# MORALITY AFFECTING YOUR AFFECT:

#### HOW MORAL DILEMMAS EVOKE INTEGRAL EMOTIONS

by

#### KAYLA DION BROWN

(Under the Direction of ADAM GOODIE)

#### ABSTRACT

Two types of affect have been reported to affect the moral decision-making process and its subsequent outcomes. The influence of integral affect, affect that directly relates to a specific decision, is largely understudied compared to incidental affect, affect that is unrelated to a particular decision. The present study addresses this gap in the literature by explicitly measuring the presence of integral emotions in the moral decision-making process. An online sample of undergraduate university students (N = 241) were presented a series of moral or non-moral dilemmas and completed multiple iterations of a scale measuring positive and negative affect and other affective states. Results indicated participants who faced moral dilemmas reported higher general negative affect and lower general positive affect over time compared to participants who faced non-moral dilemmas. Additionally, participants who faced either dilemma reported various changes in specific positive and negative emotions over time.

# INDEX WORDS: INTEGRAL EMOTION, INCIDENTAL EMOTION, DECISION-MAKING, MORAL DECISION-MAKING, MORAL DILEMMAS

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### TABLE OF CONTENTS

| Page  |
|---|
| ACKNOWLEDGEMENTSiv                                |
| LIST OF TABLES                                    |
| LIST OF FIGURES                                   |
| CHAPTER   |
| 1 INTRODUCTION                                    |
| Emotions and Moral Decision-Making2               |
| Factors that Influence Emotion in Decision-Making |
| The Focus on Incidental Emotion5                  |
| The Present Study                                 |
| 2 METHOD  |
| Participants9                                     |
| Materials9  |
| Procedure10                                       |
| 3 RESULTS   |
| PANAS-X – General Affect Scales11                 |
| PANAS-X – Specific Affect Scales                  |
| 4 DISCUSSION16                                    |
| Limitations and Future Directions                 |

| REFERENCES | 3( | ) |
|------------|----|---|
|------------|----|---|

# LIST OF TABLES

| Table 1: Between-Subjects Pairwise Comparisons of the PANAS-X General Affect Scales22       |
|---|
| Table 2: Within-Subjects Pairwise Comparisons of the PANAS-X General Affect Scales23        |
| Table 3: Between-Subjects Pairwise Comparisons of the PANAS-X Specific Affect Scales24      |
| Table 4: Within-Subjects Pairwise Comparisons of the PANAS-X Specific Affect Scales – Moral |
| Condition25   |
| Table 5: Within-Subjects Pairwise Comparisons of the PANAS-X Specific Affect Scales – Non-  |
| moral Condition   |

# LIST OF FIGURES

|   | Page |
|---|------|
| Figure 1: Process Flow of Study Procedure                                 | 27   |
| Figure 2: Means and Standard Errors of the PANAS-X General Affect Scales  | 28   |
| Figure 3: Means and Standard Errors of the PANAS-X Specific Affect Scales | 29   |

#### CHAPTER 1

#### INTRODUCTION

It is clear from several decades of research that emotions play a pivotal role in the decision-making process. Seminal papers from the field have established a causal link between positive and negative emotions and various decision-making outcomes (Alhakami & Slovic, 1994; Johnson & Tversky, 1983; Schwarz & Clore, 1983). The integration of affect in judgment and decision-making research has expanded rapidly since the turn of the century, allowing for more insight on how one's complex emotional states can affect what types of decisions one makes and the mental processes involved in the decision-making process (George & Dane, 2016; Lerner et al., 2015). Researchers in the field have identified two distinct types of emotions that affect one's decision-making. Incidental emotions are emotions that are unrelated to the decision one makes (Lerner & Keltner, 2000; Lerner & Keltner, 2001); integral emotions are emotions that are directly related to the decision one makes (Dijkstra & Hong, 2019; Laube & van der Bos, 2018; Young et al., 2019). Much of this research has focused on the effects of negative incidental emotions, such as anger and fear, on decision-making under risk or uncertainty (Bartholomeyczik et al., 2022; Finucane et al., 2000, Lerner & Keltner, 2000; Lerner & Keltner, 2001, Slovic et al., 2005; Wake et al., 2020), leaving both positive and negative integral emotions vastly understudied in this context. This disparity between incidental and integral emotions is also present in the moral judgment and decision-making context (Singh et al., 2018; Strohminger et al., 2011; Szekely & Miu, 2015; Ugazio et al., 2012; Valdesolo & DeSteno,

2006). Therefore, the topic of interest in this paper relates to whether and which integral emotions are elicited in the moral decision-making process.

#### **Emotions and Moral Decision-Making**

Research on moral decision-making typically employs the use of moral dilemmas to assess moral reasoning with dilemmas that involve causing harm to one party to save another party (Greene et al., 2001; Greene & Haidt, 2002; Greene et al., 2004; Lee & Gino, 2015; Shou & Song, 2017; Szekely & Miu, 2015). The moral reasoning often studied with these dilemmas typically consists of two approaches. Utilitarian reasoning involves making a decision that focuses on choosing the best outcome given the consequences; deontological reasoning involves making a decision in relation to one's principles and moral duty (Baron, 2011; Conway & Gawronski, 2013; Shou & Song, 2017). One of the most well-known examples of these types of dilemmas is the trolley dilemma (Thompson, 1976). The trolley dilemma involves a scenario in which a runaway trolley has lost control and is on course to kill five people stuck on the track. Individuals can choose to either do nothing and let the trolley kill the five people or flip a switch, diverting the trolley to another track with only one person stuck on the track. Past research has shown that modifying the personalness of the trolley dilemma results in changes in the preference of making utilitarian and deontological choices (Greene et al., 2001; Greene et al., 2004). More specifically, the cognitive mechanisms involved in decision-making are associated with utilitarian judgments, and the emotional mechanisms involved in decision-making are associated with deontological judgments (Ugazio et al., 2012).

Much of the early research on emotion and decision-making as a whole solely focuses on the role valence plays in altering one's decision-making (Alhakami & Slovic, 1994; Finucane et al., 2000; Johnson & Tversky, 1983; Schwarz & Clore, 1983). For example, Alhakami & Slovic (1994) conceptualized a model that suggests that one's perceived risk of a potential activity was associated with one's affect toward said activity such that positive/negative attitudes were linked to lower/higher risk perception. The focus on valence is also found in earlier research on moral decision-making. Valdesolo and DeSteno (2006) conducted a study in which participants were induced to feel positive or neutral affect through a five-minute comedy or documentary clip, respectively. They found that participants induced to feel positive affect were more likely to make the utilitarian choice in the footbridge dilemma. The footbridge dilemma is a modified version of the trolley dilemma in which participants have the choice to directly push the one individual onto the track instead of flipping a switch to divert the trolley. The researchers of this study claim that their results stem from the positive valence associated with the comedy clip, reducing the negative affect associated with the utilitarian choice in the dilemma.

#### Factors that Influence Emotion in Decision-Making

Although past research has shown that valence is an important factor in the decisionmaking process, contemporary research suggests that factors besides valence such as cognitive appraisals and motivational dimensions associated with specific emotions may also explain the differential effects of emotion on decision-making (Strohminger et al., 2011; Ugazio et al., 2012). Strohminger and colleagues (2011) focused on the differential effects of two positive emotions, mirth and elevation, on one's moral decision-making. They rely on the Appraisal Tendency Framework (ATF; Lerner & Keltner, 2000) as the theoretical basis for their study. The ATF posits that emotions have specific cognitive appraisals that affect one's decision-making. This framework suggests that emotions of the same valence can exert differing and potentially opposing effects on decision-making through various mechanisms associated with each emotion. Utilizing this framework, Strohminger and colleagues hypothesized that mirth, an emotion associated with humor, may increase irreverence in participants, resulting in a preference for more utilitarian choices. Additionally, they hypothesized that elevation, an emotion associated with viewing acts of moral beauty, may increase reverence in participants, resulting in a preference for deontological choices. They ultimately found that participants induced to feel a sense of mirth preferred to make utilitarian choices in moral dilemmas, and participants induced to feel a sense of elevation preferred to make deontological choices in moral dilemmas.

Conversely, Ugazio and colleagues (2012) conducted research on two negative emotions, anger and disgust, on one's moral decision-making. Like Strohminger et al. (2011), Ugazio and colleagues (2012) suggest factors other than valence contribute to the effects of emotions on moral decision-making. They found that the motivational tendency associated with anger and disgust resulted in divergent effects on judgments in moral dilemmas. Anger is viewed as an approach emotion that involves a tendency to approach people, situations, or events. This resulted in an increased preference of the utilitairan option (i.e., they may be more inclined to flip the switch in the trolley dilemma). Disgust is viewed as a withdrawal emotion that involves a tendency to withdraw from people, situations, or events. resulted in a decreased preference of the utilitairan option (i.e., they more inclined to flip the utilitairan option (i.e., they are more inclined to not do anything in the trolley problem).

Additionally, the field has also seen research focusing on emotion regulation strategies and their effects on moral decision-making (Lee & Gino, 2015; Szekely & Miu, 2015). Contemporary research in this subset of the field has shown emotional suppression and emotion regulation through positive reappraisal may increase utilitarian choices in moral dilemmas. In a series of four studies, Lee and Gino (2015) found that participants who made more utilitarian judgments were more likely to suppress their emotions compared to participants who implemented other emotion regulation strategies (i.e., cognitive reappraisal) or no regulation strategy. This relationship was mediated by individual differences related to one's inclination to make fewer deontological choices rather than one's inclination to make more utilitarian choices. Szekely and Miu (2015) suggest that emotional arousal mediates the relationship between positive reappraisal and moral choice. As one's emotional arousal from moral dilemmas decreases, one's ability to reappraise their emotions increases, resulting in a lower tendency to make deontological judgments.

#### The Focus on Incidental Emotion

The relationship between emotion and moral decision-making has been explored in a variety of contexts, providing ample information on how these complex emotional states affect the way individuals explore different decision-making options. However, most of the research on this field of study focuses on the impact of incidental emotions on decision-making (Lee & Gino, 2015; Singh et al., 2018; Strohminger et al., 2011; Szekely & Miu, 2015; Ugazio et al., 2012), leaving the potential impact of integral emotions largely understudied (Barnum et al., 2018; Garg et al., 2005). Because of this disparity in research on the two types of affect, there is an assumption that they exert similar influences on decision-making (Ferrer & Ellis, 2020; Västfjäll et al., 2016). However, Ferrer and Ellis (2020) conducted a recent meta-analysis of eight studies that examines the differences between integral and incidental anger and fear on risk perception. They found differential effects between integral and incidental affect of both emotions. Additionally, they found a trend of integral affect having stronger influences on risk perception compared to incidental affect. Västfjäll et al. (2016) highlight how decision-making research

focusing on incidental affect also includes integral affect and often neglects to report the potential effects of the particular affect. The researchers discuss how the congruence or incongruence of the integral and incidental affect can augment or diminish feelings of a particular emotion. For example, if the valence of the integral and incidental emotion are congruent, in that both emotions are positive/negative, then the overall judgment or perception of a target will also be positive/negative. If the valence of the integral and incidental emotion are incongruent, then the perception of the target will favor the valence of the integral emotion (i.e., positive incidental affect interacting with negative integral affect would lead to an overall negative judgement or perception). They also report how the intensity of the integral or incidental emotions plays an important role in the emotion is particularly weak or not as salient, the other respective emotion would have more influence on the subsequent decision. This research highlights the important role that integral emotion plays in the decision-making process and how it may be overlooked in research that focuses solely on incidental emotion.

#### **The Present Study**

It is clear from the studies mentioned above that incidental affect is the primary focus of the emotion and decision-making literature and that integral affect plays a important, yet underrepresented, role in decision-making alongside incidental affect. These factors are also likely to be present in moral decision-making research. Given the nature of the content featured in many of these moral dilemmas, it is reasonably expected for these dilemmas to generate some level of affect in individuals (Szekely & Miu, 2015). Past research has measured and examined the lasting effects of incidental emotions in decision-making tasks over time, (Andrade & Ariely, 2009), however, we are unaware of any studies that explicitly measure individuals' integral affective states while assessing moral dilemmas over time. Therefore, the present work sought to examine whether and which integral emotions are present during moral decision-making through the use of moral dilemmas.

Participants read and assessed a number of moral and non-moral dilemmas (i.e., dilemmas devoid of affect) through random assignment. Previous research that has utilized moral dilemmas has used as few as 1 dilemma to as many as 40 in their study procedure. Given this large range, we chose to administer multiple dilemmas at different time points during the study that fall in this range. Pre and post surveys measured participants' emotional state before and after reading and assessing the dilemmas. Since its creation, the Positive and Negative Affect Schedule (PANAS) has been consistently administered to measure positive and negative affect and has proven to be valid and reliable (Watson & Clark, 1988). In this study, the expanded version of the PANAS — PANAS – Expanded Form (PANAS-X) — was administered to participants at three distinct time points to receive more on how participants' emotional states changed over time. Ultimately, we planned to measure whether negative affect is elicited from facing moral dilemmas compared to non-moral dilemmas and how the potential negative affects changes over time, as research on negative affect is more prevalent in this field. We also answered exploratory questions specifically related to the presence and potential changes in positive affect over time, in addition to questions related to what specific positive and negative emotions are elicited and change over time in the administration of moral dilemmas.

The hypotheses are:

H1: Participants in the moral dilemma group will report more intense negative affect compared to the nonmoral dilemma group.

H2: Participants within the moral dilemma group will report more intense negative affect in the  $2^{nd}$  and  $3^{rd}$  iteration of the PANAS-X compared to the  $1^{st}$  iteration.

H3: Participants within the moral dilemma condition will not report higher/more intense negative affect in the 2<sup>nd</sup> iteration of the PANAS-X compared to the 3<sup>rd</sup> iteration.

#### **CHAPTER 2**

#### METHOD

#### **Participants**

Two hundred and fifty University of Georgia psychology students participated in this online study in exchange for course credit. Nine participants were excluded for failing to complete the study in its entirety, resulting in a total sample of two hundred and forty-one participants (188 female, 52 male, 1 other specified identity). The mean age of the sample was 18.74 (SD = 1.10), and the majority of the sample identified as White (75%).

#### Materials

**Positive and Negative Affect Schedule – Expanded Form.** The Positive and Negative Affect Schedule - Expanded Form (PANAS-X) was administered to measure participants' affect. The PANAS-X is a 60-item questionnaire that asked participants to what extent they felt both general and discrete affective states on a 1 (very slightly or not at all) to 5 (extremely) Likert scale (Watson and Clark, 1994). This expanded version included the original Positive and Negative Affect Schedule (PANAS) consisting of two 10-item scales that measure general positive and negative affect in addition to 11 subscales that measure "Specific Negative" (Fear, Hostility, Guilt, Sadness); "Specific Positive" (Joviality, Self-Assurance, Attentiveness); and "Other Affective States" (Shyness, Fatigue, Serenity, Surprise). The PANAS-X was administered a total of three times throughout the study to measure participants' affect over three distinct time points.

**Dilemmas.** Morality of dilemmas was manipulated through a series of scenarios depicting moral or non-moral dilemmas adapted from Greene et al. (2004). A total of 40 dilemmas were featured in this present s tudy with participants being randomly assigned to read and assess a total of 20 moral or 20 non-moral dilemmas. These dilemmas were determined to be moral or non-moral based on pilot data from the original Greene et al. (2004) study. Each scenario was presented one at a time and posed a question about the appropriateness of the actions that would take place. Participants indicated if they felt the specified action was "Appropriate" or "Inappropriate".

#### Procedure

Participants were first informed about the content and nature of the study and provided consent to participate. Participants completed the PANAS-X as a pre-manipulation measure of affect. Following this, participants were randomly assigned to read and assess 10 moral (N = 120) or 10 non-moral (N = 121) dilemmas. Scenarios were presented one at a time and in a randomized order for each participant. After the participants assessed all 10 respective scenarios, participants once again complete the PANAS-X as a post-affect measure. After completing the PANAS-X for a second time, participants read and assessed an additional 10 moral or non-moral dilemmas. Participants read the same type of dilemma (moral or non-moral) as the previous iteration. The dilemmas user also presented in a randomized order. Following the assessment of these 10 dilemmas, participants took the PANAS-X for the final time as a post-manipulation measure after 20 total dilemmas. Finally, participants completed a demographics questionnaire. Figure 1 visualizes the flow of the study procedure. After the conclusion of the study, participants were debriefed regarding the educational benefit of the study.

#### CHAPTER 3

#### RESULTS

#### PANAS-X – General Affect Scales

Before running analyses, assumptions about the distribution of PANAS-X scores and the homogeneity of variances among all sample groups were checked. The Positive and Negative PANAS-X scores were not normally distributed (p < .05) except for Positive scores in the Moral condition at Time Point 1, as determined by the Shapiro-Wilks Test of Normality (p > .05). Additionally, there was homogeneity of variance of all sample groups (p > .05) excluding Negative PANAS-X scores at Time Points 2 and 3, as determined by Levene's Test of Homogeneity of Variances (p < .05).

A three-way mixed ANOVA was performed to test the effects of moral or non-moral dilemmas (Condition) on PANAS-X Positive and Negative scores (PANAS-X Type) at three distinct time points (Time). Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated, (p < .05), therefore the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ( $\varepsilon = .82$ ). The three-way ANOVA with a Greenhouse-Geisser correction showed that there was a significant three-way interaction between Condition, PANAS-X Type, and Time, F(1.63, 389.65) = 40.03, p < .001,  $\eta^2 = .013$ .

The significant three-way interaction was decomposed with several post-hoc analyses. The simple two-way interaction between PANAS-X Type and Time using a Bonferroni correction was significant for the moral condition, F(1.61, 192) = 60.00, p < .001,  $\eta^2 = .046$ , and the non-moral condition, F(1.66, 199) = 5.04, p = .011,  $\eta^2 = .002$ . The simple main effect of Time on PANAS-X Score was significant for Positive; F(1.63, 194) = 87.50, p < .001,  $\eta^2 = .097$ ; and Negative; F(1.62, 193) = 8.23, p < .001,  $\eta^2 = .014$ ; PANAS-X scales for the moral condition. The simple main effect of Time was also significant for Positive; F(1.72, 207) = 36.90, p < .001,  $\eta^2 = .029$ ; and Negative; F(1.42, 170) = 51.70, p < .001,  $\eta^2 = .042$ ; PANAS-X scales for the nonmoral condition.

Multiple between and within pairwise comparisons were computed using the emmeans R package (v1.8.5; Lenth 2023) with Holm-Bonferroni corrections for both Positive and Negative PANAS-X scores at all three time points for both condition groups. Figure 2 displays the means and standard errors of the General Positive and General Negative scales of the PANAS-X at all three time points for both condition groups. Table 1 displays the between-subjects comparisons for positive and negative affect at all time points, and Table 2 displays the within-subjects comparisons of the reported positive and negative affect for the moral and non-moral conditions for all three time points. Time points corresponded to how many dilemmas had assessed prior to completing the PANAS-X. At Time 1, zero dilemmas had been assessed; at Time 2, ten dilemmas had been assessed, and at Time 3, twenty dilemmas had been assessed.

Between-subjects comparisons were specifically observed with their corresponding time point (i.e.: the moral scores at time point 1 was compared to the non-moral scores at time point 1). Looking at these comparisons, participants in the moral condition group reported significantly higher negative affect at the 2<sup>nd</sup> and 3<sup>rd</sup> iterations of the PANAS-X compared to participants in the non-moral condition group, providing evidence for Hypothesis 1. Additionally, there were no significant differences between condition groups for all time points for reported positive affect. For within-subjects comparisons, participants within the moral condition group reported significantly higher negative affect from the 1<sup>st</sup> iteration of the PANAS-X to the 2<sup>nd</sup> and from the 1<sup>st</sup> iteration to the 3<sup>rd</sup>, supporting Hypothesis 2. Additionally, the difference in reported affect between the 2<sup>nd</sup> and 3<sup>rd</sup> iteration was not significantly significant, supporting Hypothesis 3.

#### **PANAS-X** – Specific Affect Scales

The same assumptions that were checked before running the analyses on the mean scores of the General Dimension Scales were also checked for the Specific Affect Scales of the PANAS-X. The Shapiro-Wilks Test of Normality revealed that PANAS-X scores were not normally distributed for all groups except for Attentiveness scores in the Moral condition group at Time Point 1 (p > .05). Additionally, Levene's Test of Homogeneity of Variance determined that there was homogeneity of variance for all groups except for Fear, Hostility, Guilt, Shyness, Fatigue, and Surprise scores at Time Point 2 and Fear, Hostility, Guilt, Sadness, Shyness, and Surprise scores at Time Point 3 (p < .05).

A three-way mixed ANOVA tested the effects of moral or non-moral dilemmas (Condition) on all 11 subscales of the PANAS-X (PANAS-X Type) at three distinct time points (Time). Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated, (p < .05), therefore the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ( $\varepsilon = .39$ ). The three-way ANOVA with a Greenhouse-Geisser correction showed that there was a significant three-way interaction between Condition, PANAS-X Type, and Time, F(7.69, 1838.75) = 20.53, p < .001,  $\eta^2 = .011$ .

The significant three-way interaction was further decomposed using several post-hoc analyses. The simple two-way interaction between PANAS-X Type and Time using a Bonferroni correction was significant for the Moral condition; F(6.42, 764) = 42.10, p < .001,  $\eta^2 = .048$ ; and the Non-moral Condition, F(8.48, 1018) = 9.40, p = .005,  $\eta^2 = .008$ . There was a significant

simple main effect of Time on PANAS-X Score for each Specific Affect Scale for all groups except for Sadness and Fear scores in the Moral condition and Serenity scores in the non-moral condition (p > .05).

Multiple between and within pairwise comparisons were computed using the emmeans R package (v1.8.5; Lenth 2023) with Holm-Bonferroni corrections for the Specific Affect Scales for both condition groups for all three time points. Figure 3 displays the means and standard errors of the Specific Affect scales of the PANAS-X at all three time points for both condition groups. Table 3 displays the between-subjects comparisons for all 11 affect scales at all time points. Tables 4 and 5 display the within-subjects comparisons for all 11 affect scales at all time points for the moral and non-moral condition groups respectively.

As with the General Affect scales, between-subjects comparisons were specifically observed with their corresponding time point. For the between-subjects comparisons of the Specific Negative Emotion Scales (Fear, Hostility, Guilt, & Sadness), there were no significant differences between groups at Time 1 for any of the scales in this category. At Time 2, there were significant differences between groups for the Fear and Hostility scales; at Time 3, there were significant differences between groups for all four Affect scales. For the within-subjects comparisons of the Specific Negative Emotion Scales specifically for the moral condition group, analyses show that participants reported higher scores over time for the Hostility and Guilt scales; there were no significant differences reported for the Fear or Sadness scales. Betweensubjects comparisons revealed no significant differences between condition groups of all the Specific Positive Emotion Scales (Joviality, Self-Assurance, & Attentiveness). Conversely, within-subjects comparisons for the moral condition specifically show that all comparisons for the three emotions statistically decreased over all time points. Finally, the between-subjects comparisons of the Other Affective States Scales (Shyness, Fatigue, Serenity, Surprise) display no significant differences between groups for all scales at Time 1, significant differences between groups for the Serenity and Surprise Scales at Time 2, and significant differences between groups for the Shyness, Serenity, and Surprise scales at Time 3. Within-subjects comparisons specifically for the moral condition group revealed no significant differences in reported Shyness, a significant decrease in reported Fatigue and Serenity, and a significant increase in reported Surprise over time.

#### CHAPTER 4

#### DISCUSSION

Previous research has mainly focused and highlighted the role of incidental emotion on moral decision-making and decision-making as a whole. Therefore, the two major goals of this exploratory research were to 1) provide information on the presence of integral emotions in moral decision-making through the presentation of moral dilemmas and 2) to measure the intensity of these effects over time through continued presentation. We found support for our hypotheses in that participants who assessed moral dilemmas reported higher negative affect compared to participants who assessed non-moral dilemmas. We also found that participants reported an increase of negative affect from responding to zero to ten moral dilemmas but not from ten to twenty moral dilemmas, supporting our hypotheses. These data on negative affect in the moral condition directly contrasted with a decrease in negative affect over time in the nonmoral condition. Additionally, we found evidence of participants' reported feelings of positive affect decrease from all three time points in both the moral and non-moral condition groups. Furthermore, this study provides ample findings regarding specific negative, specific positive, and other affective states via the 11 Specific Affect scales included on the PANAS-X (Watson & Clark, 1994).

It is clear from these findings that engaging and assessing moral dilemmas left participants feeling more negative and less positive compared to assessing non-moral dilemmas. This information is vital to the literature in that it provides explicit evidence of integral emotions being present in moral dilemmas, information that is often not mentioned or included in research that focuses on how incidental emotions affect moral decision-making (Singh et al., 2018; Strohminger et al., 2011; Szekely & Miu, 2015; Ugazio et al., 2012).

It is important for researchers to consider how these two types of affect may interact with each other in the decision-making process, as it is likely that integral and incidental affect integrate to influence the decision-making process and subsequent outcomes (Västfjäll et al., 2016). Additionally, the number of dilemmas administered in this study potentially played a role in how participants reported their current emotional states. It is possible that reading twenty separate moral dilemmas in one sitting resulted in more/less intense feelings of negative/positive affect compared to previous studies that may have administered one or just a few of these dilemmas (Barnum et al., 2018; Lee & Gino, 2015; Singh et al., 2018). Knowing that these integral emotions are present in the decision-making process can help paint a more complete picture about emotion's role in moral decision-making and would hopefully lead to an increase in how often they are studied in this context.

Though the data support our hypotheses and goals for the study, there were some aspects of the data that don't paint a crystal-clear picture. For the General Affect scales of the PANAS-X, reported positive affect decreased after assessing 10 and 20 total dilemmas; however, reported negative affect initially increased after participants assessed 10 dilemmas, but not after 20 dilemmas. These results provide conflicting evidence on the intensity of experienced emotion over time, highlighting the variability in the number of dilemmas that has been implemented in moral decision-making research (Barnum et al., 2019; Garg et al., 2005; Singh et al., 2018; Strohminger et al., 2011; Szekely & Miu, 2015; Ugazio et al., 2012; Valdesolo & DeSteno, 2006). This trend of increased variability between negative and positive affect is also present when observing the specific emotional states. Though past research has also shown these

differing influences in different positive emotions (Strohminger et al., 2011), there wasn't much variation in the way participants reported their experience of positive emotions when assessing the moral dilemmas. It is possible that the specific positive emotions that were measured in this study employ similar cognitive dimensions that result in similar emotional experiences.

Despite there being clear decreases in the specific positive emotions over time, this trend was not consistent across the specific negative emotions. Specifically, there were no differences in reported Fear over time, but there were significant differences in reported Hostility over time. Previous work has shown that integral fear and anger influence risk perception in different ways (Ferrer & Ellis, 2020), so it is interesting to see that these particular results show how integral fear and anger (hostility in this case) differ in terms of affect arousal and intensity. One of the more intriguing results found among the specific emotional states is that there wasn't a significant difference in reported Guilt after 10 moral dilemmas; there were only significant differences from 10 to 20 dilemmas and from 0 to 20 dilemmas. This suggests that repeated exposure to these moral dilemmas led to an increase in feelings of Guilt in participants. This increase in Guilt would be lost had there not been a third time point in the study, supporting past studies that has used a large number of dilemmas in moral decision-making research. It is important for researchers in this field to consider how facing an increased number of these affect-inducing dilemmas can affect the intensity of participants' emotional state and how that intensity may be lost in studies that contain very few moral dilemmas.

#### **Limitations and Future Directions**

One of the most pressing limitations of the present study and most research in the field is the fact that integral affect cannot be fully isolated. The focus of this particular study determining whether and which integral emotions are present in moral decision-making, but it is likely the case that incidental affect also played a role in the results that were found (Västfjäll et al., 2016). It is important for the field to include more research specifically on the mechanisms involved in the integration of integral and incidental affect and how this may affect the decision-making process and subsequent outcomes.

Additionally, this study only examined the presence of integral emotions in the presentation of moral dilemmas and not how the elicited affect affects the resulting decision that participants ultimately made. A large factor of moral decision-making research is related to the underlying mechanisms surrounding the actual choice one makes when assessing a moral dilemma. Previous studies have examined participants' experienced incidental emotions when viewing moral dilemmas (Szekely & Miu, 2015), but it is unclear what mechanisms or properties associated with these emotions are involved in the emotional experience. It would be beneficial for future work to examine how the experience of certain integral emotions or certain qualities associated with said emotions (i.e.: valence, cognitive appraisals) are correlated with utilitarian or deontological choices made in moral dilemmas. Determining these underlying mechanisms will allow for future research to better identify the root causes of why individuals may or may not experience certain emotions in various moral contexts and how it may shape their subsequent decision.

One of the more important limitations of the present study is the lack of diversity found in the sample. Data were collected from a majority WEIRD (White, Educated, Industrialized, Rich, Democratic) and undergraduate convenience sample which is not representative of the United States or global population. It is important to note that cognitive processes and mechanisms such as emotion can be experienced differently in various underrepresented groups and that these results that were found in this study may not generalize to groups of different cultural backgrounds (Roberts et al., 2020. They may also have different conceptualizations of what a utilitarian or deontological decision looks like or means to them, potentially leading to results that don't align with what is being consistently reported in the literature. This is especially an issue considering that much of cognitive psychology research paints many cognitive processes as "universal" or "race-neutral" (Roberts et al., 2020). Future work in decision-making research and cognitive psychology research as a whole must work to include non-WEIRD samples in order to obtain more concrete evidence on how emotional processes may function differently in groups of different cultural backgrounds.

This study adds to the existing literature by including information on how these changes in emotional states may change over periods of time in the context of moral decision-making. Watson & Clark (1988, 1994) devised the PANAS and PANAS-X to administered over 8 distinct time points based on changes in the phrasing of the instructions. These time points allowed for affect to be reported from "at the present moment" to "during the past year." These temporal distinctions allow for more robust data, specifically in that these measures can account for potential changes in emotional intensity or arousal at various time points. Future work should attempt to measure emotional intensity or arousal at these various time points to determine if these emotional states are still felt or increase/decrease over longer periods of time to get more concrete information on the duration of emotional experiences.

Furthermore, it would also be useful to gain information on how individuals experience emotions in moral contexts outside of those that involve causing harm to save others. Much of the research on moral decision-making involves the use of these types of dilemmas, likely because they are more emotionally salient and would provide a more taxing decision-making process. However, it is important for the field to consider moral decisions in other contexts that do not involve bodily harm, as these types of decisions can be just as emotionally salient. Ultimately, the field of emotion and moral decision-making must begin to include the entire spectrum of emotions to truly understand the way in which individuals make sense of their moral reasoning.

|            |                        | Mean       |      |     |       |
|------------|------------------------|------------|------|-----|-------|
| PANAS Type | Comparison             | Difference | SE   | df  | t     |
| Negative   | Nonmoral T1 - Moral T1 | -1.30      | 0.85 | 239 | -1.53 |
| Negative   | Nonmoral T2 - Moral T2 | -5.28***   | 0.94 | 239 | -5.64 |
| Negative   | Nonmoral T3 - Moral T3 | -6.29***   | 0.93 | 239 | -6.80 |
| Positive   | Nonmoral T1 - Moral T1 | -0.70      | 1.00 | 239 | -0.70 |
| Positive   | Nonmoral T2 - Moral T2 | 2.00       | 1.04 | 239 | 1.93  |
| Positive   | Nonmoral T3 - Moral T3 | 1.83       | 1.02 | 239 | 1.80  |

Between-Subjects Pairwise Comparisons of the PANAS-X General Affect Scales

\*\*\*p < .001

|           |            |            | Mean       |      |     |       |
|-----------|------------|------------|------------|------|-----|-------|
| Condition | PANAS Type | Comparison | Difference | SE   | df  | t     |
| Moral     | Negative   | T1 - T2    | -1.68*     | 1.01 | 119 | -2.79 |
| Moral     | Negative   | T1 - T3    | -2.21**    | 1.01 | 119 | -3.35 |
| Moral     | Negative   | T2 - T3    | -0.53      | 1.11 | 119 | -1.27 |
| Moral     | Positive   | T1 - T2    | 4.03***    | 0.98 | 119 | 8.67  |
| Moral     | Positive   | T1 - T3    | 5.97***    | 0.98 | 119 | 10.96 |
| Moral     | Positive   | T2 - T3    | 1.93***    | 0.98 | 119 | 5.53  |
| Nonmoral  | Negative   | T1 - T2    | 2.30***    | 0.77 | 120 | 7.61  |
| Nonmoral  | Negative   | T1 - T3    | 2.78***    | 0.75 | 120 | 7.72  |
| Nonmoral  | Negative   | T2 - T3    | 0.48*      | 0.72 | 120 | 2.56  |
| Nonmoral  | Positive   | T1 - T2    | 1.34***    | 1.05 | 120 | 3.54  |
| Nonmoral  | Positive   | T1 - T3    | 3.44***    | 1.04 | 120 | 7.22  |
| Nonmoral  | Positive   | T2 - T3    | 2.10***    | 1.07 | 120 | 6.08  |

Within-Subjects Pairwise Comparisons of the PANAS-X General Affect Scales

\*\*p < .01. \*\*\*p < .001.

Between-Subjects Pairwise Comparisons of the PANAS-X Specific Affect Scales

| PANAS Type     | Comparison             | Mean<br>Difference | SE   | df  | t     |
|----------------|------------------------|--------------------|------|-----|-------|
| Fear           | Nonmoral T1 - Moral T1 | -1.02              | 0.55 | 239 | -1.87 |
| Fear           | Nonmoral T2 - Moral T2 | -2.99***           | 0.60 | 239 | -5.02 |
| Fear           | Nonmoral T3 - Moral T3 | -3.33***           | 0.60 | 239 | -5.56 |
| Hostility      | Nonmoral T1 - Moral T1 | -1.00              | 0.49 | 239 | -2.07 |
| Hostility      | Nonmoral T2 - Moral T2 | -3.05***           | 0.54 | 239 | -5.63 |
| Hostility      | Nonmoral T3 - Moral T3 | -3.69***           | 0.57 | 239 | -6.49 |
| Guilt          | Nonmoral T1 - Moral T1 | -0.28              | 0.62 | 239 | -0.46 |
| Guilt          | Nonmoral T2 - Moral T2 | -2.12              | 0.65 | 239 | -3.24 |
| Guilt          | Nonmoral T3 - Moral T3 | -3.68***           | 0.65 | 239 | -5.71 |
| Sadness        | Nonmoral T1 - Moral T1 | -0.03              | 0.60 | 239 | -0.06 |
| Sadness        | Nonmoral T2 - Moral T2 | -1.44              | 0.62 | 239 | -2.34 |
| Sadness        | Nonmoral T3 - Moral T3 | -2.24*             | 0.59 | 239 | -3.82 |
| Joviality      | Nonmoral T1 - Moral T1 | -0.45              | 0.94 | 239 | -0.48 |
| Joviality      | Nonmoral T2 - Moral T2 | 2.73               | 0.94 | 239 | 2.91  |
| Joviality      | Nonmoral T3 - Moral T3 | 2.41               | 0.92 | 239 | 2.63  |
| Self-Assurance | Nonmoral T1 - Moral T1 | -0.57              | 0.62 | 239 | -0.91 |
| Self-Assurance | Nonmoral T2 - Moral T2 | 0.90               | 0.61 | 239 | 1.48  |
| Self-Assurance | Nonmoral T3 - Moral T3 | 1.08               | 0.62 | 239 | 1.74  |
| Attentiveness  | Nonmoral T1 - Moral T1 | -0.13              | 0.41 | 239 | -0.31 |
| Attentiveness  | Nonmoral T2 - Moral T2 | 0.11               | 0.45 | 239 | 0.24  |
| Attentiveness  | Nonmoral T3 - Moral T3 | 0.22               | 0.46 | 239 | 0.48  |
| Shyness        | Nonmoral T1 - Moral T1 | -0.31              | 0.36 | 239 | -0.84 |
| Shyness        | Nonmoral T2 - Moral T2 | -0.85              | 0.35 | 239 | -2.45 |
| Shyness        | Nonmoral T3 - Moral T3 | -1.22*             | 0.32 | 239 | -3.76 |
| Fatigue        | Nonmoral T1 - Moral T1 | 0.14               | 0.50 | 239 | 0.28  |
| Fatigue        | Nonmoral T2 - Moral T2 | 0.61               | 0.54 | 239 | 1.14  |
| Fatigue        | Nonmoral T3 - Moral T3 | 0.84               | 0.55 | 239 | 1.53  |
| Serenity       | Nonmoral T1 - Moral T1 | 0.45               | 0.34 | 239 | 1.33  |
| Serenity       | Nonmoral T2 - Moral T2 | 1.88***            | 0.37 | 239 | 5.01  |
| Serenity       | Nonmoral T3 - Moral T3 | 2.58***            | 0.39 | 239 | 6.55  |
| Surprise       | Nonmoral T1 - Moral T1 | -0.37              | 0.24 | 239 | -1.51 |
| Surprise       | Nonmoral T2 - Moral T2 | -1.74***           | 0.32 | 239 | -5.35 |
| Surprise       | Nonmoral T3 - Moral T3 | -1.97***           | 0.31 | 239 | -6.31 |

\*p < .05. \*\*\*p < .001.

Within-Subjects Pairwise Comparisons of the PANAS-X Specific Affect Scales – Moral Condition

| Condition | PANAS Type     | Comparison | Mean Difference | SE   | df  | t     |
|-----------|----------------|------------|-----------------|------|-----|-------|
| Moral     | Fear           | T1 - T2    | -0.64           | 0.64 | 119 | -1.79 |
| Moral     | Fear           | T1 - T3    | -0.72           | 0.61 | 119 | -1.78 |
| Moral     | Fear           | T2 - T3    | -0.08           | 0.68 | 119 | -0.28 |
| Moral     | Hostility      | T1 - T2    | -1.33***        | 0.59 | 119 | -3.68 |
| Moral     | Hostility      | T1 - T3    | -1.98***        | 0.63 | 119 | -4.74 |
| Moral     | Hostility      | T2 - T3    | -0.64*          | 0.69 | 119 | -2.51 |
| Moral     | Guilt          | T1 - T2    | -0.53           | 0.68 | 119 | -1.59 |
| Moral     | Guilt          | T1 - T3    | -1.28*          | 0.58 | 119 | -2.97 |
| Moral     | Guilt          | T2 - T3    | -0.74*          | 0.63 | 119 | -2.67 |
| Moral     | Sadness        | T1 - T2    | -0.12           | 0.62 | 119 | -0.40 |
| Moral     | Sadness        | T1 - T3    | -0.27           | 0.61 | 119 | -0.83 |
| Moral     | Sadness        | T2 - T3    | -0.15           | 0.64 | 119 | -0.78 |
| Moral     | Joviality      | T1 - T2    | 4.79***         | 0.89 | 119 | 11.76 |
| Moral     | Joviality      | T1 - T3    | 6.33***         | 0.89 | 119 | 11.69 |
| Moral     | Joviality      | T2 - T3    | 1.53***         | 0.87 | 119 | 4.27  |
| Moral     | Self-Assurance | T1 - T2    | 2.75***         | 0.6  | 119 | 8.77  |
| Moral     | Self-Assurance | T1 - T3    | 3.41***         | 0.61 | 119 | 9.75  |
| Moral     | Self-Assurance | T2 - T3    | 0.66**          | 0.62 | 119 | 3.03  |
| Moral     | Attentiveness  | T1 - T2    | 0.79***         | 0.44 | 119 | 3.41  |
| Moral     | Attentiveness  | T1 - T3    | 1.58***         | 0.44 | 119 | 6.48  |
| Moral     | Attentiveness  | T2 - T3    | 0.79***         | 0.46 | 119 | 4.24  |
| Moral     | Shyness        | T1 - T2    | 0.46            | 0.4  | 119 | 2.02  |
| Moral     | Shyness        | T1 - T3    | 0.50            | 0.33 | 119 | 2.22  |
| Moral     | Shyness        | T2 - T3    | 0.04            | 0.33 | 119 | 0.30  |
| Moral     | Fatigue        | T1 - T2    | 2.03***         | 0.48 | 119 | 7.31  |
| Moral     | Fatigue        | T1 - T3    | 2.16***         | 0.49 | 119 | 6.55  |
| Moral     | Fatigue        | T2 - T3    | 0.13            | 0.5  | 119 | 0.58  |
| Moral     | Serenity       | T1 - T2    | 1.88***         | 0.35 | 119 | 8.47  |
| Moral     | Serenity       | T1 - T3    | 2.46***         | 0.37 | 119 | 9.85  |
| Moral     | Serenity       | T2 - T3    | 0.58***         | 0.38 | 119 | 3.38  |
| Moral     | Surprise       | T1 - T2    | -1.28***        | 0.34 | 119 | -4.75 |
| Moral     | Surprise       | T1 - T3    | -1.24***        | 0.33 | 119 | -4.60 |
| Moral     | Surprise       | T2 - T3    | 0.04            | 0.39 | 119 | 0.25  |

\*p < .05. \*\*p < .01. \*\*\*p < .001.

| Within-Subjects | Pairwise C | Comparisons of | of the | PANAS-X S | Specific . | Affect Scales | s – Nonmoral |
|-----------------|------------|----------------|--------|-----------|------------|---------------|--------------|
|                 |            |                | .,     |           |            |               |              |

|           |                |            | Mean       |      |     |       |
|-----------|----------------|------------|------------|------|-----|-------|
| Condition | PANAS Type     | Comparison | Difference | SE   | df  | t     |
| Nonmoral  | Fear           | T1 - T2    | 1.33***    | 0.49 | 120 | 6.18  |
| Nonmoral  | Fear           | T1 - T3    | 1.60***    | 0.51 | 120 | 6.36  |
| Nonmoral  | Fear           | T2 - T3    | 0.26       | 0.48 | 120 | 1.89  |
| Nonmoral  | Hostility      | T1 - T2    | 0.71**     | 0.42 | 120 | 3.46  |
| Nonmoral  | Hostility      | T1 - T3    | 0.71**     | 0.44 | 120 | 2.92  |
| Nonmoral  | Hostility      | T2 - T3    | 0.00       | 0.38 | 120 | 0.00  |
| Nonmoral  | Guilt          | T1 - T2    | 1.30***    | 0.59 | 120 | 5.34  |
| Nonmoral  | Guilt          | T1 - T3    | 2.12***    | 0.56 | 120 | 7.36  |
| Nonmoral  | Guilt          | T2 - T3    | 0.83***    | 0.55 | 120 | 4.60  |
| Nonmoral  | Sadness        | T1 - T2    | 1.29***    | 0.59 | 120 | 6.35  |
| Nonmoral  | Sadness        | T1 - T3    | 1.93***    | 0.57 | 120 | 7.79  |
| Nonmoral  | Sadness        | T2 - T3    | 0.64***    | 0.56 | 120 | 4.39  |
| Nonmoral  | Joviality      | T1 - T2    | 1.60***    | 0.99 | 120 | 4.49  |
| Nonmoral  | Joviality      | T1 - T3    | 3.46***    | 0.96 | 120 | 7.84  |
| Nonmoral  | Joviality      | T2 - T3    | 1.86***    | 0.98 | 120 | 6.51  |
| Nonmoral  | Self-Assurance | T1 - T2    | 1.28***    | 0.63 | 120 | 4.61  |
| Nonmoral  | Self-Assurance | T1 - T3    | 1.76***    | 0.63 | 120 | 5.83  |
| Nonmoral  | Self-Assurance | T2 - T3    | 0.48*      | 0.61 | 120 | 2.41  |
| Nonmoral  | Attentiveness  | T1 - T2    | 0.55*      | 0.43 | 120 | 2.63  |
| Nonmoral  | Attentiveness  | T1 - T3    | 1.23***    | 0.43 | 120 | 4.79  |
| Nonmoral  | Attentiveness  | T2 - T3    | 0.68**     | 0.46 | 120 | 3.52  |
| Nonmoral  | Shyness        | T1 - T2    | 1.00***    | 0.31 | 120 | 6.63  |
| Nonmoral  | Shyness        | T1 - T3    | 1.41***    | 0.29 | 120 | 8.89  |
| Nonmoral  | Shyness        | T2 - T3    | 0.41***    | 0.27 | 120 | 4.00  |
| Nonmoral  | Fatigue        | T1 - T2    | 1.55***    | 0.49 | 120 | 6.19  |
| Nonmoral  | Fatigue        | T1 - T3    | 1.45***    | 0.55 | 120 | 5.17  |
| Nonmoral  | Fatigue        | T2 - T3    | -0.10      | 0.51 | 120 | -0.61 |
| Nonmoral  | Serenity       | T1 - T2    | 0.45       | 0.36 | 120 | 2.19  |
| Nonmoral  | Serenity       | T1 - T3    | 0.33       | 0.37 | 120 | 1.44  |
| Nonmoral  | Serenity       | T2 - T3    | -0.12      | 0.39 | 120 | -0.67 |
| Nonmoral  | Surprise       | T1 - T2    | 0.08       | 0.22 | 120 | 0.57  |
| Nonmoral  | Surprise       | T1 - T3    | 0.36*      | 0.21 | 120 | 2.56  |
| Nonmoral  | Surprise       | T2 - T3    | 0.28*      | 0.23 | 120 | 2.33  |

Condition

\*p < .05. \*\*p < .01. \*\*\*p < .001.

### Figure 1

Process Flow of Study Procedure



*Note.* After completing the first iteration of the PANAS-X, participants were randomly assigned to read and assess either 10 moral or non-moral dilemmas. Following their completion of the second iteration of the PANAS-X, participants read and assessed 10 additional dilemmas of the group they were previously randomly assigned to.

## Figure 2

### Means and Standard Errors of the PANAS-X General Affect Scales



PANAS-X: General Affect Scales



emotions that represent negative and positive affect respectively.

### Figure 3

### Means and Standard Errors of the PANAS-X Specific Affect Scales



*Note*. The PANAS-X Specific Affect Scales have been arranged in order of valence: Negative (Fear, Hostility, Guilt, Sadness); Positive (Joviality, Self-Assurance, Attentiveness); and Other (Shyness, Fatigue, Serenity, Surprise).

#### References

- Alhakami, A. S., & Slovic, P. (1994). A Psychological Study of the Inverse Relationship Between Perceived Risk and Perceived Benefit. *Risk Analysis*, *14*(6), 1085-1096.
  10.1111/j.1539-6924.1994.tb00080.x
- Andrade, E. B., & Ariely, D. (2009). The enduring impact of transient emotions on decision making. Organizational Behavior and Human Decision Processes, 109(1), 1-8. 10.1016/j.obhdp.2009.02.003
- Barnum, T. C., & Solomon, S. J. (2019). Fight or flight: Integral emotions and violent intentions. *Criminology (Beverly Hills)*, 57(4), 659-686. 10.1111/1745-9125.12222
- Baron, J. (2011). Utilitarian Emotions: Suggestions from Introspection. *Emotion Review*, *3*(3), 286-287. 10.1177/1754073911402377
- Bartholomeyczik, K., Gusenbauer, M., & Treffers, T. (2022). The influence of incidental emotions on decision-making under risk and uncertainty: a systematic review and meta-analysis of experimental evidence. *Informa UK Limited*. 10.1080/02699931.2022.2099349
- Conway, P., & Gawronski, B. (2013). Deontological and Utilitarian Inclinations in Moral Decision Making: A Process Dissociation Approach. *Journal of Personality and Social Psychology*, 104(2), 216-235. 10.1037/a0031021
- Dijkstra, K. A., & Hong, Y. (2019). The feeling of throwing good money after bad: The role of affective reaction in the sunk-cost fallacy. *PLoS ONE*, *14*(1), e0209900. 10.1371/journal.pone.0209900

- Ferrer, R. A., & Ellis, E. M. (2021). Preliminary evidence for differential effects of integral and incidental emotions on risk perception and behavioral intentions: A meta-analysis of eight experiments. *Journal of Behavioral Decision Making*, 34(2), 275-289. 10.1002/bdm.2209
- Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. Wiley. 10.1002/(sici)1099-0771(200001/03)13:1<1::aidbdm333>3.0.co;2-s
- Garg, N., Inman, J. ., & Mittal, V. (2005). Incidental and Task-Related Affect: A Re-Inquiry and Extension of the Influence of Affect on Choice. *The Journal of Consumer Research*, 32(1), 154-159. 10.1086/426624
- George, J. M., & Dane, E. (2016). Affect, emotion, and decision making. *Organizational Behavior and Human Decision Processes*, 136, 47-55. 10.1016/j.obhdp.2016.06.004
- Greene, J. D., Nystrom, L. E., Engell, A. D., Darley, J. M., & Cohen, J. D. (2004). The Neural Bases of Cognitive Conflict and Control in Moral Judgment. *Neuron*, 44(2), 389-400. 10.1016/j.neuron.2004.09.027
- Greene, J. D., Sommerville, R. B., Nystrom, L. E., Darley, J. M., & Cohen, J. D. (2001). An fMRI investigation of emotional engagement in moral judgment. Science, 293(5537), 2105-2108.
- Greene, J., & Haidt, J. (2002). How (and where) does moral judgment work?. *Elsevier BV*. 10.1016/s1364-6613(02)02011-9
- Johnson, E. J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal* of Personality and Social Psychology, 45(1), 20-31. 10.1037/0022-3514.45.1.20

- Laube, C., & van den Bos, W. (2020). It's About Time: How Integral Affect Increases Impatience. *Emotion (Washington, D.C.), 20*(3), 413-425. 10.1037/emo0000553
- Lee, J. J., & Gino, F. (2015). Poker-faced morality: Concealing emotions leads to utilitarian decision making. *Organizational Behavior and Human Decision Processes*, 126, 49-64. 10.1016/j.obhdp.2014.10.006
- Lenth, R. S. (2023). emmeans: Estimated Marginal Means, aka Least-Squares Means. R package version 1.8.5. https://CRAN.R-project.org/package=emmeans
- Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion*, 14(4), 473-493. 10.1080/026999300402763
- Lerner, J. S., & Keltner, D. (2001). Fear, Anger, and Risk. Journal of Personality and Social Psychology, 81(1), 146. 10.1037/O022-3514.81.1.146
- Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. S. (2015). Emotion and Decision Making. Annual Review of Psychology, 66(1), 799-823. 10.1146/annurev-psych-010213-115043
- Roberts, S. O., Bareket-Shavit, C., Dollins, F. A., Goldie, P. D., & Mortenson, E. (2020). Racial inequality in psychological research: Trends of the past and recommendations for the future. *Perspectives on Psychological Science*, *15*(6), 1295–1309. https://doi.org/10.1177/17456 91620927709

- 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), 513-523. 10.1037/0022-3514.45.3.513
- Shou, Y., & Song, F. (2017). Decisions in moral dilemmas: The influence of subjective beliefs in outcome probabilities. *Judgment and Decision Making*, *12*(5), 481-490.
  10.1017/S1930297500006501
- Singh, J. J., Garg, N., Govind, R., & Vitell, S. J. (2018). Anger Strays, Fear Refrains: The Differential Effect of Negative Emotions on Consumers' Ethical Judgments. *Journal of Business Ethics*, 151(1), 235. 10.1007/s10551-016-3248-x
- Slovic, P., Peters, E., Finucane, M. L., & MacGregor, D. G. (2005). Affect, Risk, and Decision Making. *Health Psychology*, 24(4S), S35-S40. 10.1037/0278-6133.24.4.S35
- Strohminger, N., Lewis, R. L., & Meyer, D. E. (2011). Divergent effects of different positive emotions on moral judgment. *Cognition*, *119*(2), 295-300. 10.1016/j.cognition.2010.12.012
- Szekely, R. D., & Miu, A. C. (2015). Incidental emotions in moral dilemmas: The influence of emotion regulation. *Cognition and Emotion*, 29(1), 64-75. 10.1080/02699931.2014.895300
- Thomson, J. J. (1976). Killing, Letting Die, and the Trolley Problem. *The Monist*, *59*(2), 204-217. 10.5840/monist197659224
- Ugazio, G., Lamm, C., & Singer, T. (2012). The role of emotions for moral judgments depends on the type of emotion and moral scenario. *Emotion (Washington, D.C.), 12*(3), 579-590. 10.1037/a0024611

- Valdesolo, P., & DeSteno, D. (2006). Manipulations of Emotional Context Shape Moral Judgment. *Psychological Science*, *17*(6), 476-477. 10.1111/j.1467-9280.2006.01731.x
- 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*, 325. 10.3389/fpsyg.2016.00325
- Wake, S., Wormwood, J., & Satpute, A. B. (2020). The influence of fear on risk taking: a metaanalysis. *Cognition and Emotion*, *34*(6), 1143-1159. 10.1080/02699931.2020.1731428
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070. doi:10.1037/0022-3514.54.6.1063
- Watson, D., & Clark, L. A. (1994). The PANAS-X: Manual for the positive and negative affect schedule-expanded form. Ames, IA: The University of Iowa.
- Young, N. A., Shuster, M. M., & Mikels, J. A. (2019). The Sure Thing: The Role of Integral Affect in Risky Choice Framing. *Emotion (Washington, D.C.), 19*(6), 1035-1043.
  10.1037/emo0000505