

Fear Deciding Fate: How Fear Influences Moral Decision-Making

By

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Abstract

Moral dilemmas require individuals to make a life-altering choice. Due to the severity of the choice, we argue that there is a degree of fear in moral decision-making. We aimed to see how prevailing fears in each individual predicts moral decision-making habits. We looked into the emotional and physical divisions of fear to deem which dimension of fear is more dominant in each participant. Then analysed these results against reported deontological or utilitarian moral inclinations to see if higher reports of fear impact moral decision-making. Additionally, we included two secondary variables that are most prevalent in fear research (gender and thinking styles) as well as the impact of burden on moral choice. We found that our research was supported; fear tendencies are linked to individual behaviours and burden of moral decisions was influenced by what we fear and affected moral choices.

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Introduction

You are on one of your normal routes through the mountains, content with the bustling sound of the coal-powered engine and cricketing of the tracking beneath. You stare off into the distance at the blue skies and greenery surrounding the tracks as you continue to navigate the train through the winding terrain. Amongst the continuous ticking of the wheels, you start to hear screams. Anxiously you pull the horn on your cargo train as a reminder to the worrisome sounds of your upcoming approach. You begin to see shadows covering the track straight ahead. Narrowing your vision, you clearly see a man and woman with two young children struggling against the rough ropes keeping them secured to the railway. With nervous hands you grab for the emergency brake to find yellow caution tape surrounding the metal rod. You survey the environment surrounding the railway, and you notice a forgotten track off in the distance before the trapped family. Relieved, you commence redirecting the train, until you spot a lone backpacker that mistakenly set up camp on the tracks and is peacefully sleeping in the middle of the rail. You begin to panic. You have the power to redirect the train and save the family, however this action would kill the unsuspecting man on the opposing tracks. What is the appropriate action to take?

The train scenario shows a fitting representation of moral dilemmas as it often emphasizes the aspect of life/ death and choice. As depicted in the train scenario, moral decisions tend not to affect our own physical being, but the physical being of others. For example, as the conductor, you were never in danger of being physically harmed, but you were the decider of which lives should be saved. As moral decisions commonly have a large effect on well-being and life, it can be argued that these decisions have elements of fear in them as well.

Albeit the thought of choosing who a train hits seems not fear-inducing at first glance, it produces an emotional response tantamount to fear. Fear is multi-dimensional by its ability to be produced by its myriad of stimuli. A common misconception about fearful scenarios is they require a physical threat to self-bodily injury. While in actuality, the same “hole in your stomach” feeling can be evoked by threat to others as well. This phenomenon is what piques our interest in fear. The range of what is considered fearful, both thought-processes and inducements, shows that this emotion is not only complex, but may be a powerful controller of our actions. We chose to look into this topic to see the extent to which fear may motivate actions, specifically in moral decision-making. If fear is shown to be a predictor of moral judgement, we can infer that emotions have the ability to mediate a wide array of actions.

Within this thesis, we aim to see how prevailing fears in each individual predicts moral decision-making habits. We will observe this relationship by creating and testing a scale to measure individual fear patterns. Through our scale, we look into the emotional and physical divisions of fear to deem which dimension of fear is more dominant in each participant. We will then compare their fear patterns to their responses from several moral decision-making scenarios. Through our research we answer the overarching research question: how does fear influence moral-decision making?

What is Fear?

Fear is a conscious feeling one has when one is in danger (LeDoux & Brown, 2017). However, this danger can be both emotional and physical. Indeed, in a review of the literature on fear, Longin, Chammat, Chapouthier, and Jouvent (2010) argued that there is a clear divide between emotional fear and physical fear.

Physical fear is comprised of situations people would normally regard as “scary.” The defining characteristic necessary to be labelled as a physical fear is that the situation must have potential to cause bodily harm (Longin et al., 2010). Physical fears are more common in childhood; however, many adults still suffer from varying degrees of physical fears as a result of childhood fear carry-over, media exposure to fear-inducing scenarios, or personal experience. In a study on childhood and adulthood physical fear, Gullone (2000) discovered that if an individual has not conquered their childhood fear by the age of eleven, the fear tends to stay with the individual for life. When a child is exposed to physical harm, they may not understand the cause of harm and therefore blame the injury on “scary” items the child may have been exposed to via the media or personal experiences (Gullone, 2000). Physical fears tend not to fluctuate for two distinct reasons: childhood carry-over of fear and inability to face the fear. Physical fears such as animal attacks and shipwrecks rarely occur, and therefore people with these fears are never given an opportunity to overcome it or mature out of it. Evidence suggests that media exposure to deadly situations is the most likely cause for adult development of physical fear from Discovery Channel’s shark week to news coverage of a plane crash (Altheide & Michalowski, 1999).

Emotional fear describes situations where there is no or minor probability for physical harm, but which causes a large amount of emotional distress or trauma (Longin et al., 2010). Emotional fear is primarily socially constructed and is induced when the event involves other individuals, for example, fear of humiliation or abandonment by others. One of the differentiating traits between emotional and physical fears is that emotional fear is more likely to change throughout development whereas physical fear remains stable (Kendler, Karkowski, & Prescott, 1999). Different stages of life evoke new and changing emotional fears, which develop

and subside as life circumstances change. Adolescents often develop social, achievement, and evaluation fears (Bokhorst, Westenberg, Oosterlaan, & Heyne, 2008), whereas in elderly individuals, the fear of being forgotten increases (Hay D. P., Sperry, L., & Hay, L., 1998).

What provokes a fearful response in individuals changes throughout a lifetime dependent on personal experience and growth (Hartley & Phelps, 2009). Children are primarily fearful of physical fear triggers while adults are mainly scared of emotional fear triggers. This section identified the dimensions of fear: the differences between physical and emotional fear, and the diachronic aspect over the development of the individual. How these dimensions play a role in morality is discussed in the next sections.

How Do We Make Moral Decisions?

Many philosophers and moral psychologists argue that there are two actions available to respond to a moral dilemma: a deontological action and a utilitarian action (Greene, 2009). Deontology is a moral decision-making style which believes that the morality of an action depends on the intrinsic nature of the action (Conway, Gawronski, & Smith, 2013). Deontological thinkers believe that harming others is morally wrong regardless of the consequences. In the train example, deontological individuals would choose to not redirect the train as it is a conscious action to harm an innocent man. Utilitarianism is the moral decision-making style which believes that the morality of an action is determined by its consequences. Utilitarian thinkers believe that in some circumstances, harming others is acceptable if it increases the well-being of a greater number of people than those being harmed (Conway et al., 2013). Also known as the “sacrificial” action, utilitarian thinkers often rationalize their actions using cost-benefit reasoning (it is always better to save more lives). In the train example,

utilitarian individuals would choose to use the railway switch to hit the man instead of the family, as the number of lives saved is always the most important factor.

Moral Choice & Fear

Previous research shows that anticipated burden of choice influenced how participants responded to hypothetical negotiation scenarios (Larrick & Boles, 1995). Consequently, fear of carrying an emotional burden may also be a factor that effects moral decision-making. Emotional burden is the guilt, worry, shame, or regret the individual may feel after their decision has been made (Tangney, 2001). As burden does not cause outward damage to the physical beings, it can be concluded that carrying burden is an emotional condition.

Aligning with deontological views, research shows that people view actions that result in harm as morally worse than omission of action that results in identical harm (Baron & Ritov, 2004). When harm is done to a third party by inaction, people are less likely to feel responsibility for the outcome compared to feelings of culpability by overt actions that cause equivalent harm (Navarrete, McDonald, & Asher, B, 2012). Additionally, the psychoanalytic approach on guilt shows that having a high fear of punishment induces more avoidant and non-action deontological behaviours (Mosher, 1965). As a result, it can be assumed that non-actions equate to lesser blame for harm caused than an overt action that caused equivalent harm. Hence, by not acting, you are not to blame for the consequence.

Emotional burden only affects the self. Similarly, when faced with life-changing moral dilemmas, people act in a more self-concerned manner (Batson & Collins, 2011). Regardless of commensurate harm caused by deontological and utilitarian decisions, the sacrificial utilitarian choice demonstrates greater genuine concern about minimizing damage to others (Conway, Goldstein-Greenwood, Polacek, & Greene, 2018). For example, in the train scenario, the

utilitarian action of redirecting the train to hit the backpacker shows reflection of the scenario by minimizing the amount of death. Whereas, deontological choices reflect on the moral dilemma with greater self-focus (Miller, Hannikainen & Cushman, 2014). From these studies, we can speculate that some of the self-focus evaluated when making a moral decision may be motivated by anticipated emotional burden.

Contrary to the deontological self-focused assessment in making moral decisions, individuals who select utilitarian actions show considerably higher levels of emotional arousal than individuals who choose the deontological option (Navarrete et al., 2012). In addition, people with emotion regulation difficulties rate deontological actions as more appropriate in moral dilemmas (Zhang, L., Li, Wu, & Zhang, Z., 2017). Therefore, we can conclude that emotions play a pivotal role in moral decision-making. Considering that utilitarian actions consider emotional processes greater than deontological actions, we can hypothesize that utilitarian inclinations may have more emotional fears than deontological inclinations.

Secondary Variables

To examine fear and moral decision-making more thoroughly, we also chose to look into two variables that are most frequent in fear and moral psychology research: gender and thinking style.

Gender. Some researchers argue that gender plays a role in which fears are more prevalent in an individual. Women have been found to report more emotional fears than men, for instance more anxiety-related fears (Mclean, 2007), and fear of autonomy (Gruen, 1988). Men have been found to report more physical fears than women, such as higher levels of fear of crime (Reid & Konrad, 2004). Dobson (2006) argued that women were more likely to develop anxiety disorders and emotional fears as a result of their taught emotional reaction to fear. She states that

women were taught to “befriend” in response to threat so they can better understand the situation, while men were taught to emphasize humans’ physical “fight or flight” response to threat which helped them develop effective ways to deal directly with the threat. This theory provides a prediction for why men feel more threatened in physical fear scenarios as they were taught to act in that manner.

Therefore, based off the previous studies on different fear specificities and gender theories further support the hypothesis that women tend to have more emotional fears than men, and that men have more physical fears than women (Gruen, 1988; Mclean, 2007; Reid & Konrad, 2004). As a secondary variable, we will broaden this notion of gender differences to measure the wider scope of fear outside of explicit fears. This thesis will explore and test the relationship between gender and the two types of fears (emotional and physical) through two studies.

Thinking Styles. It is plausible that different thinking styles predict fear as well. Individuals who are highly rational thinkers will more likely justify to themselves why certain situations should not be viewed as “scary,” therefore leading to less fears in general. Himle Thyer, and Papsdorf (1982) found that people with high levels of social anxiety were prone to higher amounts of irrational thinking and behaviours. However, in another study, Thyer, Papsdorf, and Kramer (1983) found the opposite results, that rationality and fear-based anxiety had a statistically weak relationship. They argued that the enhanced development of irrational fears is developed by conditioning and acquired misinformation, rather than irrational thinking patterns. Due to the literature having contrasting viewpoints on rational thinking and fear, this thesis will examine the relationship between thinking styles and fear prevalence.

The Studies

In this thesis, we look at the relationship between fear and moral decision-making. We assessed this by two psychological studies: a pilot study (Study 1) and the principal study (Study 2). Study 1 reported fear patterns and placed participants on a spectrum of two types of fear: emotional fear and physical fear. This step was made to establish a reliable measure for evaluating the patterns of fear, as well as to explore our secondary variables relationships to the findings. Study 2 incorporated the revised measure on fear, gender, and thinking styles from Study 1 with an additional measure on moral decision-making. The morality survey is a replication and expansion upon the moral dilemmas posed in Conway and Gawronski's (2013) Study 1. These involved participants to find a solution to an arduous moral scenario by responding with either a deontological or utilitarian action. With the data collected from Study 1 and Study 2 we will be able to thoroughly investigate how fear influences moral decision-making.

Study 1 (Pilot Study)- Investigating Individual Fear

Psychological evidence suggests that there are six universal expressions of emotion: happiness, surprise, sadness, disgust, anger, and fear (Ekman & Oster, 1979). From this list, fear may be the most ever-changing emotion (Phelps, 2012). Within our pilot study, we created our own measure to look into individual fear patterns and the divide between constructs of emotional fear and physical fear. Physical fear is an animalistic trait that is inherent to human nature and produces rapid and intense behaviour as a response to the stimuli, while emotional fear is a learned trait that is created via social exposure and produces deferred behaviour as a response to the stimuli. Most people lie somewhere within the fear spectrum of combined physical fears and emotional fears. Fear is a multifaceted emotion, and this detailed dissection into the dimensions

provided insight into how fear is perceived and was a valuable precursory step for Study 2. Due to the changing of nature of fear, in this pilot study we aimed to discover if fear is viewed by the population as a dichotomy of emotional fear and physical fear as well as if the developed fear scale is an adequate measure of individual fear patterns. Additionally, this pilot also looked into how fear is affected by the secondary variables: gender and thinking styles.

Hypotheses

Based off previous research on fear, we have compiled three over-arching hypotheses. These hypotheses test the dimensions of fear and our secondary variables: gender and thinking style. These hypotheses were formulated in Study 1 in effort to confirm the validity of the Physical and Emotional Fear Inventory (PEFI). As such, these hypotheses will be tested again in Study 2 with the established PEFI.

1. Emotional fear and physical fear are two separate dimensions.
2. Women will have more emotional fears than men.
3. Individuals who show highly rational thinking patterns will have less fear (both emotional and physical) than those who are show highly experiential (intuitive) thinking patterns.

Methods

Recruitment of Participants. This measure was collected through Victoria University of Wellington's IPRP program and distributed by Qualtrics. As this study was a pilot, it was united as an amendment to a larger study on moral reasoning. Thus, we could only recruit 104 participants within the time allocated.

Procedure. With the three combined measures, this survey had 165 questions and on average took 30 minutes to complete (Appendix A). Data was collected from 10 September to 7

October 2018. To view the full analysis plan and survey information please refer to the preregistration of this study on Open Science Framework (OSF) (<https://osf.io/wnp8t>).

Fear Measure: Physical & Emotional Fear Inventory (PEFI). Prior to our research there was no established scale created to measure the broad patterns of fear. Subsequently, we sought to construct a reliable measure of physical fear and emotional fear. Through this survey, we would be able to observe dominant fears in each participant.

We created this scale first by referencing the Chapman University annual fear survey. The Chapman University Survey of American Fears provides a thorough investigation into the trends and changes of the average American's fears (Chapman University, 2018). The scale used for Chapman's annual study was not replicated as a result of the discrepancies among the wording of each question and the strong inclination towards American issues. Therefore, we used the results of the study as a guideline.

The scenarios that were not taken from the Chapman survey were created in Victoria University of Wellington's Mind in Context Lab by a panel of psychology students and professors. By working as a group, we were able to distinguish between different emotional and physical fears to come to a consensus on 100 fear items. Fear situations where the initial response has the potential to be both emotional and physical were excluded from the survey to avoid any cross-over.

The items were measured using a seven-point Likert scale. Participants were asked to indicate on a scale of one (none at all) to seven (very much) how much fear they would feel about this situation potentially happening. All of the items were randomized to control for the order effect. In addition, there were a total of four "attention check" questions embedded within

the fear items to eliminate any participants who were not giving their full attention to the survey. Participants who failed the attention check questions were excluded from the analyses.

The final survey resulted in 100 various fear scenarios with an even split of 50 physical fears and 50 emotional fears. The emotional fear scenarios asked about the following issues: humiliation, public speaking, verbal abuse, disappointment, commitment, emotional abuse, poverty, isolation, abandonment, criticism, terminal illness, privacy, ostracism, rejection, dependency, expected death, unexpected death, and success. The physical fear scenarios asked about the following issues: animal attacks, aliens, assault, natural disasters, water, transport injuries, ghosts, small spaces, war, and fire.

Gender Measure. The gender measured contained a single question asking participants to list their identified gender. Participants who chose not to answer were not included in the analysis of hypothesis two, but their data was used to test the other hypotheses.

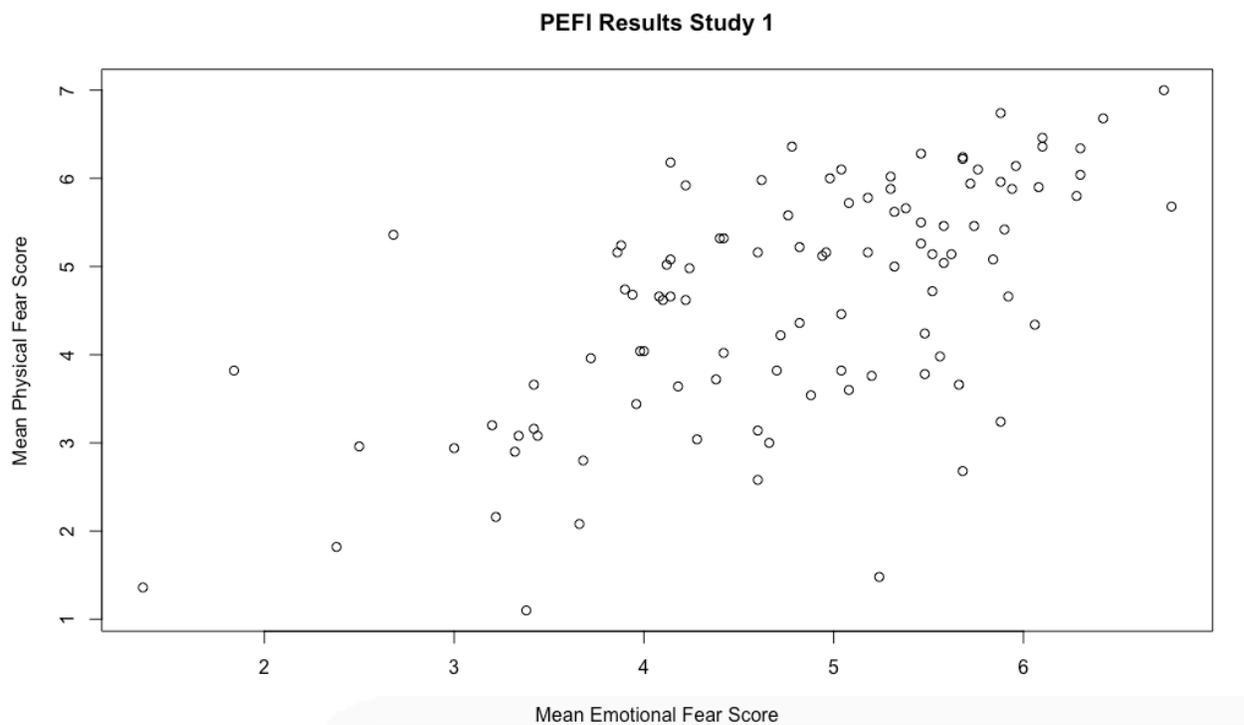
Thinking Style Measure. The Rational-Experiential Inventory (REI) measures an individual's preference in information processing for either the need for cognition rationality or faith in intuition experientiality (Shirzadifard, Shahghasemi, Hejazi, Naghsh, and Ranjbar, 2018). REI consists of twenty self-identifying items that participants rank on a seven-point Likert scale. Ten of the items address rational thinking habits (eight items are reverse coded). The remaining ten items address experiential thinking habits (one item is reverse coded). The participants are to indicate from one (completely false) to seven (completely true) the extent to which they believe each statement to be true about themselves.

Analysis

Descriptive Statistics

Study 1 had a total of 104 participants from 31 males, 70 females, and 3 not applicable participants.¹ The PEFI scores showed 39 participants were considered to have high emotional fear and 49 participants were considered to have high physical fear (Figure 1). The fear items with the highest overall responses (also ranked as the “scariest” items) were Fear 75: A family member becoming terminally ill (681 overall sum), Fear 90: An unexpected death of a family member (675 overall sum), and Fear 76: A partner becoming terminally ill (672 overall sum).

Figure 1. Participant’s Average Fear Scores from Study 1.



Hypothesis 1. *Emotional fear and physical fear are two separate dimensions.*

To answer this hypothesis, we conducted principle component analysis (PCA) and a parallel analysis on items from our survey with fear as the main variable. The PCA showed that four components should be extracted. We extracted those four components through a varimax

¹ The codes for Study 1 are available on OSF under “pilot r script FDF” at <https://osf.io/wnp8t>

rotation. The eigenvalues from our parallel analysis showed component 1 (34.86), component 2 (9.05), component 3 (5.27), and component 4 (3.27).

From our PCA, Component 1 showed 24% of overall variance and displayed 46 physical fear items, as a result we labeled this component as “physical fear” (Table 1). The highest factor loading items included Fear 3: Being in a plane crash (0.86), Fear 14: Being stabbed (0.85), and Fear 10: Being in a pandemic (0.82).

Table 1

Component 1 Factor Loadings for Study 1

| Component Items | Factor Loadings |
|---|-----------------|
| Fear 1: Being attacked by animal while walking | 0.7369 |
| Fear 2: Being attacked by animal while swimming | 0.6964 |
| Fear 3: Being in a plane crash | 0.8647 |
| Fear 4: Being in a nuclear attack | 0.7451 |
| Fear 5: Swimming in a murky water | 0.4878 |
| Fear 6: Getting a root canal | 0.5493 |
| Fear 7: Aliens invading the world | 0.6004 |
| Fear 8: Being abducted by aliens | 0.6257 |
| Fear 9: Not having enough to eat | 0.4614 |
| Fear 10: Being in a pandemic | 0.8223 |
| Fear 11: Being physically assaulted by a stranger | 0.6146 |
| Fear 12: Being mugged | 0.6077 |
| Fear 13: Being physically assaulted by someone you know | 0.5304 |
| Fear 14: Being Stabbed | 0.8540 |

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| Fear 15: Waking up during an operation | 0.7263 |
| Fear 16: Being shot | 0.8168 |
| Fear 17: Being held Underwater | 0.7500 |
| Fear 18: Falling from a great height | 0.5227 |
| Fear 19: Being trapped in a small box | 0.5595 |
| Fear 20: Being covered in insects | 0.5907 |
| Fear 22: Being in a Tsunami | 0.7796 |
| Fear 23: Being in a large earthquake | 0.5364 |
| Fear 24: Being in a tornado | 0.8011 |
| Fear 25: Being in a hurricane | 0.7627 |
| Fear 26: Being in a Shipwreck | 0.8198 |
| Fear 27: Being in a car accident | 0.6194 |
| Fear 28: Being run over by a bus | 0.7681 |
| Fear 29: Being Hit by lightning bolt | 0.7796 |
| Fear 30: Being in the middle of a combat zone | 0.8034 |
| Fear 31: Choking on your food | 0.6538 |
| Fear 32: Being in a terrorist attack | 0.8222 |
| Fear 34: Being buried alive | 0.7790 |
| Fear 35: Being in the middle of the ocean on a boat at night | 0.4999 |
| Fear 37: Exposed to a deadly pathogen | 0.8017 |
| Fear 38: Trapped in a building on fire | 0.8107 |
| Fear 39: Being possessed by a ghost | 0.6810 |
| Fear 40: Being physically attacked by a ghost | 0.6739 |

| | |
|--|--------|
| Fear 41: Experiencing extreme physical pain | 0.5855 |
| Fear 42: Being physically harmed | 0.6529 |
| Fear 44: Standing in a field of small, deep holes | 0.5159 |
| Fear 45: Being incarcerated for a crime you did not commit | 0.6335 |
| Fear 46: Being physically stalked everywhere you go | 0.7136 |
| Fear 47: Being physically controlled by someone else | 0.5900 |
| Fear 48: Living in an extremely dangerous city | 0.6897 |
| Fear 79: Being lost in a dense forest | 0.5610 |

Component 2 showed 36% of overall variance and displayed 23 emotional fear items (Table 2). Of the 23 fear items displayed all of them included outcomes that directly affected their social well-being, hence we chose to label component 2 as “social well-being fears.” This component’s highest factor loadings included Fear 96: Being rejected by a romantic partner (0.61), Fear 55: Being verbally abused by friends (0.56), and Fear 52: Being humiliated in front of your family (0.54).

Table 2

Component 2 Factor Loadings for Study 1

| Component Items | Factor Loadings |
|---|-----------------|
| Fear 51: Being humiliated in front of your peers | 0.5641 |
| Fear 52: Being humiliated in front of your family | 0.5384 |
| Fear 54: Being verbally abused by an authority figure | 0.6715 |
| Fear 55: Being verbally abused by friends | 0.5575 |
| Fear 56: Being verbally abused by family | 0.5113 |

| | |
|---|--------|
| Fear 57: Being verbally abused by a stranger | 0.6053 |
| Fear 58: Disappointing an authority figure | 0.6180 |
| Fear 60: Disappointing your friends | 0.5148 |
| Fear 67: Failing a course | 0.5514 |
| Fear 69: Being criticized on something you're proud of | 0.6350 |
| Fear 70: Being criticized on your appearance | 0.7479 |
| Fear 71: Being criticized on your intellect | 0.6116 |
| Fear 72: Being criticized on your behaviour | 0.8234 |
| Fear 73: Being cruelly gossiped about | 0.7520 |
| Fear 74: Everyone finding out an embarrassing secret about you | 0.6914 |
| Fear 78: Standing alone in a large, open space | 0.5339 |
| Fear 84: Being socially ostracized | 0.4866 |
| Fear 94: Being rejected by an organization you want to be a part of | 0.5507 |
| Fear 96: Being rejected by a romantic partner | 0.6177 |
| Fear 97: Never accomplishing anything noteworthy | 0.5119 |
| Fear 43: Being in the centre of large, cramped crowd | 0.4283 |

Component 3 showed 48% of overall variance and displayed 21 emotional fear items (Table 3). Of the 21 fear items displayed many of the items affected close relationships, therefore we labeled component 3 as “close relationship fears.” This component had the highest salience in comparison to the others as well as had the highest overall average for the items. This shows that component three is viewed as the “scariest” component and involves that most prominent fears overall. This component’s highest factor loadings included Fear 77: A friend becoming terminally ill (0.77) and Fear 92: Death of partner (0.76).

Table 3

Component 3 Factor Loadings for Study 1

| Component Items | Factor Loadings |
|---|-----------------|
| Fear 59: Disappointing your family | 0.5966 |
| Fear 64: Not being able to provide for your family | 0.5478 |
| Fear 66: Being lonely for the remainder of your life | 0.4944 |
| Fear 68: Not being able to have children | 0.4500 |
| Fear 75: A family member becoming terminally ill | 0.7583 |
| Fear 76: A partner becoming terminally ill | 0.7372 |
| Fear 77: A friend becoming terminally ill | 0.7723 |
| Fear 80: Finding out a major aspect of your life is false | 0.4530 |
| Fear 81: Everyone being able to hear your thoughts | 0.4516 |
| Fear 82: Everyone being able to watch you at all times | 0.6627 |
| Fear 85: Being completely dependent on person you hate | 0.4775 |
| Fear 88: Being abandoned by your friends | 0.6380 |
| Fear 89: Being abandoned by your family | 0.6286 |
| Fear 90: An unexpected death of a family member | 0.6788 |
| Fear 91: An expected death of a family member | 0.6134 |
| Fear 92: Death of a partner | 0.7623 |
| Fear 93: Seeing a person die unexpectedly | 0.4557 |
| Fear 95: Being rejected by your family | 0.5695 |
| Fear 99: Being cheated on by your partner | 0.5785 |

Component 4 showed 52% of overall variance and only had 4 items: 2 emotional fears and 2 physical fears (Table 4). These items include Fear 49: Pollution destroying the environment, Fear 50: Global warming destroying the environment, Fear 63: Committing to a job for the rest of your life, and Fear 86: Being completely dependent on a person you love. As a result of the varying nature of these fears, component 4 was labeled as ‘external locus of control.’ We did not include component 4 within the analyses due to its unclear patterns and low factor loadings.

Table 4

Component 4 Factor Loadings for Study 1

| Component Items | Factor Loadings |
|--|-----------------|
| Fear 49: Pollution destroying the environment | 0.7564 |
| Fear 50: Global warming destroying the environment | 0.7430 |
| Fear 63: Committing to a job for the rest of your life | 0.5809 |
| Fear 86: Being completely dependent on a person you love | 0.4265 |

Hypothesis 2. *Women will have more emotional fears than men.*

Emotional Fear. The overall average answer to the emotional fear scenarios was a 4.78 out of 7 on the Likert scale. An independent-samples t-test was conducted to compare emotional fear in males and females. There was not a significant difference in the scores for males ($M=4.49$) and females ($M=4.87$) conditions; $t(57.669) = -1.68, p=0.09$. The effect size for this analysis was found to align with Cohen’s (1988) interpretation for medium effect size ($d = 0.36$). We followed this up by examining potential differences between genders within the two categories of emotional fears between genders as found through hypothesis 1.

Social Well-Being and Close Relationships. To view the components individually, we ran a linear regression model to predict gender (independent variable) based on the two emotional fear components (dependent variables). The results of the regression indicated that social well-being fears explained 36% of the variance and that gender is a significant predictor of social well-being fears ($F(1, 99) = 3.629, p = 0.05$), with an R^2 of 0.03. The results of the regression for close relationship fears and gender explained 48% of variance and a non-significant regression equation was found ($F(1, 99) = 1.796, p = 0.183$), with an R^2 of 0.01. In conclusion, gender does significantly predict social well-being fears ($b = 0.49, \beta = 1.63$) but does not significantly predict close relationships fears ($b = 0.349, \beta = 1.41$).

Physical Fear. An independent samples t-test was carried out to investigate if gender could significantly predict participants' physical fear levels. The results of the independent-samples t-test showed a non-significant difference in the fear scores for males ($M = 4.38$) and females ($M = 4.71$); $t(61.361) = -1.187, p = 0.2239$. The effect size for this analysis was found to align with Cohen's (1988) interpretation for large effect size ($d = 0.24$). As physical fear only had one component, we can confidently state that there is no gender difference in physical fear.

Hypothesis 3. *Individuals who show highly rational thinking patterns will have less fear (both emotional and physical) than those who show highly experiential (intuitive) thinking patterns.*

To analyse thinking styles in comparison to fear, we first had to comprehensively assess each individual's results from the REI. Of the twenty-question survey, eleven of the responses had to be reverse coded before the initial analysis. After the reverse coding, we then completed a linear regression model for each fear and we were able to organize individual participants into a ranking order based off of averages.

Emotional Fear. The results of the regression indicated that thinking style explained 2% of the variance and that thinking style was not a significant predictor of emotional fears ($F(2,101)= 1.409$, $p = 0.249$), with an R^2 of 0.027. It was found that emotional fear was not significantly predicted by experiential thinking ($b = -0.160$, 95% CI [-0.42, 0.10], $p= 0.225$) or rational thinking ($b = -0.110$, 95% CI [-0.35, 0.13], $p= 0.370$).

Social Well-Being and Close Relationships. Mirroring the analyses comparing gender and emotional fear, we then separated the emotional fear components to find if there was any significance. The regression with social well-being fears indicated that thinking style explained 2% of the variance and that thinking style was not a significant predictor of social well-being fears ($F(2,101)= 1.084$, $p = 0.342$), with an R^2 of 0.021. Social well-being fears was not predicted by experiential thinking ($\beta = -0.152$, 95% CI [-0.45, 0.14], $p= 0.313$) or rational thinking ($\beta = -0.120$, 95% CI [-0.39, 0.15], $p= 0.394$).

The regression with close relationship fears indicated that thinking style explained 1% of the variance and that thinking style did not predict close relationship fears ($F(2,101)= 0.939$, $p = 0.39$), with an R^2 of 0.01. Close relationship fear was not predicted by experiential thinking ($b = -0.165$, 95% CI [-0.46, 0.13], $p= 0.27$) or rational thinking ($b = -0.081$, 95% CI [-0.35, 0.19], $p= 0.558$).

Physical Fear. The results of the regression indicated that thinking style explained 3% of the variance and that thinking style was not a significant predictor of physical fears ($F(2,101)= 1.801$, $p = 0.170$), with an R^2 of 0.034. Physical fear was not significantly predicted by experiential thinking ($b = -0.183$, 95% CI [-0.50, 0.13], $p= 0.262$) or rational thinking ($b = -0.195$, 95% CI [-0.49, 0.10], $p= 0.202$).

Exploratory Data

We also conducted an analysis using a free-list at the end of the survey asking each participant to list their top five fears (Table 6). From this qualitative data, we found that fear of family dying (0.422), loneliness (0.20), and fear of self-death (0.11), were the most salient. The highest write-in for number one fear was family dying with a total of 20 write-ins. Loneliness was the seconded highest write-in for number one fear with 7 write-ins and self-death was third with 6 write-ins. This experimental free-list shows a clear pattern of self-reported fears among participants and provided a useful method to showcase individual thought patterns with fear-inducing stimuli. This supports the evidence shown from the salience in component three, close relationships; most individuals fear their close relationships over other fear-inducing items.

Table 5

Free List Top Items

| Write-In | Number of Times Written as #1 Fear | Number of Times Written as #2 Fear | Number of Times Written as #3 Fear | Salience |
|--------------|------------------------------------|------------------------------------|------------------------------------|----------|
| Family Dying | 20 | 31 | 9 | 0.422 |
| Loneliness | 7 | 7 | 8 | 0.207 |
| Self-Death | 6 | 6 | 4 | 0.119 |

Conclusions from Study 1

This study showed that there is a clear divide between emotional fear and physical fear. However, we have discovered that emotional fear is far more complex than previously thought. The PCA showed that fear is viewed in four different categorizations, two of which are the separate aspects of emotional fear: social well-being fears and close relationships fears. The high

factor loadings within the close relationship fears showed that people value the safety of and relationship with loved ones over themselves.

This study also looked into how the characteristics of gender and thinking styles related to fear. Through logistic regressions there showed to be no significant relationship between thinking styles and fear, with and without the three components of fear disjointed. While thinking style showed no significance, gender did have significance with component two: social well-being fears. This shows that women have a greater fear of emotional hurt by social situations. There were no other significant findings with fear and gender.

This study provided insight into how fear is perceived through the division of emotional and physical fears. By using quantitative methods through PCA, regressions, and t-tests, we were able to thoroughly examine the data collected to reach a conclusion regarding the hypotheses. Subconscious factors influence the perception of fear potentially creating a multitude of fear categorization instead of the previously hypothesized dichotomy.

Study 2- Fear Influencing Moral Decisions

Within Study 2, there were several different measures used to look at the relationship between fear and moral decision-making to address the hypotheses. The survey was divided into three sections: fear, moral scenarios, and secondary variables. Section one was a revised, continuation of Study 1 that looked into emotional and physical fear prevalence in each participant. Section two involved participants making moral decisions to resolve dilemmas that required them to respond in a deontological or utilitarian manner. This assessed their decision-making style, with covariates for difficulty in their choice, the potential emotional burden, and fear of the situation. Section three reported again on the secondary variables: gender and thinking style.

In section one, we aimed to reaffirm Longin et al. (2010) review that emotional and physical fear are two separate and distinct dimensions (primary hypothesis one). Due to the changing nature of emotional fear and the stable nature of physical fear, it is hard to decipher which type of fear is more dominant. The data collected examined participants' levels of fear for each classification.

In section two, we tested the moral decision-making hypotheses by replicating the moral dilemmas posed in Conway and Gawronski's (2013) Study 1. We expanded on Conway and Gawronski's (2013) study by also addressing the emotional burden of the differing moral choices (primary hypothesis three and primary hypothesis four). We then used the data from the scenarios and compared participants' moral decision-making to their fear scores in section one to find if people with higher emotional fear scores made more utilitarian moral decisions (primary hypothesis two).

Lastly, we included two different scales in section three that addressed common variables (gender, thinking style) used in fear and moral decision-making research. These variables were measured as potential factors that influence participants' fears and used as an exploration into whether they affected moral decision-making. Study 2 assessed an emotion that has minimally been examined as broadly, and therefore provides contemporary findings to a widely speculated emotional responsive action.

Hypotheses

Primary Hypotheses

1. Emotional fear and physical fear are two separate dimensions.
2. People who score higher on emotional fear will make more utilitarian moral decisions.

3. Utilitarian decisions will be considered more emotionally taxing than deontological decisions.
4. If people with highly emotional fear primarily make utilitarian decisions and utilitarian decisions are more emotionally taxing, then emotional burden may explain the link between high emotional fear favouring utilitarian decisions.

Secondary Hypotheses (Fear)

1. Women will have more emotional fears than men.
2. Individuals who show highly rational thinking patterns will have less fear (both emotional and physical) than those who are show highly experiential (intuitive) thinking patterns.

Counter Hypotheses (Moral Decision-Making)

1. If gender is a covariate in the relationship between fear and moral decision-making, this will affect the results of the analysis to reflect that women may be more likely to choose deontological decisions.
2. If thinking style is a covariate in the relationship between fear and moral decision-making, this will affect the results to reflect that rational thinkers may be more likely to choose utilitarian options.

Methods

In this study, we used three different scales to measure how fear influences moral decision-making. Firstly, we included the revised PEFI as an established scale to measure participants fear patterns. With the knowledge of the separate dimensions of emotional fear and the single dimension of physical fear, we were able to revise the scale to include only the most prominent fear items in Study 2. We then presented participants with ten morally difficult scenarios presented in Conway and Gawronski's (2013) Study 1 with minor adjustments. We

used the collected data to compare participants' moral decision-making habits to the participants' PEFI scores to find how fear prevalence may predict deontological or utilitarian inclinations.

You can find our analyses on Open Science Framework (OSF) here: <https://osf.io/f52rp>.

Recruitment of Participants. The surveys were administered through Qualtrics and the sample was collected through Victoria University of Wellington's IPRP program. As section 2 on morality is an extension of Conway and Gawronski's (2013) Study 1, we chose to include a similar number of participants. In their original study the researchers examined 275 participants. Based on this study's findings, we recruited 300 participants for our study. We increased the amount slightly in order to have an even split of the genders: 150 women and 150 men. It was crucial for our study to have an equal number of participants from both genders as gender is one of the secondary variables.

Procedure. This survey had approximately 156 questions. Given the required readings and contemplation time, it took an average of 45 minutes to complete (Appendix B). Data was collected from 16 May to 1 August 2019.

Section 1: Fear Measure (PEFI)

Section one provides an understanding of each individual's degree of emotional fear and physical fear. This section addresses primary hypothesis one as well as provides comparable data for the subsequent hypotheses. For our second study, we aimed to mimic the results of the preliminary study by including the updated PEFI. From the results of the pilot study, we used 84 of the original 100 fear items to include in this study, with 42 physical fear items and 42 emotional fear items. Sixteen items were excluded due to cross-loadings, null findings, irrelevant components, or low factor-loadings. The items were measured using a seven-point Likert scale. Participants were asked to indicate on a scale of one (none at all) to seven (very much) how

much fear you would feel about each situation. The wording of this question was slightly altered to give the participants a better understanding of how to respond to the question being asked.

Reflecting Study 1, the 84 items were randomized to control for the order effect and we included four “attention check” questions.

Section 2: Morality

The morality vignette section mimicked Conway and Gawronski’s (2013) Study 1. For each scenario, participants were instructed to read a detailed story involving a moral dilemma and to choose a deontological or utilitarian solution. The stories covered a range of moral issues involving topics such as poverty, assassination, torture, animal cruelty, and epidemics to test participants’ hypothetical moral decisions. As a sole actor in the scenarios, participants had to choose if they would respond with the harm-based action (utilitarian) or non-harm-based action (deontological). They then were prompted to report on a seven-point Likert scale on how difficult it was to make this decision from one (very easy) to seven (very difficult).

In Conway and Gawronski’s (2013) original article, the two questions above were the only questions asked after the moral dilemma was introduced. In our adaption, we added three additional follow-up questions after each moral scenario. Two of the additional questions targeted perspectives on the utilitarian and deontological decisions in relation to emotional burden, while the third additional question targeted fear of the moral dilemma. The first additional question allowed the participant to rate on a seven-point Likert scale on how emotionally taxing their decision is on themselves from one (not burdensome) to seven (very burdensome). The second additional question asked participants to pick which one of the two options (deontological or utilitarian) they consider to be more emotionally taxing. The last additional question had participants report their fear of each moral dilemma potentially occurring

by mirroring the questions in the PEFI². Reflecting the questions asked in section one, the participants were asked: “Please indicate on a scale of one (none at all) to seven (very much) how much fear you would feel about this situation potentially happening.”

Section 3: Secondary Variables- Gender & Thinking Style

While section one and section two explore the primary hypotheses, the measures in section three do not specifically pertain to the primary hypotheses but are included as indicators of predictors of fear and moral decision-making. Within this section, we looked into gender and thinking styles.

Gender Measure. As the secondary and counter hypotheses addresses gender differences in fear severity and moral decision-making, it is crucial that all participants gender be reported. We recruited by requesting participants to reveal their identified gender prior to taking the study to attain an even split of genders.

Thinking Style Measure. As with Study 1, we again included the Rational-Experiential Inventory (REI) to measure an individual’s dominant thinking style: experiential or rational. This measure has not been altered from Study 1, hence the REI in Study 2 still consists of the same 20 items addressing rational thinking and experiential thinking. These items were again rated by each participant on a seven-point Likert scale from one (completely false) to seven (completely true) the extent to which they believe each statement to be true about themselves.

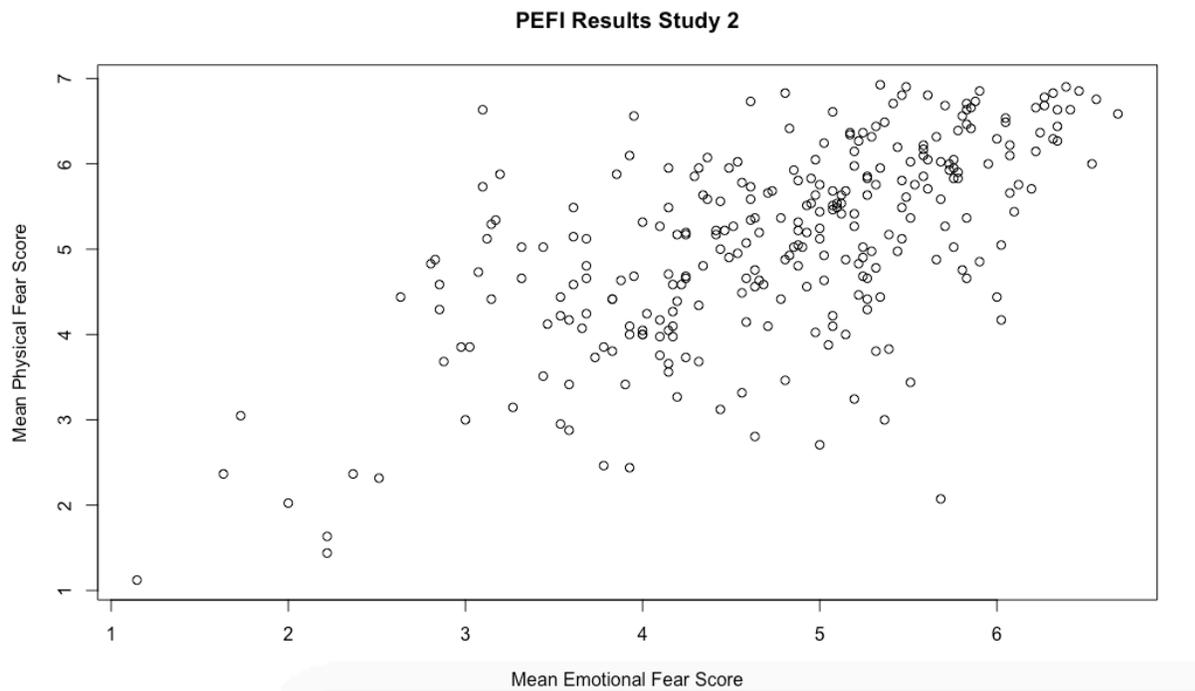
² In the original study, Conway and Gawronski (2013) also included parallel scenarios where the participant could choose a harmful action that causes more harm than overall well-being to further test moral decision-making. However, we chose to exclude these scenarios from this study because we did not find the outcome data relevant for this thesis.

Analysis

Descriptive Statistics

Study 2 collected data from 300 participants, however, after marking the attention checks, we were only able to analyze 273 of the participant's responses. Of the 273 participants measured, 133 were male, 139 were female, and 1 was not listed. The participant with the not listed gender was not included in the gender analyses. Based off the information retained from the PEFI, 79 participants were considered to have high emotional fear and 122 participants were considered to have high physical fear (Figure 2). The fear items with the highest overall responses (also ranked as the "scariest" items) were Fear 21: A partner becoming terminally ill (1,800 overall sum), Fear 35: Death of a partner (1,825 overall sum), and Fear 69: Being buried alive (1,847 overall sum). Lastly, 216 participants are primarily utilitarian thinkers and 57 are primarily deontological thinkers.

Figure 2. Participant's Average Fear Scores from Study 2.



Primary Hypothesis 1. *Emotional fear and physical fear are two separate dimensions.*

As primary hypothesis one was tested within Study 1, we repeated a similar principle component analysis (PCA) and parallel analysis on the new data present in the PEFI. The PCA from Study 1 showed four different components to be extracted through an orthogonal varimax rotation. While Study 2 excluded 18 of the original PEFI items due to cross-loadings and a random component, our Study 2 PCA also gave us four components to extract: Physical Fear, Social Well-Being Fear, Close Relationship Fear, and Spatial Fears.

Component 1 (Physical Fear) showed 45% of overall variance and displayed 38 physical fear items (Table 6). The highest factor loading items included Fear 66: Being hit by a lightning bolt (0.77), Fear 54: Being shot (0.76), and Fear 67: Being in the middle of a combat zone (0.75). We labelled this component physical fear as it contained 38 out of the 41 physical fear items in the PEFI. All 38 physical fear items that loaded on component 1 in Study 2 were also loaded onto component 1 in Study 1.

 Table 6
Component 1 Factor Loadings for Study 2

| Component Items | Factor Loadings |
|---|-----------------|
| Fear 24: Being lost in a dense forest | 0.4935 |
| Fear 42: Being attacked by an animal while walking | 0.7418 |
| Fear 43: Being attacked by an animal while swimming | 0.6468 |
| Fear 44: Being in a plane crash | 0.6596 |
| Fear 45: Being in a nuclear attack | 0.7468 |
| Fear 47: Aliens invading the world | 0.6586 |

| | |
|---|--------|
| Fear 48: Being affected by a pandemic | 0.7233 |
| Fear 49: Being physically assaulted by a stranger | 0.6889 |
| Fear 50: Being mugged | 0.6901 |
| Fear 51: Being physically assaulted by someone you know | 0.6664 |
| Fear 52: Being stabbed | 0.7471 |
| Fear 53: Waking up during an operation | 0.4840 |
| Fear 54: Being shot | 0.7648 |
| Fear 55: Being held under water | 0.5597 |
| Fear 56: Falling from a great height | 0.6143 |
| Fear 57: Being trapped in a small box | 0.4476 |
| Fear 58: Being covered in insects | 0.4466 |
| Fear 59: Being in a tsunami | 0.6754 |
| Fear 60: Being in a large earthquake | 0.6433 |
| Fear 61: Being in a tornado | 0.7256 |
| Fear 62: Being in a hurricane | 0.7100 |
| Fear 63: Being in a shipwreck | 0.6915 |
| Fear 64: Being in a car accident | 0.6845 |
| Fear 65: Being run over by a bus | 0.7396 |
| Fear 66: Being hit by a lightning bolt | 0.7788 |
| Fear 67: Being in the middle of a combat zone | 0.7581 |

| | |
|--|--------|
| Fear 68: Choking on your food | 0.6060 |
| Fear 69: Being buried alive | 0.5932 |
| Fear 71: Being exposed to a known deadly pathogen | 0.7081 |
| Fear 72: Being trapped in a building on fire | 0.7166 |
| Fear 73: Being possessed by a ghost | 0.5659 |
| Fear 75: Experiencing extreme physical pain | 0.6141 |
| Fear 76: Being physically harmed | 0.6614 |
| Fear 78: Being incarcerated for a crime you did not commit | 0.5827 |
| Fear 79: Being physically stalked everywhere you go | 0.6573 |
| Fear 80: Being physically controlled by someone else | 0.6110 |
| Fear 81: Living in an extremely dangerous city | 0.5928 |
| Fear 82: Being in a terrorist attack | 0.7453 |

Component 2 (Social Well-Being Fear) showed 71% of overall variance and displayed 21 emotional fear items (Table 7). This component's highest factor loadings included Fear 15: Being criticized on your appearance (0.71), Fear 17: Being criticized on your behavior (0.72), and Fear 28: Being socially ostracized (0.71). We labelled this component social well-being fear as it contained 17 out of the original 21 fears that were loaded on component 2 in Study 1. Unlike to Study 1, component 2 had an additional 4 fears that loaded onto component 3 in Study 1. These fears are Fear 31: Being abandoned by your friends, Fear 29: Being completely dependent on a person you hate, Fear 27: Everyone being able to watch you at all times, and Fear 25: Finding out a major aspect of your life is false.

Table 7

Component 2 Factor Loadings for Study 2

| Component Items | Factor Loadings |
|---|-----------------|
| Fear 1: Being humiliated in front of your peers | 0.6888 |
| Fear 2: Being humiliated in front of your family | 0.5460 |
| Fear 3: Being verbally abused by an authority figure | 0.6523 |
| Fear 4: Being verbally abused by friends | 0.6775 |
| Fear 6: Being verbally abused by a stranger | 0.5020 |
| Fear 7: Disappointing an authority figure | 0.5903 |
| Fear 11: Being lonely for the remainder of your life | 0.4694 |
| Fear 14: Being criticized on something you're proud of | 0.5600 |
| Fear 15: Being criticized on your appearance | 0.7171 |
| Fear 16: Being criticized on your intellect | 0.6482 |
| Fear 17: Being criticized on your behaviour | 0.7210 |
| Fear 18: Being cruelly gossiped about | 0.6903 |
| Fear 19: Everyone finding out an embarrassing secret about you | 0.6082 |
| Fear 28: Being socially ostracized | 0.7111 |
| Fear 37: Being rejected by an organization you want to be a part of | 0.5226 |
| Fear 39: Being rejected by a romantic partner | 0.5658 |
| Fear 40: Never accomplishing anything noteworthy | 0.4626 |

| | |
|---|--------|
| Fear 31: Being abandoned by your friends | 0.5832 |
| Fear 29: Being completely dependent on a person you hate | 0.4789 |
| Fear 27: Everyone being able to watch you at all times | 0.4364 |
| Fear 25: Finding out a major aspect of your life is false | 0.5356 |

Component 3 (Close Relationship Fear) showed 91% of overall variance and displayed 13 emotional fear items (Table 8). This component's highest factor loadings included Fear 20: A family member becoming terminally ill (.79), Fear 21: A partner becoming terminally ill (0.75) and Fear 33: An unexpected death of a family member (0.73). We labelled this component social well-being fear as it contained 12 out of the original 18 fears that were loaded on component 3 in Study 1. Four of the previous items that loaded onto component 3 were now in component 2.

Table 8

Component 3 Factor Loadings for Study 2

| Component Items | Factor Loadings |
|--|-----------------|
| Fear 8: Disappointing your family | 0.6179 |
| Fear 10: Not being able to provide for your family | 0.6103 |
| Fear 13: Not being able to have children | 0.4188 |
| Fear 20: A family member becoming terminally ill | 0.7936 |
| Fear 21: A partner becoming terminally ill | 0.7550 |
| Fear 22: A friend becoming terminally ill | 0.6937 |
| Fear 32: Being abandoned by your family | 0.6082 |
| Fear 33: An unexpected death of a family member | 0.7398 |

| | |
|---|--------|
| Fear 34: An expected death of a family member | 0.6979 |
| Fear 35: Death of a partner | 0.7283 |
| Fear 36: Seeing a person die unexpectedly | 0.4866 |
| Fear 38: Being rejected by your family | 0.6113 |
| Fear 30: Being abandoned by a partner | 0.5521 |

Study 2 also had a fourth component that was dissimilar from Study 1. The fourth component items in Study 1 were redacted in Study 2, therefore this component was made up of divergent items and displayed a different fear construct. Component 4 showed 100% of overall variance and displayed 4 fear items; 2 emotional fear and 2 physical fear. The items included Fear 23: Standing alone in a large, open space, Fear 46: Swimming in murky water, Fear 70: Being in the middle of the ocean on a boat at night, and Fear 77: Being in the center of a large, cramped crowd. Fear 23 and Fear 77 originally loaded onto Component 2 (social well-being fear) in Study 1. Fear 46 and Fear 70 originally loaded onto Component 1 (physical fear) in Study 1. Due to the fears all being related to space, we concluded that this fear be labelled spatial fears (Table 9).

Table 9

Component 4 Factor Loadings for Study 2

| Component Items | Factor Loadings |
|--|-----------------|
| 23 Standing alone in a large, open space | 0.5694 |
| 46 Swimming in murky water | 0.5982 |
| 70 Being in the middle of the ocean on a boat at night | 0.5711 |
| 77 Being in the centre of a large, cramped crowd | 0.5422 |

Primary Hypothesis 2. *People who score higher on emotional fear will make more utilitarian moral decisions.*

To find if primarily emotionally fearful people make more utilitarian decisions than deontological decisions we first created two total variables for utilitarian and deontological decisions. The variable for utilitarian decisions represented the amount of times a participant responded with a utilitarian choice with the moral scenarios. The variable for deontological decisions represented the amount of times a participant responded with a deontological choice with the moral scenarios. Both variables together equated to ten as there were ten moral scenarios given. We then analysed these total variables amount against the participants emotional fear scores through a general linear model. We predicted in the model that emotional fear (independent variable) influenced moral decisions (dependent variable). The results of the model indicated that emotional fear is significant predictor of moral decisions (95% CI [0.83, 0.99], $p = 0.03$). The log-odds of moral decision-making being influenced by emotional fear shows an odds ratio of 0.91. Therefore, moral decision-making is influenced by emotional fear and emotionally fearful people do significantly make more utilitarian moral decisions.

Primary Hypothesis 3. *Utilitarian decisions will be considered more emotionally taxing than deontological decisions.*

To find if utilitarian decisions are considered more emotionally taxing than deontological decisions, we conducted an exact binomial test. The analysis revealed that neither the deontological burden or utilitarian burden responses were given at random. The participants who responded with the utilitarian decision being the more burdensome was not significant (49%, $p = 0.30$). Participants who responded with the deontological decision being the more burdensome

was not significant (51%, $p = 0.16$). This means there is no evidence that the questions targeting the burden of decision are arranged for a certain outcome. In addition, our descriptive statistics the question, “What option is more emotionally taxing?” found that 121 participants primarily viewed deontological decisions as more emotionally taxing and 152 participants primarily viewed utilitarian decisions as more emotionally taxing. In conclusion, primary hypothesis 3 is supported; utilitarian decisions are considered more emotionally taxing than deontological decisions.

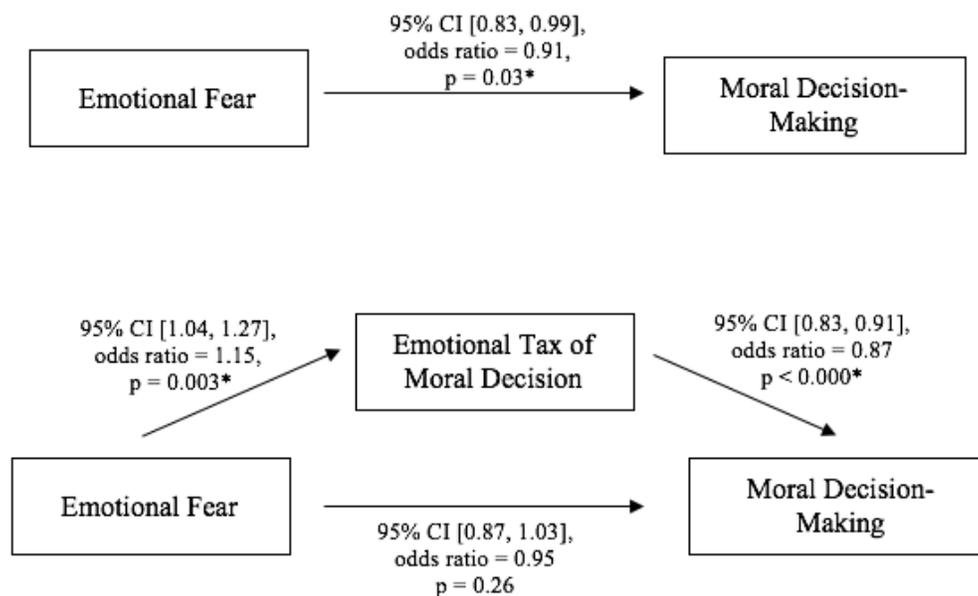
Primary Hypothesis 4. *If people with high emotional fears prefer utilitarian decisions and utilitarian decisions have higher emotional tax, then emotional tax may explain the link between high emotional fear favouring utilitarian decisions.*

To answer hypothesis four, we ran a mediation with emotional tax of the moral decision acting as a mediator between emotional fear (independent variable) and moral decision-making (dependent variable). To analyze this mediation, we had to run each regression separately to come to our final result. In our first regression we ignored our mediator to test if emotional fear predicted moral decisions. The regression showed that emotional fear does significantly predict moral decisions (95% CI [0.83, 0.99], $p = 0.03$). The log-odds of moral decision-making being influenced by emotional fear while mediating for burden shows an odds ratio of 0.91.

We then continued our mediation by then running three different regressions on our variables. Firstly, we tested how emotional fear influenced our mediator, emotional tax of moral decisions. The regression showed that emotional fear does significantly influence emotional tax of moral decisions (95% CI [1.04, 1.27], $p = 0.003$) with an odds ratio of 1.15. We then tested our mediator on moral decision-making. The regression showed that emotional tax does significantly influence moral decision-making (95% CI [0.83, 0.91], $p < 0.000$) with an odds

ratio of 0.87. Lastly, we tested to see how the relationship between emotional fear and moral decision-making while mediating for emotional tax of moral decision. The regression indicated that while mediating for emotional tax, that there is no significance between emotional fear and moral decision-making (95% CI [0.87, 1.03], $p = 0.26$) with an odds ratio of 0.95. As a result, we can say that this mediation is valid. Therefore, primary hypothesis 4 is supported; emotional tax of moral decisions does significantly influence the relationship between emotional fear and moral decision-making.

Figure 3. Mediation from Hypothesis 4 Analysis.



Secondary Hypothesis 1. *Women will have more emotional fears than men.*

Emotional Fear. The overall average answer to the emotional fear scenarios was a 4.77 out of 7 on the Likert scale. An independent-samples t-test was conducted to compare emotional fear in males and females. There was a significant difference in the scores for males ($M = 4.57$) and females ($M = 4.97$) conditions; $t(256.39) = -3.35$ $p < 0.001$. The effect size for this analysis was found to align with Cohen's (1988) interpretation for medium effect size ($d = 0.41$). We

again followed up this data between the two different categories of emotional fear found in primary hypothesis 1.

Social Well-Being and Close Relationships. To view the components individually, we ran a linear regression model to predict gender (independent variable) based on the two emotional fear components (dependent variables). The results of the regression indicated that social well-being fears explained 2% of the variance and that gender is a significant predictor of social well-being fears ($F(1, 264) = 8.115$, 95% CI [-0.64, -0.11], $p = 0.004$), with an R^2 of 0.02. The results of the regression for close relationship fears and gender explained 2.5% of variance and a significant regression equation was found ($F(1, 267) = 8.006$, 95% CI [-0.60, -0.10], $p = 0.00$), with an R^2 of 0.02. In conclusion, gender does significantly predict social well-being fears ($b = 0.38$, $\beta = 1.46$) but does not significantly predict close relationships fears ($b = 0.35$, $\beta = 1.42$).

Physical Fear. Similar to Study 1, using an independent samples t-test we examined if gender could significantly predict participants' physical fear levels. The results of the independent-samples t-test showed a significant difference in the fear scores for males ($M = 4.89$) and females ($M = 5.34$); $t(263.22) = -3.35$, $p < 0.001$. The effect size for this analysis was found to align with Cohen's (1988) interpretation for large effect size ($d = 0.41$). As physical fear only had one component, we can confidently state that there is a gender difference in physical fear.

Secondary Hypothesis 2. *Individuals who show highly rational thinking patterns will have less fear (both emotional and physical) than those who are show highly experiential (intuitive) thinking patterns.*

To analyse thinking styles in comparison to fear, we first had to comprehensively assess each individual's results from the REI. Of the twenty-question survey, eleven of the responses

had to be reverse coded before the initial analysis. After the reverse coding, we then completed a linear regression model for each fear and we were able to organize individual participants into a ranking order based off of averages.

Emotional Fear. The results of the regression indicated that thinking style explained 4% of the variance and that thinking style was a significant predictor of emotional fears ($F(2, 261) = 7.288, p < 0.001$), with an R^2 of 0.05. It was found that emotional fear was not predicted by experiential thinking ($b = 0.141, 95\% \text{ CI } [-0.01, 0.29], p = 0.07$) and was significantly predicted by rational thinking ($b = -0.228, 95\% \text{ CI } [-0.35, -0.09], p < 0.001$).

Social Well-Being and Close Relationships. Mirroring the analyses comparing gender and emotional fear, we then separated the emotional fear components to find if there was any significance. The regression with social well-being fears indicated that thinking style explained 3% of the variance and that thinking style was a significant predictor of social well-being fears ($F(2, 264) = 5.743, p = 0.003$), with an R^2 of 0.04. Social well-being fears was not significantly predicted by experiential thinking ($b = 0.128, 95\% \text{ CI } [-0.04, 0.30], p = 0.149$) and was significantly predicted rational thinking ($b = -0.232, 95\% \text{ CI } [-0.37, -0.08], p < 0.001$).

The regression with close relationship fears indicated that thinking style explained 4% of the variance and that thinking style was a significant predictor of close relationship fears ($F(2, 267) = 6.92, p < 0.001$), with an R^2 of 0.049. Close relationship fears were significantly predicted by both experiential thinking ($b = 0.212, 95\% \text{ CI } [0.04, 0.37], p = 0.012$) and rational thinking ($b = -0.202, 95\% \text{ CI } [-0.34, -0.06], p = 0.004$).

Physical Fear. The results of the regression indicated that thinking style explained 1% of the variance and that thinking style was a significant predictor of physical fears ($F(2, 264) = 3.621, p = 0.02$), with an R^2 of 0.026. Physical fear was not significantly predicted by

experiential thinking ($b = 0.169$, 95% CI [-0.01, 0.35], $p = 0.06$), and was significantly predicted by rational thinking ($b = -0.154$, 95% CI [-0.30, -0.00], $p = 0.04$).

Counter Hypothesis 1. *If gender is a covariate in the relationship between fear and moral decision-making, this will affect the results of the analysis to reflect that women may be more likely to choose deontological decisions.*

To test counter hypothesis 1, we ran a general linear regression that tested if fear (independent variable) predicted moral decision-making (dependent variable) controlling for gender. Through the regression we saw that fear and gender influences moral decision-making positively. The coefficient of fear is not significant ($p = 0.77$), however the coefficient of gender is significant ($p = 0.01$). The results of the regression showed 2% of variance and there is not significant effect of fear on moral decision-making after controlling for gender ($F(1,256) = 0.81$, $p = 0.77$), with an R^2 of 0.029. Fear did not significantly predict moral decision-making while controlling for gender ($\beta = 1.04$).

Counter Hypothesis 2. *If thinking style is a covariate in the relationship between fear and moral decision-making, this will affect the results to reflect that rational thinkers may be more likely to choose utilitarian options.*

Similar to counter hypothesis 1, we assessed counter hypothesis 2 in the same manner; through a linear regression with fear as our independent variable and moral decision-making as our dependent variable, while controlling for thinking styles. Through the regression we saw that fear and thinking styles influences moral decision-making positively. The coefficients of fear ($p = 0.36$), experiential thinking ($p = 0.68$), and rational thinking ($p = 0.55$) were not significant. The results of the regression showed there is not significant effect of fear on moral decision-making after controlling for thinking style ($F(1,256) = 0.90$, $p = 0.36$). Fear did not significantly

predict moral decision-making while controlling for rational thinking ($\beta = 1.07$, $p = 0.68$).

Additionally, fear did not significantly predict moral decision-making while controlling for experiential thinking ($\beta = 1.12$, $p = 0.55$).

Conclusions from Study 2

In Study 2, we successfully analysed our four primary hypotheses on fear and moral decision-making, our two secondary hypotheses on gender and thinking style and fear, and our two counter-hypotheses on gender and thinking style and moral decision-making.

Primary Hypotheses. The primary outcome from primary hypothesis 1 in Study 2 showed that all of the emotional fears loaded onto either Component 2 (social well-being fears) or Component 3 (close relationship fears), while all of the physical fears loaded onto Component 1, with only 4 outlying items that loaded onto Component 4. From this clear differentiation between loadings of emotional fear and physical fear on our components, we can confidently say that hypothesis 1 is fully supported: emotional fear and physical fear are two separate dimensions.

Primary hypothesis 2 analysed if people who scored higher on emotional fear would make more utilitarian decisions. Through a total variable for moral inclination and a linear regression model, showed there was significance shown and therefore this hypothesis was supported.

Primary hypothesis 3 answered the question of whether utilitarian decisions would be more emotionally taxing than deontological decisions. Through a simple grouping of a total variable and an exact binomial test, we were able to support primary hypothesis 3.

Primary hypothesis 4 analysed the link between high emotional fear favouring utilitarian decisions as explained by emotional tax. Through a mediation we were able to find that the

relationship between emotional fear and moral decision-making is significantly affected when mediating for emotional tax of moral decision. Therefore, primary hypothesis four was supported.

Secondary Hypotheses. Our secondary hypotheses analysed our secondary variables (gender and thinking style) against participant's reported fears from the PEFI. Both secondary hypothesis 1 and secondary hypothesis 2 were also analysed in Study 1. For complete support of our hypotheses, we again analysed using the same statistical tests that were originally used in Study 1 with the same variables.

Secondary hypothesis 1 looked at if women have more emotional fear than men. Due to the disconcertment of emotional fear, we analysed the gender divide against the emotional fear components separately. Resembling the outcomes in Study 1, secondary hypothesis 2 is again partially supported showing no significance for gender differences in close relationship fears, but a significance in social well-being fears.

Secondary hypothesis 2 observed if highly rational thinkers had less fear (both emotional and physical) than those who are highly experiential (intuitive) thinkers. Through a regression, the analyses aligned with Study 1, that physical fear was not a significant predictor of thinking style. When analysing emotional fear without the component separation, the hypothesis is not supported for emotional fear. However, with the social well-being fears and close relationship fears separation, close relationship fears predicted both experiential and rational thinking and social well-being fears predicted rational thinking. Therefore, secondary hypothesis 2 is partially supported.

Counter Hypotheses. Lastly, we analysed our secondary variables (gender and thinking style) as covariates for our moral decision-making and fear regressions. When gender was acting

as a covariate in the regression of if fear predicts moral decision-making, we found that fear did not significantly predict moral decision-making while controlling for gender. When thinking style was acting as a covariate in the regression of if fear predicts moral decision-making, we found that fear is not significantly predict moral decision-making while controlling for both experiential and rational thinking. In conclusion, both of our counter hypotheses were not supported.

Conclusions from Study 1 and Study 2

Emotional Fear and Physical Fear: Study 1 vs Study 2

We tested our hypothesis on the dimensions of fear (emotional and physical) through two separate studies with two separate sets of data. In both studies, we completed identical principle component analyses and parallel analyses to answer our analogous hypotheses. In both analyses, we extracted four components with similar fear items.

Physical Fear Conclusion. Study 1 and Study 2 both only showed a singular component that loaded a majority of the physical fear items tested in the PEFI. In Study 1, Component 1 (physical fear) loaded 41 physical fear items. Correspondingly, in Study 2 Component 1 loaded 38 out of the 41 original physical fears in Study 1. In addition, of the 42 physical fears used in Study 2, 38 of the items were included in this component. This shows a clear pattern about the understanding of physical fears. Therefore, I can confidently say that physical fears are distinctive.

Emotional Fear Conclusion. Study 1 and Study 2 again displayed similar understandings of the divide between emotional fears. Component 2 and component 3 in both studies held the bulk of emotional fears showing a clear split between social well-being fears

(fears that impact your social status and social health), and close relationship fears (fears that impact your close relationships).

Component 2 (social well-being fears) kept similar loadings to Study 1 in Study 2. In Study 1, social well-being fears included 21 emotional fear items. In Study 2, social well-being fears included 17 of the original 21 items with an additional 5 emotional fears. Component 2 did not contain any physical fear items showing a clear pattern that this component was solely emotional.

Component 3 (close relationship fears) had the most changes in fear items between Study 1 and Study 2. In Study 1, close relationship fears were composed of 18 emotional fear items. In Study 2, only 12 of the original 18 fears were still loaded onto this component. Interestingly, 5 fear items that were included in Study 1 and not Study 2, all loaded onto social well-being fears instead. Component 3 also did not contain any physical fear items.

Conclusion on Emotional Fear and Physical Fear. As a result of both component 2 and component 3 loading minor physical fears and the bulk of emotional fears in both studies presented, there is a well-defined understanding regarding the distinction of emotional fears. From the reoccurring PEFI use and comparable outcomes from repeating analyses, this is sufficient evidence that emotional fears and physical fear are separate dimensions. In conclusion, our hypotheses on the distinction between emotional fears and physical fears is supported.

Secondary Variables: Study 1 vs Study 2

Our gender and thinking style hypotheses were tested twice with two sets of data provided from Study 1 and Study 2. For both of the studies, the same analyses were run to provide as similar results as possible.

Gender. Our first secondary variable tested to see if gender predicted fear. Regardless of the same fears being questioned, our results from Study 1 and Study 2 varied. Physical fear, emotional fear, and close relationship fear all showed different significances between Study 1 and Study 2 (Table 10). The assorted significance from these analyses could be caused by using two different samples of PEFI data as fear is an individually unique factor for each participant. As a consequence of our contradictory findings, the only indisputable result is that there is a significance between the genders for social well-being fears. Therefore, the hypothesis that women will have more emotional fears than men is partially supported.

 Table 10

Gender: Study 1 vs Study 2

| | Study 1 | | Study 2 | |
|-------------------------|----------------|-------|----------------|-------|
| Physical Fear | Mean (female): | 4.71 | Mean (female): | 5.34 |
| | Mean (male): | 4.38 | Mean (male): | 4.89 |
| | p-value: | 0.22 | p-value: | 0.00* |
| Emotional Fear | Mean (female): | 4.87 | Mean (female): | 4.97 |
| | Mean (male): | 4.49 | Mean (male): | 4.57 |
| | p-value: | 0.09 | p-value: | 0.00* |
| Social Well-Being Fear | Mean (female): | 4.51 | Mean (female): | 4.56 |
| | Mean (male): | 4.02 | Mean (male): | 4.17 |
| | p-value: | 0.05* | p-value: | 0.00* |
| Close Relationship Fear | Mean (female): | 5.44 | Mean (female): | 5.80 |

| | | | |
|--------------|------|--------------|-------|
| Mean (male): | 5.09 | Mean (male): | 5.44 |
| p-value: | 0.18 | p-value: | 0.00* |

Thinking Style. We also tested to see if thinking style (experiential and rational) predicted fear. The statistical analyses between Study 1 and Study 2 were identical yet, our significances in this relationship did not correspond. This contrast in our studies is supported by the literature that displays fluctuating results for the relationship between thinking style and fear (Himle et al.,1982; Thyer et al.,1983). Study 1 showed no significance between thinking style and fear at all, whereas Study 2 showed only significance between thinking style and fear (Table 11). Due to these inconsistent results, we argue that the relationship between fear and thinking style are neither supported or not supported. This relationship needs to be further expanded and examined in order to come to a concise conclusion.

Table 11

Thinking Style: Study 1 vs Study 2

| | Study 1 | Study 2 | | |
|----------------|-------------------------|---------|-------------------------|-------|
| Physical Fear | p-value (experiential): | 0.26 | p-value (experiential): | 0.06 |
| | p-value (rational): | 0.20 | p-value (rational): | 0.04* |
| | p-value: | 0.17 | p-value: | 0.02* |
| Emotional Fear | p-value (experiential): | 0.22 | p-value (experiential): | 0.07 |
| | p-value (rational): | 0.37 | p-value (rational): | 0.00* |
| | p-value: | 0.24 | p-value: | 0.00* |

| | | | | |
|-------------------------|-------------------------|------|-------------------------|-------|
| Social Well-Being Fear | p-value (experiential): | 0.31 | p-value (experiential): | 0.14 |
| | p-value (rational): | 0.39 | p-value (rational): | 0.00* |
| | p-value: | 0.34 | p-value: | 0.00* |
| Close Relationship Fear | p-value (experiential): | 0.27 | p-value (experiential): | 0.01* |
| | p-value (rational): | 0.55 | p-value (rational): | 0.00* |
| | p-value: | 0.39 | p-value: | 0.00* |

Discussion

The research investigated supported and negated several different theories about fear, moral decision-making, burden, gender, and thinking style. The research led to an array of other fascinating findings including the changeability of the relationship between thinking style and fear, the gender discrepancies between the literature and our results, and the significant relationship of burden and moral decision.

Firstly, the descriptive statistics from the PEFI survey in both studies had higher overall fear scores than expected. As stated previously in study 2, 79 participants were considered to have high emotional fear and 122 participants were considered to have high physical fear. This large portion of our sample having high degrees of fear could be explained by the high anxiety level of undergraduate students. Atchison (1968) found that students with elevated anxiety had a higher GPA than students without anxiety. This thesis survey was completed by university students who were required to have a high GPA for acceptance into university. This link between good grades and high anxiety could also explain the high level of reported emotional fear.

In relation to emotional fear, the findings of study 1 and study 2 suggest that emotional fear has two separate domains: social well-being and close relationships. Physical fear is one-

dimensional as it only deals with physical pain related to the self, whereas emotional fear is more complex. The emotional fear scores had a notable division between the target of the emotional fear scenario. This differentiation led to the separate components of emotional fear; fear of emotional harm on oneself (social well-being fears) and fear of emotional/ physical harm on loved ones (close relationship fears). This aligns with the myriad of literature that specifically studies social fears and does not question fear of harm to loved ones. For example, Liu and Li's (2008) study on child fear found that fear was separated into five different dimensions that showed a divide between social relationships and other fears. As well as Gullone et al.'s (2000) study distinguished between social anxieties and physical fear as related, but separate constructs. The findings of this study as well as previous research into fear dimensions, show that emotional fear is a more multifaceted paradigm.

Additionally, the close relationship fear component had the highest factor loadings as well as the highest overall mean answers. This implies that people are most affected by loved one's well-being over their own. The other two components (physical fear and social well-being fear), focus primarily on harm to the self and self-suffering and did not have consistently high results. Seven of the ten highest overall averages fall within the close relationship fear category (the remaining 3 are from the physical fear category). The top five highest overall averages also all directly deal with terminal illness or death of friends, family, or partner. The free list addition of the survey on study 1 also showed that family dying was the highest fear with 85 write-ins. Hence, we can theorize that people are generally more fearful of harm to the people closest to them rather than harm to themselves.

Next, we tested the relationship between fear and moral decision-making in study 2. We came to the conclusion that emotional fear does significantly predict moral decision-making

suggesting that fear motivates our actions. These findings align with a study completed on visual perception and action. Geuss (2015) found that people with more fearful personalities presume a threat as more dangerous and react with safer actions than those with braver personalities.

Furthermore, our findings on fear and action could be viewed more broadly as emotions having control over our chosen behaviour. On a study researching motivation and envy, it was found that envy and admiration both lead to a motivation and action to improve oneself (Van de Ven, 2017). From the results of our study and the supporting text, it can be inferred that emotional arousal does control how we act.

Implications. In addition to our overarching research question being supported, there was more positive conclusions made from our research. Specifically, our hypotheses on the relationship between burden and moral decision-making. Our results imply that regardless of action chosen in a moral scenario, most people view utilitarian decisions as more burdensome. This supports our background research on burden and moral decision-making (Baron & Ritov, 2004; Navarrete et al., 2012; Mosher, 1965). Our results and the literature show an indication that utilitarian inclinations willingly accept the burden of harm when making their moral choice.

Perhaps the most interesting outcome from this research was the varying significance levels between our secondary variables; gender and thinking style. While the literature on thinking style and fear supports these contradictory findings (Himle et al., 1982; Thyer et al., 1983), the literature on gender is in favour of women having more emotional fear than men. This peculiar result could be a product of the blurring gender restrictions that previously separated women from men. Most of the previous research on gender and fear was conducted over a decade ago, the most recent study on the topic was completed in 2007. In a new study on emotion recognition between genders, it was found that disgust was the only gender difference

supported in ability to recognize emotions (Connolly, Lefevre, Young, & Lewis, 2019). In a similar study completed in 2018, it was found that there was no gender difference in emotional perception and emotional intelligence across a sample of 5,000 (Fischer, Kret, Broekens, 2018). The evolution of society veers away from the stereotypical roles of men and women to a more equalitarian environment. Subsequently, the gender divide in emotional vulnerability is now slowly dissipating and resulting in men no longer feeling pressured to act “tough”. This could explain the varying results seen in our research. A future study on the relationship between societal pressure on men to attain a “tough” attitude and self-reported fears would prove to be a valuable insight into this continually evolving gender revolution.

Research on the paradigm of fear and its relationship with variables demonstrates an exciting insight due to the continually shifting exposures and norms in widely acquired fears. With greater terror being bestowed upon the globe such as a heightened number of mass shootings and mass disease outbreaks, we are at a critical time for fear development. Fear is an individually unique emotion that is continually changing throughout personal experience. Further research into increasing number of fearful events becoming commonality would bring value to the psychological community to understand how this emotion is influenced by other interior factors. From our research we can assume that inward factors play a part in what we fear and what we fear influences how we act/ respond.

Limitations. The limitations in these studies stem from the reliability from the self-reports. What individuals perceive as fearful may not produce equivalent fear to when the individual is actually faced with the scenario or vice versa. Hence, our results from the tests could be altered due to either an under evaluation or an over evaluation of a fear or moral situation.

There is a similar issue with the questions on the moral decision-making survey. In all moral scenario studies, the participants had to accept a closed world assumption by answering the dilemmas as presented instead of thinking of alternative, creative solutions that could “solve” the issue (Bennis, Medin, Bartels, 2010). As noted in Conway and Gawronski’s (2013) study, if participants believe that the information they are given could potentially be falsified, the participant could have rejected a utilitarian (more violent than deontological) response as utilitarian actions always result in someone suffering. All moral studies had this limitation to consider. While this was crucial to consider in our research, there was little action we could do to avoid it. If this occurred with any participant, this could have potentially modified the results to be inaccurate.

Additionally, individuals with mood disorders or post-traumatic stress disorder were advised to not take the survey as it could be triggering. However, this did not prevent those individuals from participating in the study. If participants exhibit a severe phobia, this may have resulted in outliers within the data for certain fears. Lastly, the data in this study was collected through Victoria University of Wellington’s IPRP program and therefore not representative of New Zealand society or the global society as a whole.

Lastly, there are alternative interpretations that can be made from the divide of emotional fear and physical fear. Most notably, that emotional fear is a fallacy and should be labelled instead as social anxiety. They could argue that the divide between physical fear and emotional fear indicates that emotional fear is an unrelated entity and should not be categorized as fear. I would counter that argument by bringing to their attention the three emotional fear subcategories, specifically close relationship fears. Social anxiety is defined as an intense apprehension of being scrutinized in social situations (Mesquita & Frijda, 1992). Close relationship fears encompass

worries regarding harm to others, the participant facing no social harm themselves. Therefore, emotional fear expands beyond social anxiety as it incorporates a myriad of non-social threatening scenarios.

Conclusion

Our studies showed that moral decisions do affect individuals involved by producing a fear-based responsive action. The research looked into the consequences of fear and implied that subconscious emotions may motivate behaviour such as decision-making. We used quantitative methods through PCA, regressions, and t-tests, to thoroughly examine the data collected and reach a conclusion that did support our overarching hypothesis. Our research was supported, fear tendencies are linked to individual behaviours. Within this research, we observed fear patterns and severity and provided a baseline for individual fear level and compared to moral judgements reported within moral dilemma scenarios. Additionally, we found that burden of moral decisions was influenced by what we fear and affected moral choices. Our secondary variables (gender and thinking style) proved to have swaying results for our studies that require further research into the paradigm of fear between these factors. From our results, we can conclude that subconscious emotional factors carry weight in individual behaviour preferences by discovering that fear does predict decision-making.

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Appendix A: Study 1 Survey

Physical and Emotional Fear Inventory (PEFI):

“Please indicate on a scale of 1 (being none at all) to 7 (being very much) how much fear you would feel about this situation potentially happening.”

1. Being humiliated in front of your peers
2. Being humiliated in front of your family
3. Having to present a speech in front of the entire student cohort
4. Being verbally abused by an authority figure
5. Being verbally abused by friends
6. Being verbally abused by family
7. Being verbally abused by a stranger
8. Disappointing an authority figure
9. Disappointing your family
10. Disappointing your friends
11. Committing to someone for the rest of your life
12. Committing to a location for the rest of your life
13. Committing to a job for the rest of your life
14. Not being able to provide for your family
15. Being emotionally abused
16. Being lonely for the remainder of your life
17. Failing a course
18. Not being able to have children
19. Being criticized on something you're proud of

20. Being criticized on your appearance
21. Being criticized on your intellect
22. Being criticized on your behaviour
23. Being cruelly gossiped about
24. Everyone finding out an embarrassing secret about you
25. A family member becoming terminally ill
26. A partner becoming terminally ill
27. A friend becoming terminally ill
28. Standing alone in a large, open space
29. Being lost in a dense forest
30. Finding out a major aspect of your life is false
31. Everyone being able to hear your thoughts
32. Everyone being able to watch you at all times
33. Being blatantly ignored by everyone
34. Being socially ostracized
35. Being completely dependent on person you hate
36. Being completely dependent on a person you love
37. Being abandoned by a partner
38. Being abandoned by your friends
39. Being abandoned by your family
40. Unexpected death of a family member
41. Expected death of a family member
42. Death of a partner

43. Seeing a person die unexpectedly
44. Being rejected by an organization you want to be a part of
45. Being rejected by your family
46. Being rejected by a romantic partner
47. Never accomplishing anything noteworthy
48. Never being able to make your family proud
49. Being cheated on by your partner
50. Being forgotten when you die
51. Being attacked by animal while walking
52. Being attacked by animal while swimming
53. Being in a plane crash
54. Being in a nuclear attack
55. Swimming in a murky water
56. Getting a root canal
57. Aliens invading the world
58. Being abducted by aliens
59. Not having enough to eat
60. Being affected by a pandemic
61. Being assaulted by a stranger
62. Being mugged
63. Being physically assaulted by someone you know
64. Being stabbed
65. Waking up during an operation

66. Being shot
67. Being held under water
68. Falling from a large height
69. Being trapped in a small box
70. Being covered in insects
71. Being injected with needles
72. Being in a tsunami
73. Being in a large earthquake
74. Being in a tornado
75. Being in a hurricane
76. Being in a shipwreck
77. Being in a car accident
78. Being ran over by a bus
79. Being hit by a lightning bolt
80. Being in the middle of a combat zone
81. Choking on your food
82. Being a victim in a terrorist attack
83. Being present for the collapse of civilization
84. Being buried alive
85. Being in the middle of the ocean on a boat at night
86. Going on a rollercoaster
87. Being exposed to a known deathly pathogen
88. Being trapped in a building on fire

89. Being possessed by a ghost
90. Being physically attacked by a ghost
91. Experiencing extreme physical pain
92. Being physically harmed
93. Being in the centre of large, cramped crowd
94. Standing in a field of small, deep holes
95. Being incarcerated for a crime you did not commit
96. Being physically stalked everywhere you go
97. Being physically controlled by someone else
98. Living in an extremely dangerous city
99. Pollution destroying the environment
100. Global warming destroying the environment

Rational Experiential Inventory (REI) (Shirzadifard et al., 2018):

“Please use the following scale to answer the question.”

Completely False (1), Somewhat False (2), Slightly False (3), Neither False or True (4), Slightly True (5), Somewhat True (6), Completely True (7)

1. Reasoning things out carefully is not one of my strong points (recoded).
2. Intuition can be a very useful way to solve problems.
3. I don't like to have to do a lot of thinking (recoded).
4. Using my gut feelings usually works well for me in figuring out problems in my life.
5. I am not very good at solving problems that require careful logical analysis (recoded).
6. I tend to use my heart as a guide for my actions.
7. I enjoy intellectual challenges (recoded).
8. I think there are times when one should rely on one's intuition.
9. I enjoy solving problems that require hard thinking (recoded).

10. I hardly ever go wrong when I listen to my deepest gut feelings to find an answer.
11. I am not that good at figuring out complicated problems (recoded).
12. I often go by my instincts when deciding on a course of action.
13. I am not a very analytical thinker (recoded).
14. I don't think it is a good idea to rely on one's intuition for important decisions.
15. I try to avoid situations that require thinking in depth about something (recoded).
16. I trust my initial feelings about people.
17. Thinking is not my idea of an enjoyable activity (recoded).
18. I think it is foolish to make important decisions based on feelings.
19. I have a logical mind (recoded).
20. When it comes to trusting people, I can usually rely on my gut feelings.

Gender:

“What gender do you identify with?”

- Man
- Woman
- I choose not to answer
- Not listed

Appendix B: Study 2 Survey

Physical and Emotional Fear Inventory (PEFI):

“Please indicate on a scale of 1 (being none at all) to 7 (being very much) how much fear you feel about each situation.”

1. Being humiliated in front of your peers
2. Being humiliated in front of your family
3. Being verbally abused by an authority figure
4. Being verbally abused by friends
5. Being verbally abused by family

6. Being verbally abused by a stranger
7. Disappointing an authority figure
8. Disappointing your family
9. Disappointing your friends
10. Not being able to provide for your family
11. Being lonely for the remainder of your life
12. Failing a course
13. Not being able to have children
14. Being criticized on something you're proud of
15. Being criticized on your appearance
16. Being criticized on your intellect
17. Being criticized on your behaviour
18. Being cruelly gossiped about
19. Everyone finding out an embarrassing secret about you
20. A family member becoming terminally ill
21. A partner becoming terminally ill
22. A friend becoming terminally ill
23. Standing alone in a large, open space
24. Being lost in a dense forest
25. Finding out a major aspect of your life is false
26. Everyone being able to hear your thoughts
27. Everyone being able to watch you at all times
28. Being socially ostracized

29. Being completely dependent on a person you hate
30. Being abandoned by a partner
31. Being abandoned by your friends
32. Being abandoned by your family
33. An unexpected death of a family member
34. An expected death of a family member
35. Death of a partner
36. Seeing a person die unexpectedly
37. Being rejected by an organization you want to be a part of
38. Being rejected by your family
39. Being rejected by a romantic partner
40. Never accomplishing anything noteworthy
41. Being cheated on by your partner
42. Please click 5
43. Please click 7
44. Being attacked by an animal while walking
45. Being attacked by an animal while swimming
46. Being in a plane crash
47. Being in a nuclear attack
48. Swimming in murky water
49. Aliens invading the world
50. Being affected by a pandemic
51. Being physically assaulted by a stranger

52. Being mugged
53. Being physically assaulted by someone you know
54. Being stabbed
55. Waking up during an operation
56. Being shot
57. Being held under water
58. Falling from a great height
59. Being trapped in a small box
60. Being covered in insects
61. Being in a tsunami
62. Being in a large earthquake
63. Being in a tornado
64. Being in a hurricane
65. Being in a shipwreck
66. Being in a car accident
67. Being run over by a bus
68. Being hit by a lightning bolt
69. Being in the middle of a combat zone
70. Choking on your food
71. Being buried alive
72. Being in the middle of the ocean on a boat at night
73. Being exposed to a known deathly pathogen
74. Being trapped in a building on fire

75. Being possessed by a ghost
76. Being physically attacked by a ghost
77. Experiencing extreme physical pain
78. Being physically harmed
79. Being in the center of a large, cramped crowd
80. Being incarcerated for a crime you did not commit
81. Being physically stalked everywhere you go
82. Being physically controlled by someone else
83. Living in an extremely dangerous city
84. Being in a terrorist attack
85. Please click seven
86. Please click three

Moral Information:

You will now be given ten different moral scenarios to read. Once you have read and fully comprehend each scenario given, please respond to the follow-up questions addressing your feelings and hypothetical actions if this situation was happening to you.

Moral Dilemmas (Conway et al., 2013):*Moral Dilemma 1:*

It is war time. Enemy soldiers have taken over your village. They have orders to kill all remaining civilians. You and some of your townspeople have sought refuge in the cellar of a large house. Outside you hear the voices of soldiers who have come to search the house for valuables. A baby with no parents begins to cry loudly. You cover her mouth to block the sound. If you remove your hand from the baby's mouth her crying will summon the attention of the

soldiers who will kill you and the others hiding out in the cellar. To save yourself and the others you must smother the child to death.

MoralScen1_2 - Is it appropriate for you to smother the child in order to save yourself and the other townspeople from being killed?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen1_3 - How difficult was it to make this decision?

| | | | | |
|-----------|---|------------------------------|---|----------------|
| Very easy | | Neither Easy or Difficult | | Very difficult |
| 1 | 2 | 3 | 4 | 5 |

MoralScen1_4 - How emotionally taxing will this decision be on yourself?

| | | | | |
|---------------------------|---|---|---|----------------------------|
| Not Emotionally Taxing | | | | Very Emotionally Taxing |
| 1 | 2 | 3 | 4 | 5 |

MoralScen1_5 - Which decision is more emotionally taxing on yourself?

- A. Smothering the child to save yourself and the other townspeople
- B. Not smothering the child and putting you and the townspeople at risk.

MoralScen1_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

| | | | | |
|-------------------|---|---|---|-------------|
| Not Scared at All | | | | Very Scared |
| 1 | 2 | 3 | 4 | 5 |

Moral Dilemma 2:

You find a time machine and travel back to the year 1920. While checking into a hotel, you meet a young Austrian artist and veteran of the First World War. You realize this is Adolf Hitler before his rise to power in Nazi Germany. He is staying in the hotel room next to yours and the doors are not locked. It would be easy to simply smother him with a pillow in his sleep and disappear, stopping the Second World War and the Nazi party before they even start. However, he has not committed any crimes yet and it seems wrong to hurt an innocent person.

MoralScen2_2 - Is it appropriate for you to kill an innocent young Hitler in order to prevent the Second World War?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen2_3 - How difficult was it to make this decision?

| | | |
|-----------|------------------------------|----------------|
| Very easy | Neither Easy or Difficult | Very difficult |
| 1 | 2 | 3 |
| | 4 | 5 |

MoralScen2_4 - How emotionally taxing will this decision be on yourself?

| | |
|---------------------------|----------------------------|
| Not Emotionally Taxing | Very Emotionally Taxing |
| 1 | 2 |
| | 3 |
| | 4 |
| | 5 |

MoralScen2_5 Which decision is more emotionally taxing on yourself?

- A. Killing innocent, young Hitler
- B. Not killing innocent, young Hitler

MoralScen2_6 -Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

Not Scared at All

Very Scared

1

2

3

4

5

Moral Dilemma 3:

You are driving through a busy city street when all of a sudden a young mother carrying a child trips and falls into the path of your vehicle. You are going too fast to break in time; your only hope is to swerve out of the way. Unfortunately, the only place you can swerve is currently occupied by a little old lady. If you swerve to avoid the young mother and baby, you will seriously injure or kill the old lady.

MoralScen3_2 - Is it appropriate to swerve and hit the old lady in order to avoid the young mother and child?

A. Yes, it is appropriate

B. No, it is not appropriate

MoralScen3_3 - How difficult was it to make this decision?

Very easy

Neither Easy or
Difficult

Very difficult

1

2

3

4

5

MoralScen3_4 - How emotionally taxing will this decision be on yourself?

Not Emotionally

Very Emotionally

Taxing

Taxing

1

2

3

4

5

MoralScen3_5 - Which decision is more emotionally taxing on yourself?

A. Swerving and hitting the old lady in order to avoid the young mother and child

B. Not swerving and hitting the old lady in order to avoid the young mother and child

MoralScen3_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

Not Scared at All

Very Scared

1

2

3

4

5

Moral Dilemma 4:

You are the head of a poor household in a developing country. Your crops have failed for the second year in a row, and it appears that you have no way to feed your family. Your sons, ages eight and ten, are too young to go off to the city where there are jobs, but your daughter could fare better. You know a man from your village who lives in the city and who makes sexually explicit films featuring girls such as your daughter. In front of your daughter, he tells you that in one year of working in his studio your daughter could earn enough money to keep your family fed for several growing seasons.

MoralScen4_2 - Is it appropriate for you to employ your daughter in the pornography industry in order to feed your family?

A. Yes, it is appropriate

B. No, it is not appropriate

MoralScen4_3 - How difficult was it to make this decision?

Very easy

Neither Easy or

Very difficult

Difficult

about your ex-spouse. You consider simply pretending that you have never been divorced so that your current relationship can continue.

MoralScen5_2 - Is it appropriate for you to leave your new partner in the dark about your previous relationship in order to keep her/ him happy and the relationship alive?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen5_3 - How difficult was it to make this decision?

| | | |
|-----------|---|----------------|
| Very easy | Neither Easy or Difficult | Very difficult |
| 1 | 2 3 4 | 5 |

MoralScen5_4 - How emotionally taxing will this decision be on yourself?

| | | |
|---------------------------|---|----------------------------|
| Not Emotionally Taxing | | Very Emotionally Taxing |
| 1 | 2 3 4 | 5 |

MoralScen5_5 - Which decision is more emotionally taxing on yourself?

- A. Leave your new partner in the dark
- B. Tell your partner about your ex-spouse

MoralScen5_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

| | | |
|-------------------|---|-------------|
| Not Scared at All | | Very Scared |
| 1 | 2 3 4 | 5 |

Moral Dilemma 6:

You are a surgeon. A young woman you know becomes pregnant, but her body reacts in an unusual fashion. She develops a severe case of preeclampsia, a dangerous syndrome that leads to rapid increases in blood pressure. The only treatment is to deliver the baby. Unless the baby is delivered soon, the mother will die. However, the baby is too young to survive on its own. If it is delivered, it will die. So, although it is very difficult for her, the mother asks you to abort the baby.

MoralScen6_2 - Is it appropriate for you to perform an abortion in order to save the mother's life?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen6_3 - How difficult was it to make this decision?

| | | |
|-----------|------------------------------|----------------|
| Very easy | Neither Easy or Difficult | Very difficult |
| 1 | 2 | 3 |
| | 4 | 5 |

MoralScen6_4 - How emotionally taxing will this decision be on yourself?

| | | |
|---------------------------|---|----------------------------|
| Not Emotionally Taxing | | Very Emotionally Taxing |
| 1 | 2 | 3 |
| | 4 | 5 |

MoralScen6_5 - Which decision is more emotionally taxing on yourself?

- A. Aborting the baby
- B. Not aborting the baby

MoralScen6_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

Not Scared at All

Very Scared

1

2

3

4

5

Moral Dilemma 7:

You are a police officer, and have recently caught a criminal you have been hunting for some time. He is allegedly responsible for rigging a series of explosive devices: some that have already gone off and some that have yet to detonate. He places explosives outside city cafes and sets them to go off at a time when people are drinking coffee on the patios. In this manner, he has injured many people and might injure many more. Now that the criminal is in custody, you want to know where the unexploded bombs are so you can defuse them. He refuses to talk, so you decide to use “aggressive interrogation techniques” like holding his head under water and beating him.

MoralScen7_2 - Is it appropriate for you to use “aggressive interrogation techniques” in order to find and defuse the unexploded bombs?

A. Yes, it is appropriate

B. No, it is not appropriate

MoralScen7_3 - How difficult was it to make this decision?

Very easy

Neither Easy or

Very difficult

Difficult

1

2

3

4

5

MoralScen7_4 - How emotionally taxing will this decision be on yourself?

| | | | | | |
|-----------------|---|---|---|--|------------------|
| Not Emotionally | | | | | Very Emotionally |
| Taxing | | | | | Taxing |
| 1 | 2 | 3 | 4 | | 5 |

MoralScen7_5 - Which decision is more emotionally taxing on yourself?

- A. Using “aggressive interrogation techniques” in order to find and defuse the unexploded bombs
- B. Not using “aggressive interrogation techniques” in order to find and defuse the unexploded bombs

MoralScen7_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

| | | | | | |
|-------------------|---|---|---|--|-------------|
| Not Scared at All | | | | | Very Scared |
| 1 | 2 | 3 | 4 | | 5 |

Moral Dilemma 8:

You are a doctor in a health clinic overrun by patients with a serious disease. You just received a shipment of drugs that can cure the disease but the drugs have their own severe side-effects. If you administer the drugs to your patients, a small number will die from the side effects but most will live. If you do not, most will die from the disease.

MoralScen8_2 - Is it appropriate for you to administer the drug to your patients?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen8_3 - How difficult was it to make this decision?

new hope to millions of AIDS victims around the world. You anticipate saving many lives with the chemicals.

MoralScen9_2 - Is it appropriate to test these chemicals on animals?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen9_3 - How difficult was it to make this decision?

| | | | | |
|-----------|---|------------------------------|---|----------------|
| Very easy | | Neither Easy or Difficult | | Very difficult |
| 1 | 2 | 3 | 4 | 5 |

MoralScen9_4 - How emotionally taxing will this decision be on yourself?

| | | | | |
|---------------------------|---|---|---|----------------------------|
| Not Emotionally Taxing | | | | Very Emotionally Taxing |
| 1 | 2 | 3 | 4 | 5 |

MoralScen9_5 - Which decision is more emotionally taxing on yourself?

- A. Testing the chemicals on animals
- B. Not testing the chemicals on animals

MoralScen9_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

| | | | | |
|-------------------|---|---|---|-------------|
| Not Scared at All | | | | Very Scared |
| 1 | 2 | 3 | 4 | 5 |

Moral Dilemma 10:

You are a soldier guarding a border checkpoint between your nation and one troubled by insurgent violence. You notice a young man in a cheap car approaching the checkpoint with a determined look on his face. You suspect he means to bomb the checkpoint, killing all the soldiers inside. He is rapidly approaching your station.

MoralScen10_2 - Is it appropriate for you to shoot and kill the approaching man?

- A. Yes, it is appropriate
- B. No, it is not appropriate

MoralScen10_3 - How difficult was it to make this decision?

| | | |
|-----------|------------------------------|----------------|
| Very easy | Neither Easy or Difficult | Very difficult |
| 1 | 2 | 3 |
| | 4 | 5 |

MoralScen10_4 - How emotionally taxing will this decision be on yourself?

| | | |
|---------------------------|---|----------------------------|
| Not Emotionally Taxing | | Very Emotionally Taxing |
| 1 | 2 | 3 |
| | 4 | 5 |

MoralScen10_5 - Which decision is more emotionally taxing on yourself?

- A. Shooting and killing the approaching man
- B. Not shooting and killing the approaching man

MoralScen10_6 - Please indicate on a scale of 1 (being none at all) to 5 (being very much) how much fear you would feel about this situation potentially happening.

Not Scared at All

Very Scared

1

2

3

4

5