	8
Need for Perception of Control.....	8
Illusory Control.....	9
Perception of Control and Risk.....	11
The Case Study of Guilt	14
Rationale.....	15
Statement of Hypothesis.....	18
Method	20
Research Participants	20
Procedure.....	20
Materials.....	20
Results.....	23
Manipulation Checks.....	23
Appraisal Patterns	25
Control and Risk-Taking.....	26
Discussion.....	27
Limitations and Future Research	29
References.....	33
Appendices.....	39
Appendix A (Sona Recruitment Text)	39
Appendix B (Emotion Induction Writing Prompt)	40

Appendix C (Emotion Appraisal Questions).....	41
Appendix D (Illusory Control Measure).....	42
Appendix E (Number Guessing Game)	43
Appendix F (Gambling Task Instructions).....	44
Appendix G (Sample of Gambling Task Trial).....	45
Appendix H (Demographics)	46

List of Tables

Table 1. Demographics	47
Table 2. Demographics After Removing Neutral Condition	48
Table 3. Intensity of Emotions Within Conditions	49
Table 4. Means for Emotion Appraisals	50
Table 5. Tukey HSD Post-Hoc Comparison for Intensity of Pride	51
Table 6. Tukey HSD Post-Hoc Comparison for Intensity of Guilt.....	51
Table 7. Tukey HSD Post-Hoc Comparison for Intensity of Sadness	51
Table 8. Tukey HSD Post-Hoc Comparison for Personal Control	51
Table 9. Tukey HSD Post-Hoc Comparison for Pleasantness	52
Table 10. Tukey HSD Post-Hoc Comparison for Agency of Self	52
Table 11. Tukey HSD Post-Hoc Comparison for Agency of Others.....	52
Table 12. Tukey HSD Post-Hoc Comparison for Agency of Chance	52
Table 13. Tukey HSD Post-Hoc Comparison for Anticipated Effort.....	52
Table 14. Means for Illusory Control Measures	53
Table 15. Gambling Percentages Within Emotion Conditions	54

Abstract

Incidental emotion can powerfully impact risky decision-making processes, yet the specific mechanisms that drive this relationship require further exploration. The appraisal theory of emotion suggests that emotional valence alone cannot accurately predict an emotion's effect on risk-taking. Rather, specific appraisal dimensions of an emotional experience—particularly the perception of control—have been found to critically influence risk-taking across settings. Previous literature indicates that guilt, a negative emotion characterized by high personal control, led to higher risk preferences. The current study sought to replicate these findings and test whether a similar relationship would be found for the positive emotion of pride. Data was collected from 152 participants who were randomly assigned to pride induction, guilt induction, sadness induction, or a neutral control condition. Risky decision-making was assessed using a gambling task where participants were asked to choose either between guaranteed or risky financial outcomes. It was hypothesized that both pride and guilt would lead to higher risk-taking and that this relationship would be mediated by higher perceptions of personal control; however, no significant differences in risk-taking based on emotion condition were found. Study results confirmed unique appraisal patterns for pride, guilt, and sadness, however, and suggest that other people may have more agency in experiences of pride than previously assumed. Implications for future research are discussed.

Introduction

Imagine two men who have sat down at a table of roulette to enjoy an evening of gambling and possible good fortune. Both have just come from a long day at work and are ready to try their luck at a game of chance. The first is in a buoyant mood, having been unexpectedly promoted earlier that day. The second has just been fired. Knowing these facts, are we accurately able to predict whether one person is more or less likely to place high, risky bets than the other? Will the events of the day influence the men's current behavior and, if so, how? Although the answers to these questions remain complex, researchers agree that emotions are often crucial to comprehending behavior. Even transient emotional experiences—such as the joy elicited from a promotion or the anger of being laid off—can impact the complex cognitions of decision making (Lerner, Li, Valdesolo, & Kassam, 2015). Although incidental emotion may involve even affect that operates outside of an individual's conscious awareness, it interacts powerfully with integral emotion to guide judgments and alter behavior (Han, Lerner, & Keltner, 2007; Västfjäl et al., 2016). The current research investigated more specifically whether incidental emotions rooted in perceptions of personal control increase risky decision-making via emotional appraisals.

Emotion and Risk

Valence-based models. Affective experience exerts powerful influence over information processing and is used as a tool to inform judgments (Schwarz & Clore, 1981). The importance of emotion in decision-making increases when a person believes their feelings are relevant to the current situation or when

processing becomes more difficult due to distraction or cognitive load. The effect is strengthened further when a person possesses a high level of trust in his or her own feelings (Avnet, Pham, & Stephen, 2012). Traditionally, valence-based models have prioritized the differences in an emotion's degree of pleasantness as the most critical dimension when comparing the influence of emotions on decision-making (Lerner & Keltner, 2000). Consequently, it is assumed that the effects of all positive emotions (e.g., joy, gratitude, and hope) should be relatively similar to one another and significantly different from the effects of negative emotions (e.g., anger, fear, and disgust).

Nevertheless, emotional valence alone cannot predict a single, consistent behavioral outcome across contexts (Andrade & Cohen, 2007). Although people in positive moods regularly predict greater positive outcomes from risky scenarios and perceive less risk in the environment overall (and people in negative moods consistently predict the opposite), this risk perception does not necessarily parallel actual risk-taking behavior (Andrade & Cohen, 2007). It would be expected that people who perceive fewer risks would engage in more risky choices, yet this has not consistently been found as an effect of positive emotion. Competing theories have been proposed as explanation. People experiencing negative affect may be more drawn to risks, for example, because of the potential reward's mood-enhancing potential—or, they may be more averse to the consequences because their negative emotional state highlights potential loss. Similarly, positive affect may at times lead individuals to feel overconfident in risky scenarios, but when the stakes rise and the potential consequences become more salient, some studies

show that these individuals become more risk-averse than their negative-affect counterparts (Isen, Nygren, & Ashby, 1988; Andrade & Cohen, 2007).

Contrary to one proposed explanation, Isen et al. (1988) did not find evidence that the valence of an emotional experience enhanced the desirability of possible rewards in risk-taking scenarios; perceived rewards were rated as equally appealing by happy people, unhappy people, and the control group. However, emotion induction did influence perceptions of consequences—those who were happier perceived potential loss as more severe (i.e., people were protective of their current positive affect). Isen et al.'s (1988) findings demonstrated that the influence of incidental emotion on behavioral outcomes is context-dependent and cannot be generalized based on valence alone; therefore, alternative models are necessary. The appraisal theory of emotion offers a more utilitarian framework to investigate when and why specific emotions impact judgments and decision-making (Lerner et al., 2015).

Appraisal theory of emotion. The appraisal theory of emotion distinguishes between discrete affective experiences by viewing emotional processes as “adaptive responses which reflect appraisals of features of the environment” (Moors, Ellsworth, Scherer, & Frijda, 2013, p. 119). Although valence is incorporated into this model, it is not the only significant factor. Emotions are based on a perception of the person-environment relationship and are elicited by a unique combination of characteristics that are most commonly defined along multiple dimensions, including pleasantness, agency, level of certainty, attentional activity, anticipated effort, novelty, and personal control

(Smith & Ellsworth, 1985; Moors et al., 2013). Surprise, for example, is elicited by a combination of appraisals that score highly in pleasantness and novelty; low in certainty, agency, and personal responsibility; and medium in attentional activity and anticipated effort (Smith & Ellsworth, 1985). Each appraisal pattern is also assumed to result in specific motivations and action tendencies, such as approach or avoidance. Appraisal theory consequently provides a flexible framework to understand the processes of emotion and explains how an identical situation can lead to unique emotional responses between individuals.

Previous research has proposed that emotional experiences can impact perception, decision-making, and risk-taking differentially via specific appraisals. Dunn and Schweitzer (2005), for example, explored how the induction of incidental emotion (in this case, either anger, guilt, gratitude, or pride) affected a person's rating of an acquaintance's trustworthiness. Based on traditional valence-centric models, the authors hypothesized that inducing negative incidental emotion would reduce a participant's perception of an acquaintance's trustworthiness whereas positive incidental emotion would increase it. Findings only partially supported this hypothesis, as gratitude led to the highest level of perceived trustworthiness and anger produced the lowest level, but there was no significant difference between guilt and pride. When results were reinterpreted through the appraisal theory framework, however, it revealed a relationship between an emotion's non-valence dimensions and the magnitude of the emotion's effect on perceived trustworthiness. Although valence was important for predicting the general direction of the effect (positive vs. negative),

participants' judgments were impacted to a greater degree when induced with an emotion characterized by an appraisal of other-control (e.g., gratitude and anger) versus personal control (e.g., pride and guilt). Pride and guilt only slightly impacted perceptions of trustworthiness, whereas anger and gratitude demonstrated much more dramatic effects.

Within risk-taking literature specifically, research is moving beyond predicting differences between groups of negative and positive emotions and is instead focusing on discriminating successfully between the effects of emotions that possess the same valence. In an investigation of incidental fear and anger, Lerner et al. (2015) observed that the differences in specific dimensions between these two negative emotions are manifested through unique “depths of processing, brain hemispheric activation, facial expressions, autonomic responses, and central nervous system activity” (p. 804). It is therefore simplistic to assume fear and anger will have the same cognitive effects simply because they share a high negative valence. More notably, fear and anger differ in their associated degree of certainty and personal control, which relates significantly with risk perception. Whereas fear is rooted in the appraisal of the environment as highly unpredictable and uncontrollable, anger involves the opposite response and perceives something or someone outside the self as the causal agent for the emotion-inducing event (Smith & Ellsworth, 1985; Lu et al., 2013). Anger, but not fear, has consistently been found to reduce the perception of risk, a phenomenon believed to be influenced primarily by these dimensions of certainty and individual control (Lu et al., 2013).

In a series of three studies, Lu et al. (2013) expanded this research question by empirically isolating the effects of specific appraisals on perceived driving risk. First, participants read a vignette about driving that was designed to elicit either fear or anger. They were then given an additional paragraph with details that prompted them to reappraise the scenario with either strengthened or inhibited perceptions of their own certainty, control, or responsibility. Since fear is associated with low levels of certainty and anger with high levels of certainty, participants in the fear condition read details intended to heighten their sense of certainty and participants in the anger condition read details that reduced certainty. Participants were then asked to rate their level of driving risk perception immediately afterwards. The authors hypothesized that if appraisals were key to understanding an emotion's effect on risk perception, then by manipulating appraisals alone, the differences between emotion conditions would be reduced. Results strongly supported this hypothesis and, in fact, successfully eliminated differences in risk perception between fear and anger by altering only their associated appraisals in certainty, control, and responsibility. Although Lu et al.'s (2013) research did not attempt to apply these findings beyond risk perception to risk-taking behavior, initial results by other researchers support the importance of appraisals in facilitating these decision-making processes. Studies have found, for example, that anger leads participants to make riskier choices in economic games, a phenomenon attributed to the impact of high certainty and control appraisals (Beisswingert, Zhang, Goetz, Fang, & Fischbacher, 2015).

The Importance of Control

Need for perception of control. Individual control is an important appraisal dimension within emotion literature, but it has also been extensively investigated within literature related to the self. Many researchers have argued that a perception of control over the self and the environment is a universal human need (Bandura, 1977) and is particularly significant because it critically influences a person's motivation to pursue and achieve meaningful goals (Ferguson & Goodwin, 2010). Ferguson and Goodwin (2010) found that perceptions of high control were correlated with subjective well-being and meaning in life, particularly in aging populations. The strength of a person's need for control is influenced by a variety of individual and contextual variables, and the predisposition to view oneself as a causal agent can be impacted by factors such as age, mindset, levels of self-esteem, attributional style, locus of control, affective experience, and the desirability of control in a given situation (Ferguson & Goodwin, 2010; Novović, Kovač, Durić, & Biro, 2012). Novović et al. (2012), for example, found that positive affect in healthy subjects was related to higher perceptions of control, whereas clinical depression was associated with inhibited perceptions of control. Similarly, individuals who possess social power demonstrate estimations of personal control that extend beyond realistic boundaries (Fast, Gruenfeld, Sivanathan, & Galinsky, 2009).

Interestingly, motivation also significantly influences a person's perception of control. Biner and Hua (1995) conducted a clever investigation that demonstrated that people's confidence in their ability to control a game of chance

increased when their need for the game's rewards were higher. When offered a food reward, hungry participants were more likely to overestimate their individual control over a chance-based game of cards than satiated participants. A similar relationship was found when individuals were motivated to avoid an adverse consequence of losing (e.g., speaking in front of a large audience or having a hand submerged in icy water). Remarkably, even when adverse consequences were present, participants in one study willingly reduced their statistical probability of winning a game of roulette for the right to exercise the mere illusion of control (e.g., pulling a lever versus allowing a random selection of the lottery) (Friedland, Keinan, & Regev, 1992). More recent research has identified the consistent mediating role of skill perception in the relationship between need and estimates of personal control. Participants who are highly motivated to win erroneously attribute more skill to chance-based games than exists (Biner, Johnston, Summers, & Chudzynski, 2009). These studies indicate that control is intricately linked to both internal states and the environmental context, which in certain cases may even contribute to perceptions of control that extend beyond realistic boundaries.

Illusory control. Despite the importance of personal control within daily life, most people do not accurately estimate their level of control over the environment (Gino, Sharek, & Moore, 2011). Although newer lines of exploration have revealed a phenomenon where people underestimate their control during situations of high-controllability (e.g., stopping a moving vehicle by pressing the brake; Gino et al., 2011), more commonly studies have supported the human tendency to overestimate personal control when actual control is low. An

unfounded perception of control is referred to as illusory control, which Langer defined as “an expectancy of a personal success probability inappropriately higher than the objective probability would warrant” (1975, p. 313). Although illusory control is closely related to other ego-centric biases such as overconfidence and unrealistic optimism, it remains conceptually distinct. Whereas unrealistic optimism reflects more generalized beliefs about the likelihood of positive outcomes, illusory control reflects people’s own certainty that they are the source of a specific outcome (Fellner, 2004; McKenna, 1993) According to Langer (1975), illusory control is fostered in environments with characteristics that are also commonly found in skill-related scenarios (e.g., active involvement, personal choice, task familiarity, stimulus familiarity, competition), which facilitate the misattribution of outcomes to personal control.

Psychologists frequently consider illusory control to be an adaptive mechanism as it serves to reduce stress and uncertainty and can motivate constructive behaviors in the face of challenging circumstances. Control can be either primary (external control over a specific situation or outcome) or secondary (internal control over one’s response to a situation) (Heckhausen & Schulz, 1995). Through a qualitative study of women diagnosed with breast cancer, Taylor (1983) concluded that believing one had some level of control (whether primary or secondary) over an uncontrollable situation such as a cancer diagnosis served as an important meaning-making mechanism. The belief that one could influence future outcomes (i.e., cancer recurrence) by changing one’s behavior facilitated subjective well-being even if the belief was not valid. Remarkably, the women’s

sense of control over the environment proved to be highly resilient to contradiction—if their illusory control was shattered in one domain (e.g., “I cannot control whether the cancer comes back”), they simply switched their target of control to a separate, often secondary, area of control (e.g., “I can control how I respond to the cancer treatments”). These results suggest that cognitive illusions play a critical role in supporting psychological functioning, especially within situations that threaten the self.

Perception of control and risk. Evidence also indicates that the perception of control may be particularly instrumental in risky decision-making processes. In general, perceptions of control contribute to one’s ability to maintain a positive self-presentation to others and high personal self-esteem—a quality especially relevant to decisions that involve consequences. For example, compulsive gamblers who regularly engage in high-stakes games of chance may be more highly motivated to preserve strong illusory control over gambling outcomes as a self-protective mechanism (Cowley, Briley, & Farrell, 2015). Although illusory control may encourage gamblers to sustain damaging habits that can be devastating over time, in the short term this strategy protects the ego by affirming the self and justifying the person’s behavioral choices. As illusory control can facilitate self-justification within any decision-making scenario that involves risk, it remains an important mechanism to consider when investigating the factors that lead people to make risky choices.

Control over risk can be conceptually broken down into two categories: perception of control over exposure to the risk and perception of control over

outcomes (Nordgren, van der Pligt, & van Harreveld, 2007). Gambling literature strongly confirms a positive relationship between the latter aspect of control and risk-taking within game settings. Dixon (2000) found that participants gambled with more chips in a game of roulette when they could control the chip placement rather than when someone else placed the chips. More interestingly, illusory control was reinforced by the participants' selective memory recall; participants regularly overestimated the number of wins received when they selected the chip placement versus the experimenter placement. Martinez, Le Floch, Gaffié, and Villejoubert (2011) also demonstrated that perceiving high levels of personal control during the chance-driven game of French roulette significantly predicted higher bets and a faster response time in placing bets.

Researchers such as Rockloff and Dyer (2007) have also confirmed a positive relationship between the knowledge that another person has previously won at a gambling game and riskier betting behavior; Martinez et al. (2011) more recently demonstrated that illusory perceptions of control over the outcome mediated this relationship. When no detailed information was given, participants consistently misinterpreted the previous player's success as indicative of skill, but when the success was framed as an outcome due to chance, the mere knowledge of success did not inflate perceptions of control or risk-taking behavior. Even overhearing another player's misattribution of skill at a video lottery (e.g., "I have a feeling you're due now!") versus an accurate declaration (e.g., "It is chance that determines the results!") led gamblers to take more risks (Caron & Ladouceur, 2003, p. 191). Overall, the literature suggests that people tend to form overly

liberal rather than overly conservative estimates of the importance of skill in predicting gambling outcomes. As a result, gamblers sustain an unrealistic sense of control over their chance of winning and may make increasingly risky decisions.

Interestingly, misattributing the cause and effects of personal control is not a phenomenon limited to the domain of gambling. Langens (2007) discovered that when individuals receive ambiguous feedback on their performance after failing at an unsolvable word problem, those exhibiting high illusory control displayed more positivity and more persistence than those who scored low in illusory control. Rather than attributing the failure to the self, ambiguous feedback allowed individuals to reinterpret the failure as a result of external conditions. The author's conclusion—that illusory control can shield the ego and serve as an effective emotional buffer—holds interesting implications for risky decision making in both gambling scenarios and elsewhere. For the average person, failure feedback may serve as a helpful warning sign to conserve resources and protect themselves from incurring greater loss; however, those with high perceptions of control who can also reinterpret their failure experience may ultimately choose to make riskier choices.

As demonstrated by the findings on gambling and failure feedback, illusory control can often be disadvantageous. Furthermore, an investigation of the role of illusory control within business settings found that it led to lower quality decision making by restricting the number of options entrepreneurs chose to explore (Carr & Blettner, 2010). The relationship between illusory control and

low-quality decision making was strongest when the individuals were highly experienced and under high levels of stress; the combination of these factors enhanced their cognitive bias by encouraging decision-makers to neglect possible adverse outcomes and to rely excessively on previous successes. Other research within the same domain reinforced these findings and showed that inexperienced entrepreneurs with high illusory control also self-selected riskier investment portfolios because they failed to diversify across a wider range of options (Fellner, 2004). Even among the general population, illusory control can directly result in greater risk-taking behavior, as demonstrated by people's willingness to endorse more dangerous driving speeds when they are the driver rather than the passenger (Horswill & McKenna, 1999). Together, these studies indicate that strong perceptions of control may inevitably expose people to greater potential losses both physically and financially. Consequently, the direct and indirect effects of illusory control should be considered an important variable in decision-making research.

The Case Study of Guilt

Researchers Kouchaki, Oveis, and Gino (2014) designed a series of studies to test the relationship between incidental emotional experiences, perceived sense of control, and the inclination to make risky judgments. The studies focused on guilt, a negative emotion characterized by strong levels of personal control. While not typically conceptualized along this appraisal dimension, guilt is fundamentally rooted in a sense of individual control over the environment—an experience of guilt would fail to be induced if a person did not

believe that their behavior had directly resulted in a negative outcome for which he or she was personally responsible. Kouchaki et al. (2014) found that when participants were primed with guilt versus a neutral control condition, they estimated that they would experience significantly fewer negative life events and more positive events. They also preferred riskier choices when asked to choose between either a small but guaranteed amount of money or the chance to win a large amount of money. In subsequent studies, Kouchaki et al. (2014) empirically demonstrated that priming guilt increased participants' perceptions of illusory control over difficult-to-control situations; additionally, negative affect was eliminated as a possible mediator between guilt and risk taking. By utilizing a variety of manipulations to prime guilt and assess risk preferences, Kouchaki et al. (2014) successfully demonstrated that the appraisal of control mediated the relationship between guilt and risk-taking and confirmed that the observed effects were robust.

Rationale

The current study built upon the research conducted by Kouchaki et al. (2014) on the relationship between emotions characterized by strong appraisals of control and an increased preference for risky decisions. Previous studies found that other negative emotions high in individual control, such as anger, can also lead to an increase in risk taking. No current research, however, has explored whether positive-valence emotions characterized by strong control appraisals would demonstrate a similar relationship. The emotion of pride provided an excellent point for comparison with guilt as it is characterized by very similar

appraisals. Pride is defined as “a positive, self-conscious emotion arising from achievements that can be attributed to one’s abilities or efforts” (Williams & DeSteno, 2008, p. 1007). More broadly, self-conscious emotions such as pride and guilt are generated when individuals judge an event to be 1) relevant to their goal, 2) either congruent or incongruent with their goal, and 3) attributable to their internal self rather than the external environment (Hofman & Fisher, 2012). Because the event is attributable to the internal self, individuals feeling pride or guilt experience a high degree of personal responsibility (Lerner et al., 2015). Using the appraisal dimension framework, Smith and Ellsworth (1985) categorized both pride and guilt as social emotions involving relatively high levels of certainty and personal control. The two emotions vary primarily along the dimension of pleasantness, although pride also reflects less anticipated mental and physical effort than guilt.

The connection between pride and its related dimension of control has been measured both directly by appraisal theorists such as Ellsworth and Smith (1988) and indirectly by other researchers. Williams and DeSteno (2008), for example, demonstrated that authentic pride (i.e., pride that originates in a specific event or success) motivated greater perseverance on a challenging experimental task. This finding can be considered antithetical to examples of learned helplessness where subjects cease their attempts to control the environment; in contrast to control subjects, prideful subjects continued interacting with their environment to achieve a goal. Hypothetically, these subjects’ previous experience (which led to feelings of pride) motivated them to persist because it

was a readily available example of their ability to successfully impact external outcomes.

The current study sought to continue the empirical investigation of the relationship between incidental emotion, appraisals, and decision-making. First, we intended to replicate previous findings on the effects of guilt on risky decision-making and second, we investigated the effects of pride within the same paradigm. The present study also expanded the experimental design to include additional measures of illusory control and risk-taking not included in the original research, to provide further evidence of the robust nature of the relationship between control appraisals and risk taking. Results of this study will help illuminate the extent to which valence and control appraisals contribute to decision-making in the context of risky choices. Although early emotion research presented valence-centric models as the best framework for understanding emotional influence on behavior, appraisal theorists contended that researchers have traditionally underestimated the complex influence of other factors (e.g., the situation's level of novelty, anticipated effort, attentional activity, certainty, and personal control). Through the systematic investigation of individual appraisals, we can better understand how each component informs the decision-making process and more accurately predict the combination of factors that enhances a person's inclination to take risks.

Statement of Hypotheses

Given the earlier findings by Kouchaki et al. (2014) and Ellsworth and Smith's (1988) identification of appraisal dimensions, we hypothesized that

incidental emotions characterized by high levels of personal control would lead to greater risky decision-making when compared to both a neutral emotion condition (the control group) and a low-control emotion (i.e., sadness). These two conditions served as control groups.

Hypothesis I: In comparison to both the control group and the sadness condition, individuals experiencing guilt will demonstrate (*Ia*) greater perceptions of control and (*Ib*) higher risk-taking.

Hypothesis II: In comparison to both the control group and the sadness condition, individuals experiencing pride will demonstrate (*IIa*) greater perceptions of control and (*IIb*) higher risk-taking.

Hypothesis III: Greater perceptions of control will mediate the relationship between guilt and higher risk-taking.

Hypothesis IV: Greater perceptions of control will mediate the relationship between pride and higher risk-taking.

Hypothesis V: There will be no significant difference in risk-taking between pride and guilt conditions.

Within Kouchaki et al.s' (2014) original experimental paradigm, risk-taking was assessed by asking participants to choose between financial options that were framed in terms of possible gains (e.g., "Do you want a 50% chance of getting \$800 OR \$100 for sure?") No questions were framed in terms of loss (e.g., "Do you want a 50% of losing your \$800 OR lose \$100 for sure?"). Yet people do not perceive a scenario phrased in terms of loss the same way they perceive an identical situation phrased in terms of gain. Research has consistently supported the presence of a "framing effect" where people exhibit a strong desire to avoid any sure loss, regardless of its size. As a result, they are much more likely to gamble (risking greater potential loss) for the chance to keep everything (Lewis, 2016). Other research further suggested that affect can influence risk-seeking and risk-aversion differentially depending on whether the risky choice was framed in terms of loss or gain (Cheung & Mikels, 2011); therefore, the current research included both gain-frames and loss-frames in its measure of risk. However, it was unknown what effects framing might have on decision-making in this context.

Research Question: How will guilt, pride, and sadness affect an individual's risky decision making in trials where choices are framed in terms of loss versus gain?

Method

Research Participants

Participants included 152 undergraduate students at a large, public Midwestern university. Participants were recruited from introductory psychology

courses through the university's participant pool and received 1 hour of academic credit as compensation for participation. Slightly under half of the sample (46%) were first year students, with a mean age of approximately 20 years. Participants were 68% female. Participants were roughly 53% Caucasian, 21% Latinx, 14% Black, 8% Asian, 2% Pacific Islander/American Indian. Three participants were removed due to non-compliance with the risk task instructions, for a total sample size of 149 participants.

Procedure

The current study compared four conditions: guilt induction, pride induction, sadness induction, and a neutral emotion condition. Upon arriving at the research computer lab, participants were randomly assigned through Qualtrics to one of the four conditions upon arriving at the research computer lab and were told they would engage in a series tasks related to personal beliefs and decision-making (see Appendix A). First, participants completed the emotion induction exercise. They then completed a series of appraisal-related questions reporting their perception of the emotional event they described during the exercise. They continued by responding to the illusory control items and completing a number guessing game designed to assess perceptions of personal control. Lastly, they participated in a risk-taking gambling task and responded to basic demographic questions. To ensure that participants remained engaged throughout the game tasks, they were told they would have the opportunity to enter a drawing for a Starbucks gift card based on their performance in the games.

Materials

Emotion induction. To induce the emotions of pride, guilt, and sadness, participants were asked to recall a time when they experienced their assigned emotion and compose a written response to the prompt (see Appendix B). For example, the pride induction was as follows:

“Please describe a time in your personal life where you behaved in a way that made you feel pride. Please describe the details about this situation that made you feel pride. What was it like to be in this situation? What thoughts and feelings did you experience? Describe the situation and any thoughts or feelings you experienced. Please provide as many details as possible so that a person reading your entry would understand the situation and how you felt.”

The guilt and sadness inductions used identical narrative structures with the appropriate emotion words replaced. In the control condition, participants were asked simply to describe a typical day. To ensure that the intensity of the emotional events were balanced across conditions, participants were then asked to report on a 7-point scale the extent to which they had experienced sadness, guilt, and pride in the event they wrote about (see Appendix C). Participants also indicated through Likert-scale questions the extent to which they felt that 1) the event was pleasant, 2) they were personally responsible for causing the situation that happened, 3) someone other than themselves had caused the situation to happen, 4) chance or circumstance caused the situation to happen, 5) they could control what was happening, and 6) the situation required them to exert mental or

physical effort. Responses were used to assess whether the emotion induction task had induced the expected appraisal patterns for each emotion condition.

Illusory control measures.

Illusory control scale. The following series of questions were used previously in similar studies as a measure of illusory control (Kouchaki et al., 2014; Fast et al., 2009). Participants were asked to indicate their level of perceived control over five items that were generally considered beyond the control of any single individual (see Appendix D). Responses were rated on a scale from 1 (“not at all”) to 7 (“very much”). Sample items included, “To what extent will our country look different in the future because of you?”, “To what extent are you able to have some control over the economy?”, and “To what extent can you influence politicians?” A new survey item on environmental practice (“To what extent are you able to influence the environment by engaging in sustainable practices?”) replaced a previous question on an individual’s ability to influence presidential elections. The revised scale demonstrated strong reliability ($\alpha = .803$).

Number guessing game. Next, participants received instructions on how to play a short gambling game which served as a second measure of illusory control (see Appendix E). Participants were told that the computer would randomly select a number between 1 and 100 and they would have five opportunities to choose the selected number. Prior to beginning, they were asked to rate on a scale, “How confident are you that you will win the number guessing game?” (1 = “not at all”; 7 = “very much”). Higher values on this question

indicated higher perceptions of personal control. Participants then typed their five guesses into the computer textbox but were not be told whether they correctly guessed the number until the end of the experiment.

Framed Gambling Task. Risk-taking (see Appendix F and G) was assessed using the manipulation designed by De Martino, Kumaran, Seymour, and Dolan (2006). The gambling task consisted of 32 computerized trials. On each trial, participants were given a sum of money (either \$25, \$50, \$75, or \$100) and were asked to choose either a guaranteed option (lose or keep certain amount for sure) or a risky option (gamble on set probability of retaining the original full amount). For example, if the participant was given \$25, they might be asked whether they would prefer to keep \$15 and lose \$10 (the sure option) or gamble with an 80% chance of keeping all \$25. The probability of the gamble alternated between 20%, 40%, 60%, or 80%. In addition, trials alternated between questions where the choice was framed as a gain (e.g., “keep \$15”) versus a loss (e.g., “lose \$10”). Throughout the trials, the expected value of the outcomes for each choice remained identical.

Results

Manipulation Checks

To evaluate whether the emotion induction exercise successfully resulted in difference emotional experiences, participants' self-reported levels of guilt, pride, and sadness were analyzed (see Tables 5-7 for post-hoc results). Results of a MANOVA, $F(3, 145) = 54.05, p < .001$, Wilk's $\Lambda = .119$, followed by a Tukey post-hoc analysis, indicated that participants reported the greatest level of pride

($M = 6.37$, $SD = 1.32$) in the pride condition, $F(3, 145) = 116.014$, $p < .001$, $\eta^2 = .508$. Participants experienced the greatest guilt in the guilt condition ($M = 6.34$, $SD = .94$), although the sadness condition reported the second highest level of guilt ($M = 4.31$, $SD = 2.04$), $F(3, 145) = 78.48$, $p < .001$, $\eta^2 = .619$. Participants reported the greatest degree of sadness in the sadness condition ($M = 6.36$, $SD = 0.93$), although the guilt condition also indicated high levels of sadness ($M = 5.29$, $SD = 1.47$), $F(3, 145) = 86.32$, $p < .001$, $\eta^2 = .641$. There was no difference, however, between conditions in the reported intensity of the target emotion (*i.e.*, guilt in the guilt condition, pride in the pride condition, and sadness in the sadness condition), $F(2, 109) = .005$, $p = .995$. These results indicated that the emotion induction task was successful, and the three conditions were comparable in emotional intensity.

Because the appraisal of personal control was predicted to be a variable integral to the current research question, it was important that the groups selected for comparison (*i.e.*, sadness and the neutral condition) differed from guilt and pride. As a manipulation check, a one-way ANOVA, $F(3, 145) = 8.56$, $p < .001$, $\eta^2 = .150$, compared the pride, guilt, sadness, and neutral conditions on the question, “In the event you described, to what extent did you feel you could control what was happening?” Concurrent with theory-based predictions, people recalling events related to pride and guilt did not differ in their reported level of personal control over the emotion-inducing event ($M_{pride} = 4.74$, $SD_{pride} = 1.96$ vs. $M_{guilt} = 5.09$, $SD_{guilt} = 1.99$), but both conditions reported much higher levels of perceived control than the sadness condition ($M = 3.44$, $SD = 2.11$).

Unexpectedly, participants in the control condition also reported high levels of personal control ($M = 5.54$, $SD = 1.52$) that were not significantly different than the guilt and pride conditions, indicating that the neutral emotion condition in this specific study was an inappropriate choice for comparison as it was not neutral in terms of personal control appraisals. Participants in the neutral condition were subsequently removed from the data set for the next analyses, reducing the sample size to 112 subjects.

Appraisal Patterns

The three emotion conditions (pride, guilt, and sadness) were compared on the following six appraisal dimensions: pleasantness, agency of self, agency of others, agency of circumstances or chance, personal control, and anticipated mental or physical effort. All appraisals were rated on a 7-point scale. Results of a MANOVA, $F(2, 109) = 18.70$, $p < .001$, Wilk's $\Lambda = .231$, $\eta^2 = .519$, and subsequent Tukey post-hoc tests (see Tables 8-13) indicated the following:

Pride events ($M = 5.76$, $SD = 1.53$) were rated as significantly more pleasant than sadness ($M = 1.64$, $SD = 1.35$) or guilt events ($M = 1.97$, $SD = 1.25$), $F(2, 109) = 103.59$, $p < .001$, $\eta^2 = .655$. Both pride ($M = 5.34$, $SD = 1.99$) and guilt ($M = 6.14$, $SD = 1.38$) events were ascribed relatively high levels of self-agency, but only guilt was found to be significantly higher than sadness events ($M = 4.54$, $SD = 2.10$), $F(2, 109) = 6.844$, $p < .01$, $\eta^2 = .112$. Pride events ($M = 4.42$, $SD = 2.06$) were also reported to have significantly higher attributions of others-agency than guilt ($M = 2.66$, $SD = 1.47$), though the difference between the pride and sadness condition ($M = 3.59$, $SD = 2.12$) did not reach statistical significance

($p = .116$), $F(2, 109) = 7.68$, $p < .01$, $\eta^2 = .123$. There were no significant differences ($p = .087$) in perceived agency of chance between pride ($M = 3.05$, $SD = 1.82$), guilt ($M = 3.83$, $SD = 2.11$), or sadness ($M = 4.15$, $SD = 2.28$), $F(2, 109) = 2.84$, $p > .05$, $\eta^2 = .05$. Pride events were perceived as requiring significantly greater levels of anticipated effort ($M = 5.95$, $SD = 1.59$, $p < .05$) than the guilt ($M = 4.91$, $SD = 1.84$) or sadness conditions ($M = 4.90$, $SD = 2.01$), $F(2, 109) = 4.10$, $p < .05$, $\eta^2 = .07$.

Control and Risk-Taking

To test Hypothesis *Ia* and *Iia*, a one-way ANOVA evaluated whether there were any differences in illusory control (using the mean of the five Likert-scale questions) between emotion conditions (see Table 14 for means). No significant difference was found, $F(2, 109) = .080$, $p = .923$. A second ANOVA was run to determine whether participants differed in their level of confidence in being able to correctly guess a computer-generated number (the second measure of illusory control), but no differences were found based on emotion condition $F(2, 109) = .546$, $p = .581$. Overall, means were very low for this measure, between 2.74 and 3.09 on a 7-point scale.

To test Hypothesis *Ib* and *Iib*, risk-taking behavior in the gambling task was assessed, using the total percentage of the gambles selected (out of 32 total trials) as the dependent variable (see Table 15). A one-way ANOVA revealed no significant differences in gambling between the pride ($M = .56$, $SD = .15$), guilt ($M = .59$, $SD = .17$), and sadness conditions ($M = .53$, $SD = .17$), $F(2, 109) = 1.11$, $p = .333$). As Hypothesis I and II were not supported, analyses were not run to test

Hypothesis III and IV. Hypothesis V, which predicted no differences between the pride and guilt conditions in terms of perceived control and risk-taking, was supported by the results.

As an additional exploratory research question, group gambling differences based on framing effects were tested. There was a strong framing effect overall, with people gambling significantly more in the loss frames ($M = .65$, $SD = .19$) than the gain frames ($M = .48$, $SD = .19$), $F(1, 111) = 83.89$, $p < .001$. However, there was no significant interaction between framing and emotion conditions, $F(2, 109) = .870$, $p = .422$.

Discussion

Incidental emotions often serve as powerful facilitators or inhibitors for risky decision-making, although the specific factors underlying these cognitive processes are still debated. The appraisal theory of emotion, which describes emotions as responses to specific environmental information, provides a flexible framework to explore the nuanced effects of emotion on risk-taking. By considering multiple dimensions of the emotional experience, such as pleasantness, agency, level of certainty, attentional activity, anticipated effort, novelty, and personal control (Smith & Ellsworth, 1985; Moors et al., 2013), researchers have successfully identified relationships between specific appraisals and risk-taking. Appraising the environment as being highly certain and within one's control, for example—which occurs when people experience the emotion of anger but not fear—leads people to take more risks (Lu et al., 2013).

The current research builds upon these previous findings to further explore the relationship between appraisals of personal control and risk-taking. Utilizing a paradigm very similar to the Kouchaki et al. (2014) study, this study investigated whether incidental experiences of pride and guilt (emotions characterized by strong appraisals of personal control) would lead to greater risky decision-making. Although it was hypothesized that people experiencing guilt and pride would take more risks than people who experienced sadness (an emotion characterized by low appraisals of personal control) or a neutral emotion condition, there were no differences in risk-taking based on emotion condition. This finding held true across both gain- and loss-framed gambling trials, indicating that the emotion condition did not interact with framing to make gambling more likely under certain combinations of conditions. Though the pattern of means did consistently fall in the predicted direction, with guilt leading to the highest percentage of gambling and sadness the lowest, these differences were marginal and non-significant. Furthermore, the neutral emotion condition was removed from analysis as it was found that the typical “neutral” writing prompt used in emotion induction manipulations did not generate an experience that was neutral in terms of control appraisals. The study failed to replicate the Kouchaki et al. (2014) findings on guilt and did not provide evidence to substantiate the role of perceived personal control on risk-taking.

Expanding the findings of this study beyond risk-taking, the responses to the appraisal-related questions within each emotion condition contribute to our understanding of the appraisal patterns specific to guilt, pride, and sadness

experiences. As Smith and Ellsworth (1985) also found in their initial investigation, this study confirmed that guilt was characterized by low appraisals of pleasantness, high appraisals of self-agency, and medium-high levels of personal control and anticipated effort. Sadness, in contrast, involved low appraisals of pleasantness, low levels of anticipated effort, moderate levels of chance-based agency, and moderate levels of others-agency; although it was expected that sadness would score lower on self-agency than was the case. Pride was characterized by a high degree of pleasantness, self-agency, and personal control but also, surprisingly, was described as having high levels of anticipated effort and others-agency. As predicted, pride and guilt held very similar appraisal patterns across most dimensions; however, it was unanticipated that the two would differ in agency appraisals. Despite perceiving the self as having high levels of personal agency and control in the situations they recalled, people in the pride condition simultaneously perceived other people as having a high level of responsibility over pride-inducing events. These findings contribute to appraisal-related literature by providing new evidence that other people may play a more significant role in pride experiences than previously assumed.

Limitations and Future Research

The current investigation of emotion and risk-taking was limited in its use of an emotion induction technique that could not control for variations in individual experience. Because participants could choose which emotional event in their lives to write about, the experiences they recalled varied in terms of recency, intensity, attributions, and emotional purity. Participants within the guilt

and sadness conditions, for example, often recalled an event that induced simultaneous feelings of guilt and sadness, creating a mixed emotional experience that may have led to different effects than a purer experience of guilt or sadness. Similarly, despite being specifically instructed to recall instances in which they had performed an action that led them to feel pride (*e.g.*, studying hard and getting an A on a test), some participants reported an event where they played no personal role and the pride-inducing action was performed by someone else (*e.g.*, the Cubs winning the World Series in 2016).

Though the autobiographical memory recall task is one of the most popularly used emotion induction techniques, qualitative text analyses of the content generated by participants are much less frequently used. While analyses of this type are often time-consuming and challenging to conduct, they may reveal important information (such as variation in the type of content generated) that cannot be as effectively captured through self-reports. Alternatively, using a different emotional induction method, for example a rigged team-player game where participants are led to believe that either they were primarily responsible for the team loss (*i.e.*, guilt) or team win (*i.e.*, pride), could better standardize the emotions induced and ensure consistency across participant experiences.

This study also differed from the original Kouchaki et al. (2014) study in that it used a unique risk-taking task. The structure of the task was similar in that it required participants to choose between a sure financial choice or a riskier, uncertain financial choice, yet the gambling task used here was longer (32 trials versus four trials) and more complex (incorporating both gain-framed and loss-

framed trials). One concern in using a longer task is that it was unknown how long the incidental emotion induced by the recall task would last. It is possible that the carryover effects of the emotion induction faded more quickly than anticipated, and therefore perhaps only the first trials of the task were influenced by lingering emotion.

Future research should address these limitations by evaluating the relationship between emotion and risk-taking using a wider variety of emotion-induction techniques and risk-taking assessments. Differences in sampling populations should also be considered as there may have been unknown, inherent differences between the university sample used in this study and those tested in earlier research. Expanding beyond a university sample would be beneficial in testing the strength of the relationship previously found and determining the generalizability of the results.

Future investigations should also empirically explore the anecdotal differences observed in this study between pride experiences characterized by actions performed by the self versus actions performed by other people. The extent to which it is important to distinguish between these two types of pride experiences is unknown, as are their potential differential effects on general decision-making. Results from the current study suggest that there may be more diversity in the types of pride experiences participants recall, and that other people may be perceived as more agentic in pride experiences than earlier research suggests (Smith & Ellsworth, 1985).

In summary, the influence of incidental emotion on risky decision-making in everyday life remains an important research question. Understanding the mechanisms through which specific affective experiences can intensify or inhibit risk-taking can benefit our ability to anticipate people's decision-making and help them avoid extreme consequences by making more informed choices. The current research confirms that emotional experiences are characterized by specific environmental appraisal patterns, although the specific effect of control appraisals on risk-taking remains inconclusive. Future research should consider the limitations discussed above and continue to evaluate the extent to which perceptions of control lead to greater risk-taking, as well as consider the conditions under which this relationship may not be found.

References

- Andrade, E. B., & Cohen, J. B. (2007). Affect-based evaluation and regulation as mediators of behavior: The role of affect in risk taking, helping and eating patterns.
- Avnet, T., Pham, M. T., & Stephen, A. T. (2012). Consumers' trust in feelings as information. *Journal of Consumer Research*, 39(4), 720-735.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Beisswingert, B. M., Zhang, K., Goetz, T., Fang, P., & Fischbacher, U. (2015). The effects of subjective loss of control on risk-taking behavior: the mediating role of anger. *Frontiers in Psychology*, 6.
- Biner, P. M., & Hua, D. M. (1995). Determinants of the magnitude of goal valence: The interactive effects of need, instrumentality, and the difficulty of goal attainment. *Basic and Applied Social Psychology*, 16, 53-74.
doi:10.1207/s15324834basp1601&2_4.
- Biner, P. M., Johnston, B. C., Summers, A. D., & Chudzynski, E. N. (2009). Illusory control as a function of the motivation to avoid randomly determined aversive outcomes. *Motivation and Emotion*, 33(1), 32-41.
- Caron, A., & Ladouceur, R. (2003). Erroneous verbalizations and risk taking at video lotteries. *British Journal Of Psychology*, 94(2), 189-194.
doi:10.1348/000712603321661877
- Carr, J. C., & Blettner, D. P. (2010). Cognitive control bias and decision-making in context: Implications for entrepreneurial founders of small firms. *Frontiers of Entrepreneurship Research*, 30(6), 2.

- Cheung, E., & Mikels, J. A. (2011). I'm feeling lucky: the relationship between affect and risk-seeking in the framing effect. *Emotion, 11*(4), 852.
- Cowley, E., Briley, D. A., & Farrell, C. (2015). How do gamblers maintain an illusion of control?. *Journal of Business Research, 68*(10), 2181-2188.
- De Martino, B., Kumaran, D., Seymour, B., & Dolan, R. J. (2006). Frames, biases, and rational decision-making in the human brain. *Science, 313*(5787), 684-687.
- Dixon, M. R. (2000). Manipulating the illusion of control: Variations in gambling as a function of perceived control over chance outcomes. *The Psychological Record, 50*(4), 705.
- Dunn, J. R., & Schweitzer, M. E. (2005). Feeling and believing: the influence of emotion on trust. *Journal of Personality and Social Psychology, 88*(5), 736.
- Ellsworth, P. C., & Smith, C. A. (1988). Shades of joy: Patterns of appraisal differentiating pleasant emotions. *Cognition & Emotion, 2*(4), 301-331.
- Fast, N. J., Gruenfeld, D. H., Sivanathan, N., & Galinsky, A. D. (2009). Illusory control: A generative force behind power's far-reaching effects. *Psychological Science, 20*(4), 502-508. doi:10.1111/j.1467-9280.2009.02311.x
- Fellner, G. (2004). Illusion of control as a source of poor diversification: An experimental approach. *Max Planck Institute for Research into Economic Systems, Strategic Interaction Group*.
- Ferguson, S. J., & Goodwin, A. D. (2010). Optimism and well-being in older

- adults: The mediating role of social support and perceived control. *The International Journal of Aging and Human Development*, 71(1), 43-68.
- Friedland, N., Keinan, G., & Regev, Y. (1992). Controlling the uncontrollable: Effects of stress on illusory perceptions of controllability. *Journal of Personality and Social Psychology*, 63(6), 923-931. doi:10.1037/0022-3514.63.6.923.
- Gino, F., Sharek, Z., & Moore, D. A. (2011). Keeping the illusion of control under control: Ceilings, floors, and imperfect calibration. *Organizational Behavior and Human Decision Processes*, 114(2), 104-114.
- Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, 102(2), 284.
- Hofmann, W., & Fisher, R. R. (2012). How guilt and pride shape subsequent self-control. *Social Psychological and Personality Science*, 3(6), 682-690.
- Horswill, M. S., & McKenna, F. P. (1999). The effect of perceived control on risk taking. *Journal Of Applied Social Psychology*, 29(2), 377-391. doi:10.1111/j.1559-1816.1999.tb01392.x
- Isen, A. M., Nygren, T. E., & Ashby, F. G. (1988). Influence of positive affect on the subjective utility of gains and losses: It is just not worth the risk. *Journal of Personality and Social Psychology*, 55(5), 710.
- Kouchaki, M., Oveis, C., & Gino, F. (2014). Guilt enhances the sense of control and drives risky judgments. *Journal Of Experimental Psychology: General*, 143(6), 2103-2110. doi:10.1037/a0037932
- Langens, T. A. (2007). Emotional and motivational reactions to failure: The role

of illusions of control and explicitness of feedback. *Motivation and Emotion*, 31(2), 105-114.

Langer, E. J. (1975). The illusion of control. *Journal Of Personality And Social Psychology*, 32(2), 311-328. doi:10.1037/0022-3514.32.2.311

Lerner, J. S., Han, S., & Keltner, D. (2007). Feelings and consumer decision making: Extending the appraisal-tendency framework. *Journal Of Consumer Psychology*, 17(3), 184-187. doi:10.1016/S1057-7408(07)70027-X

Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. S. (2015). Emotion and decision making. *Annual Review Of Psychology*, 66, 799-823. doi:10.1146/annurev-psych-010213-115043

Lewis, M. (2016). *The Undoing Project: A Friendship that Changed the World*. (pp. 268-290). Penguin UK.

Lu, J., Xie, X., & Zhang, R. (2013). Focusing on appraisals: How and why anger and fear influence driving risk perception. *Journal Of Safety Research*, 4565-73. doi:10.1016/j.jsr.2013.01.009

Martinez, F., Le Floch, V., Gaffié, B., & Villejoubert, G. (2011). Reports of wins and risk taking: An investigation of the mediating effect of the illusion of control. *Journal of Gambling Studies*, 27(2), 271-285.

McKenna, F. P. (1993). It won't happen to me: Unrealistic optimism or illusion of control? *British Journal of Psychology*, 84(1), 39-50.

Moors, A., Ellsworth, P. C., Scherer, K. R., & Frijda, N. H. (2013). Appraisal

theories of emotion: State of the art and future development. *Emotion Review*, 5(2), 119-124. doi:10.1177/1754073912468165

Nordgren, L. F., van der Pligt, J., & van Harreveld, F. (2007). Unpacking perceived control in risk perception: The mediating role of anticipated regret. *Journal Of Behavioral Decision Making*, 20(5), 533-544. doi:10.1002/bdm.565

Novović, Z., Kovač, A., Durić, V., & Biro, M. (2012). Positive and negative affect in illusion of control. *Psihologija*, 45(4), 395-407.

Rockloff, M. J., & Dyer, V. (2007). An experiment on the social facilitation of gambling behavior. *Journal of Gambling Studies*, 23(1), 1-12.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45(3), 513.

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal Of Personality And Social Psychology*, 48(4), 813-838. doi:10.1037/0022-3514.48.4.813

Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38(11), 1161.

Tobias-Webb, J., Limbrick-Oldfield, E. H., Gillan, C. M., Moore, J. W., Aitken, M. F., & Clark, L. (2017). Let me take the wheel: Illusory control and sense of agency. *The Quarterly Journal Of Experimental Psychology*, 70(8), 1732-1746. doi:10.1080/17470218.2016.1206128

Västfjäll, D., Slovic, P., Burns, W.J., Erlandsson, A., Koppel, L., Asutay, E., &

Tinghög, G. (2016). The arithmetic of emotion: Integration of incidental and integral affect in judgments and decisions. *Frontiers in Psychology, 7*. doi: 10.3389/fpsyg.2016.00325

Williams, L. A., & DeSteno, D. (2008). Pride and perseverance: The motivational role of pride. *Journal Of Personality And Social Psychology, 94*(6), 1007-1017. doi:10.1037/0022-3514.94.6.1007

Appendix A

Sona Recruitment Ad

In this research study, you will be asked to respond to a short autobiographical prompt and answer some general questions about your life and personal beliefs. You will then play a short decision-making game. You will also be asked to provide basic demographic information (e.g., gender, race, age). The study will take approximately 30 minutes, to be completed in lab 990 W. Fullerton, room 109. You will earn 1 psychology pool credit for your participation.

Appendix B

Emotion Induction Writing Prompt

Pride/Guilt/Sadness Conditions

Please describe a time in your personal life where you behaved in a way that made you feel **[insert emotion]**. Please describe the details about this situation that made you feel **[insert emotion]**. What was it like to be in this situation? What thoughts and feelings did you experience? Describe the situation and any thoughts or feelings you experienced. Please provide as many details as possible so that a person reading your entry would understand the situation and how you felt.

Please note: This question should take about 5 minutes of your time.

Neutral Condition

Please describe a **typical day** in your life. Provide as many details as possible so that a person reading your entry would be able to clearly picture your day. Try to make your report of your activities as **factual and objective** as possible, and make sure to describe the what, where, and when of your daily schedule.

Please note: This question should take about 5 minutes of your time.

Appendix E

Number Guessing Game

In the next task, you will play a game where you attempt to guess a number randomly selected by the computer between **1 and 100**. You will have **5 chances** to guess the number correctly.

Based on your performance, you will have the opportunity to be entered into a drawing for a \$10 Starbucks gift card.

Please proceed to the next page when you are ready.

(next page)

Please respond to the question below.

	Not at all		Somewhat			Very much	
	1	2	3	4	5	6	7
How confident are you that you will win the number guessing game?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(next page)

What is the correct computer-generated number between 1 and 100?

Please enter your five guesses below. You will find out at the end of the experiment whether you guessed the number correctly.

Guess #1	<input type="text"/>
Guess #2	<input type="text"/>
Guess #3	<input type="text"/>
Guess #4	<input type="text"/>
Guess #5	<input type="text"/>

Appendix F

Gambling Task Instructions

DIRECTIONS

You will now participate in a game where you will be asked to choose between different financial options. On each trial, you will begin with a given amount of money and presented with two options.

Below you can see an example trial where you begin with \$25.



Would you rather keep \$20 of the \$25 or gamble for the chance to keep the full \$25?

The pie chart to the right demonstrates the probability of winning the gamble. Here you have a 80% chance of keeping the full \$25 you received and a 20% chances of losing the full \$25.

(next page)

Remember: Your goal is to end the game with as much money as possible.

Whatever money you earn on each trial will accumulate until the end of the game, but you will not be informed after each trial whether you won or lost. Based on your performance, you will again have the opportunity to be entered into a drawing for a Starbucks gift card.

The better your performance, the more drawing entries you will receive.

Click next when you are ready to begin.

Appendix G

Sample of Gambling Task Trial

The amount participants received on the trial (see top slide) varied between \$25, \$50, \$75, or \$100. The left option (see second slide) always reflects retaining an amount that is one-fifth of the amount received, but alternates between being phrased in terms of loss (“Lose \$20”) versus gain (“Keep \$80”). The probability of winning the gamble to keep the full amount of what was received (see right option) varied between 20%, 40%, 60%, and 80%.

YOU RECEIVE
\$100



Which option do you choose?

Left Option

Right Option

Appendix H

Demographics

What is your age?

What is your sex?

- Male
- Female
- Other

What is your ethnicity?

- American Indian or Alaska Native
- Hawaiian or Other Pacific Islander
- Asian or Asian American
- Black or African American
- Hispanic or Latino/a
- European American / Non-Hispanic White

What is your year in school?

- Freshman
- Sophomore
- Junior
- Senior

Table 1

Demographics

Demographic Variable	<i>n</i>	Percentage	<i>M</i>	<i>SD</i>
Age			19.81	3.28
Gender				
Female	103	69%		
Male	45	30%		
Other	1	1%		
Ethnicity				
White	78	52%		
Hispanic	33	22%		
Black	22	15%		
Asian	13	9%		
Hawaiian/Pacific Islander	1	1%		
American Indian/Alaskan Native	2	1%		
School Year				
Freshmen	69	46%		
Sophomore	38	26%		
Junior	30	20%		
Senior	12	8%		

Note: Total *n* = 149

Table 2

Demographics After Removing Neutral Condition

Demographic Variable	<i>n</i>	Percentage	<i>M</i>	<i>SD</i>
Age			19.85	3.64
Gender				
Female	78	70%		
Male	34	30%		
Other				
Ethnicity				
White	58	52%		
Hispanic	24	21%		
Black	18	16%		
Asian	9	8%		
Hawaiian/Pacific Islander	1	1%		
American Indian/Alaskan Native	2	2%		
School Year				
Freshmen	52	46%		
Sophomore	28	25%		
Junior	21	19%		
Senior	11	10%		

Note: Total N = 112

Table 3
Intensity of Emotions Within Conditions

Item	Condition	<i>M</i>	<i>SD</i>
How much pride did you feel?	Pride	6.37	1.32
	Guilt	1.46	1.12
	Sadness	1.54	1.07
	Neutral	4.08	1.72
How much guilt did you feel?	Pride	1.82	1.63
	Guilt	6.34	0.94
	Sadness	4.31	2.04
	Neutral	1.65	1.16
How much sadness did you feel?	Pride	2.24	1.65
	Guilt	5.29	1.47
	Sadness	6.36	0.93
	Neutral	2.16	1.52

Note: Items scored on a 7-point Likert scale.

Table 4
Means for Emotion Appraisals

Appraisal	Condition	<i>M</i>	<i>SD</i>
Pleasantness	Pride	5.76	1.53
	Guilt	1.97	1.25
	Sadness	1.64	1.35
Agency of Self	Pride	5.34	1.99
	Guilt	6.14	1.38
	Sadness	4.54	2.10
Agency of Others	Pride	4.42	2.06
	Guilt	2.66	1.47
	Sadness	3.59	2.12
Agency of Chance	Pride	3.05	1.82
	Guilt	3.83	2.11
	Sadness	4.15	2.28
Personal Control	Pride	5.09	1.99
	Guilt	4.74	1.96
	Sadness	3.44	2.11
Anticipated Effort	Pride	5.95	1.59
	Guilt	4.91	1.84
	Sadness	4.90	2.01

Note: Items scored on a 7-point Likert scale.

Table 5

Tukey HSD Post-Hoc Comparison for Intensity of Pride

		Mean Difference	SE	t	Ptukey
Guilt	Neutral	-2.624	0.315	-8.343	< .001
	Pride	-4.911	0.312	-15.716	< .001
	Sadness	-0.081	0.311	-0.262	0.994
Neutral	Pride	-2.287	0.308	-7.425	< .001
	Sadness	2.543	0.306	8.306	< .001
Pride	Sadness	4.830	0.304	15.886	< .001

Table 6

Tukey HSD Post-Hoc Comparison for Intensity of Guilt

		Mean Difference	SE	t	Ptukey
Guilt	Neutral	4.694	0.358	13.111	< .001
	Pride	4.527	0.356	12.725	< .001
	Sadness	2.035	0.354	5.756	< .001
Neutral	Pride	-0.167	0.351	-0.477	0.964
	Sadness	-2.659	0.348	-7.630	< .001
Pride	Sadness	-2.492	0.346	-7.199	< .001

Table 7

Tukey HSD Post-Hoc Comparison for Intensity of Sadness

		Mean Difference	SE	t	Ptukey
Guilt	Neutral	3.124	0.333	9.367	< .001
	Pride	3.049	0.331	9.202	< .001
	Sadness	-1.073	0.329	-3.259	0.008
Neutral	Pride	-0.075	0.327	-0.229	0.996
	Sadness	-4.197	0.325	-12.931	< .001
Pride	Sadness	-4.122	0.322	-12.787	< .001

Table 8

Tukey HSD Post-Hoc Comparison for Personal Control

		Mean Difference	SE	t	Ptukey
Guilt	Neutral	-0.455	0.450	-1.010	0.744
	Pride	0.349	0.447	0.780	0.864
	Sadness	1.650	0.445	3.710	0.002
Neutral	Pride	0.804	0.441	1.822	0.267
	Sadness	2.105	0.438	4.802	< .001
Pride	Sadness	1.301	0.435	2.988	0.017

Table 9

Tukey HSD Post-Hoc Comparison for Pleasantness

		Mean Difference	SE	t	Ptukey
guilt	pride	-3.792	0.324	-11.693	< .001
	sadness	0.330	0.322	1.025	0.563
pride	sadness	4.122	0.315	13.066	< .001

Table 10

Tukey HSD Post-Hoc Comparison for Agency of Self

		Mean Difference	SE	t	Ptukey
guilt	pride	0.801	0.437	1.834	0.163
	sadness	1.604	0.434	3.698	< .001
pride	sadness	0.804	0.425	1.892	0.146

Table 11

Tukey HSD Post-Hoc Comparison for Agency of Others

		Mean Difference	SE	t	Ptukey
guilt	pride	-1.764	0.450	-3.918	< .001
	sadness	-0.933	0.447	-2.084	0.098
pride	sadness	0.831	0.438	1.898	0.144

Table 12

Tukey HSD Post-Hoc Comparison for Agency of Chance

		Mean Difference	SE	t	Ptukey
guilt	pride	0.776	0.486	1.595	0.252
	sadness	-0.325	0.483	-0.673	0.780
pride	sadness	-1.101	0.473	-2.327	0.056

Table 13

Tukey HSD Post-Hoc Comparison for Anticipated Effort

		Mean Difference	SE	t	Ptukey
guilt	pride	-1.033	0.427	-2.419	0.045
	sadness	0.017	0.424	0.040	0.999
pride	sadness	1.050	0.416	2.527	0.034

Table 14

Means for Illusory Control Measures

Measure	Condition	<i>M</i>	<i>SD</i>
Illusory Control Scale	Pride	3.68	1.19
	Guilt	3.61	1.16
	Sadness	3.57	1.18
Number Guessing Game	Pride	2.74	1.54
	Guilt	3.09	1.74
	Sadness	3.08	1.68

Note: Total N = 112

Table 15

Gambling Percentages within Emotion Conditions

Percentage of Gambles	Condition	<i>M</i>	<i>SD</i>
Total	Pride	56%	15.4%
	Guilt	59%	17.0%
	Sadness	53%	16.8%
Under Loss Frame	Pride	64%	17.6%
	Guilt	69%	20.5%
	Sadness	61%	19.8%
Under Gain Frame	Pride	49%	19.0%
	Guilt	49%	17.4%
	Sadness	46%	19.7%

Note: Total N = 112