Emotion Regulation in Sacrificial Moral Choice Dilemmas

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I declare that this report is my own original work and that contributions of others have been duly acknowledged.

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Table of Contents:

List of Tables and Figures:

Emotion Regulation in Sacrificial Moral Choice Dilemmas

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Abstract:

The dual-process perspective of moral psychology posits the utilitarian and deontological thought processes conflict with one another in moral dilemmas. These two processes produce internal psychological conflict, which must be resolved to make moral choices. One process which may aide in reducing this conflict and in making moral choices, is emotion regulation. Emotion regulation is the process of managing emotional experience and expression to reach situational goals. Prior research has linked poorer emotion regulation with increased deontological responding in moral judgement. However, there is no research examining the relationship between emotion regulation and moral choice. The hypothesis of this study was that a weaker capacity to regulate emotions would predict lower rates of utilitarian responding. This effect would be more pronounced in high conflict, emotionally salient moral choice dilemmas. To investigate this hypothesis, 224 participants were recruited across two studies to look at individual differences in emotion regulation and utilitarian responding. Participants took an amended version of the Difficulties in Emotion Regulation Scale (DERS) and were categorised based on their DERS score. Participants then responded to a battery of low and high conflict dilemmas where they had to make a choice on whether to act, which would be the utilitarian response, or not, which would be the deontological response. Using Bayesian analyses, the results of this study found no evidence for the hypothesis, meaning emotion regulation had no effect in moral choice.

Introduction:

Moral dilemmas have become an increasingly prevalent topic in the areas of philosophy and moral psychology. With increasing globalisation and technology adaptation, the decisions that individuals make, and the reasons why people make decisions is becoming increasingly important. Should driverless vehicles protect the passengers? Or should they focus on saving the greatest number of lives? Which groups do we prioritise giving vaccines to? These are decisions which can strike opinions which differ starkly. For something to be classed as a moral dilemma, there must be two competing principles which produce different responses which conflict with one another (Christensen et al., 2014). When giving people only two options to respond to these dilemmas, it is possible to investigate the underlying reasons why people make decisions; and this can have broad implications in understanding how people make decisions.

In many studies within the field of moral psychology, scientists have developed dilemmas to understand how people make decisions. A classic moral dilemma, developed by Phillippa Foot in 1967 (Foot, 1967, in Di Nucci, 2013), is the trolley problem. The trolley problem presents a scenario where a runaway trolley is travelling uncontrollably down a train track with five people tied to it. The person presented with the dilemma then must decide whether they would pull a lever to divert the train away from the five people. However, if the participant does pull the lever, the trolley will divert onto another track where one person is stuck. As a result, this one person would be killed, while the other five are saved. Moral dilemmas, such as this one, pit two philosophical principles, which are of key interest for this study, against each other. These principles are utilitarianism and deontology.

In utilitarian thought, an action is deemed morally right to do, if the outcome of an action follows the principle of greatest good for the greatest number of people (Gawronski et al.,

2016). Contrasting utilitarianism, deontology posits that an action is morally righteous, if it follows a clear set of prescribed rules. An example includes the biblical law 'thou shall not kill' (Walsh, 2015). In moral dilemmas, an action which qualifies as utilitarian will not qualify as deontological, and vice versa. What results from this contradiction, is internal conflict within decision-making. This study will investigate one aspect of moral decision-making, the role that emotional regulation has in mitigating moral dilemma conflict. To address this, this study will examine if individual differences in emotion regulation, the process of managing emotional experience to reach situational goals (Gross, 2015), are related to tendencies towards making utilitarian or deontological decisions. It is hypothesised that a weaker capacity for emotion regulation is related to greater rates of deontological responding in individuals.

Utilitarianism

Utilitarianism, a school of thought founded by John Stuart Mill, emphasises the greatest good for the greatest number of people. Utilitarianism itself is not concerned with the nature of the action undertaken, but rather the consequences of the action itself. Thus, actions which are deemed morally reprehensible may be deemed as morally right to do, provided the central utilitarian principle is met (Gray & Schein, 2012). In a utilitarian framework, every person is assigned equal value (Freeman, 1994). This enables a fair assessment of maximising good for the greatest number of people, as characteristics of individuals is ignored. This egalitarian reasoning behind utilitarianism is what makes morally bad actions, become morally justifiable (Gray & Schein, 2012; Freeman, 1994).

Empirical studies have indicated that utilitarian decision-making requires cognitive resources to evaluate moral outcomes (Patil et al., 2021). Using functional Magnetic Resonance Imaging (fMRI), utilitarian thinking has been demonstrated to be a deliberate,

cognitive process (Greene et al., 2001). These findings have also been replicated experimentally, with increased cognitive load causing longer response times (Greene et al., 2008) and inducing time pressure causing lower utilitarian responding in sacrificial dilemmas (Suter & Hertwig, 2011; Trémolière & Bonnefron, 2014). Patil and colleagues (2021), using studies published between 2001 and 2019, summarises the nature of utilitarian thinking; it is a methodical process, where regions of the brain responsible for cognition are active in evaluating the outcomes of moral decisions. Applying utilitarian principles to sacrificial moral dilemmas, it is of utmost importance to save as many lives as possible, as all lives are equal (Freeman, 1994). This is so, as it would ensure the greatest good for the greatest amount of people. Therefore, in traditional moral dilemmas, such as the trolley problem, the utilitarian thing to do would be to act and save the lives of the five people, even if this means intentionally killing one person.

Deontology

Contrasting utilitarianism, deontology is a school of thought founded by Immanuel Kant, which emphasises that the morality of an action is what determines what is morally right or wrong to do (Holyoak & Powell, 2016). Within this framework, people must also ascertain whether an action aligns with universal ethical rules of beneficence and justice (Walsh, 2015). Deontological ethics assumes that all normally functioning adults can recognise categorial imperatives, such as the distinction between good and bad, or helpful and harmful; thus, making people wholly accountable for their actions (Holyoak & Powell, 2016). As such, the intent to harm another, or the intent behind any other reprehensible act is deemed morally worse than the action itself, making deontology action-based rather than consequential (Cushman, 2013).

Greene and colleagues (2001) using fMRI, examined brain patterns while contemplating moral dilemmas, and found that participants had increased brain activity in areas of the brain responsible for emotional processing and social cognition. These patterns tend to persist when people make deontological judgements, indicating that the emotional content of the dilemma has taken precedence over a more deliberate stream of cognition (Greene et al., 2004; Cushman, 2013). These findings are further supported experimentally where participants made fewer utilitarian decisions when they were acutely stressed (Starcke, Ludwig & Brand, 2012), or when asked to imagine the harm inflicted in high detail (Bartels, 2008). Inversely, deontological decision-making rates were low when moral dilemmas were impersonal in nature (Greene et al., 2001), or when emotional distance from the sacrificial victim was high (Petronovich et al., 1993, in Conway & Gawronski, 2013). What is evident then, is that deontological thinking is neurologically grounded in emotional centres of the brain.

According to deontological principles in the context of sacrificial moral dilemmas, like the trolley problem, choosing to actively kill the one person to save the five others is morally wrong; as this goes against societal ideas of not harming or killing another person (Amit & Greene, 2012; Gawronski & Beer, 2017). The morally acceptable response to dilemmas like these then, is to not act, as the act of intentionally killing an individual is wrong; even if this comes at the cost of allowing five people to passively die.

The Dual-Process Model

Within moral psychology, it is understood that cognitive processing and rational thought are central to utilitarian responding (Patil et al., 2021). Inversely, it is known that emotional processing is central to deontological responding (Greene et al., 2001, 2004). This thinking-feeling dichotomy can be thought of as two ends of a spectrum, identical to a traditional

framework in studies of moral psychology: the dual-process theory of moral judgement. This theory positions utilitarianism and deontology on polar ends of a moral decision-making spectrum (Conway, Olsen & Gawronski, 2013). This dual process framework is based on the work by Jacoby (1991), examining perception, attention, and memory. It was found through this study that there are two distinct processes in cognition (Jacoby, 1991). These two processes identified, are an automatic activation process and a deliberate, cognitive process (Jacoby, 2011; Rouder et al., 2008). The dual process model can be conceptualized similarly to system one and system two thinking, where system one thinking is fast and automatic, relying on heuristics. Whereas system two thinking is systematic, deliberate cognition, which is slow (Moxley et al., 2012). Similarly, the automatic process in the dual process theory of moral judgement is the first to occur. Activation in brain areas responsible for emotion (i.e., the posterior cingulate cortex, and in extension the limbic system) and social cognition (i.e., the medial prefrontal cortex) occurs first, assessing how people's emotional and cultural norms are violated in moral dilemmas (Greene et al., 2001, 2004). Following these observed brain activities, a more deliberate, controlled stream of cognition proceeds. Activity in areas such as the dorsolateral prefrontal cortex (DLPFC) and ventromedial prefrontal cortex (VMPFC) responsible for decision-making, executive function and emotion regulation enable people to synthesise factual and emotional content to produce a decision (Tassy et al., 2012; Greene et al, 2008). These two processes, the automatic, which underlies deontological thought processes, and the deliberate, which underlies utilitarian thought processes (Greene et al., 2001) constitute the dual process theory of moral judgement. The dual process theory of moral judgement posits that these two distinct processes occur simultaneously (Amit & Greene, 2012; Bialek & De Neys, 2016). These two processes conflict with one another, and one process must eventually override the other, to result in either a utilitarian or deontological decision being made in response to moral dilemmas (Bluhm, 2014).

Conflict in moral dilemmas

It has been empirically demonstrated that the internal conflict between deontological and utilitarian principles exists. Bialek and De Neys (2017) found that people with deontological tendencies respond slower to high conflict dilemmas than low conflict dilemmas. Dilemmas are classed as high conflict when the emotional salience of a dilemma is strong, provoking strong negative emotions (Gubbins & Byrne, 2014). Typically, high-conflict dilemmas simulate real-life issues, or involve distressing content, involving graphic violence or involves vulnerable groups (e.g., children; see Appendix C for examples of high-conflict dilemmas) (Bauman et al., 2014). These factors increase activity in brain regions associated with emotional processing, which in turn generates more internal conflict between deontological and utilitarian principles (Greene et al., 2004; Gubbins & Byrne, 2014). Low conflict dilemmas are characterised as being significantly less provocative, mostly recruiting rational regions of the brain with minimal engagement of emotion processing regions; with minimal reported participant distress in response to them (Greene et al., 2004; Koenigs et al., 2007. Bauman and colleagues (2014) highlight that the traditional trolley problem is one such low-conflict dilemma, as many people report not taking this seriously, and participant assessments of these low conflict dilemmas show that little to no distress was reported (Koenigs et al., 2007). A similar pattern was found amongst those with a utilitarian preference, demonstrating sensitivity to deontological principles (Koop, 2013). These findings support the idea that there is conflict between both processes of thinking, rather than moral decision-making having mutually exclusive lines of reasoning. Furthermore, Conway and colleagues (2018) also identified that utilitarian decisions in sacrificial dilemmas had deontological principles of reducing harm, both in laypeople and philosophers. Although conflict does exist between utilitarian and deontological thinking, these findings support a parallel dual-process model of morality; in that both processes must occur simultaneously.

An observed example of this conflict in action can be found in the work by Greene and colleagues (2001, 2004) observing that people typically respond in starkly different manners to the trolley problem and the footbridge problem. In the trolley problem, people are asked to use a switch to alter the direction of the runaway trolley to avoid the deaths of five people, sacrificing one person. In the footbridge problem, people instead have to push a stranger in the pathway of the trolley which threatens the lives of five other people; once again, a sacrifice of one person is necessary to save five. However, in the footbridge problem, people respond exceedingly more with a deontological response, allowing the deaths of the five, compared to most people responding in a utilitarian manner to the trolley problem (Greene et al., 2001, 2004; Nichols & Mallon, 2006; Horberg, Oveis & Keltner, 2011). This behavioural pattern has been found empirically, showing that the act of personally killing someone significantly engages emotion centres of the brain; which in turn generates more internal conflict between internalised deontological and utilitarian principles (Koenigs et al., 2007; Gubbins & Byrne, 2014). In relation to the dual process theory of moral judgement, this increased emotional salience proportionally increases emotional arousal and other areas of the brain responsible for social cognition, while simultaneously reducing activity in brain regions responsible for reasoning (Greene et al., 2001; Szekely & Miu, 2015). Thus, the emotional salience of a moral dilemma, which increases deontological tendencies, leads to more people to choose not to make a utilitarian sacrifice (Gubbins & Byrne, 2014). In contrast, moral dilemmas where the method of killing someone was impersonal, such as pulling the lever in the trolley problem, elicited far less of an emotional response, resulting in greater rates of utilitarian responding. (Choe & Min, 2011). This observed increase in utilitarian responding is the product of less activity in areas of the brain associated with emotional processing, and instead areas of the brain dealing with abstract reasoning are engaged, leading to increased utilitarian responding (Greene et al., 2001; Manfrinati et al,

2013). These findings are further supported by Nakamura (2013), using structural equation modelling and correlational matrices of personal and impersonal moral dilemmas, such as the footbridge and traditional trolley problem respectively. It was found that low conflict, impersonal dilemmas engage different rational processes compared to high conflict, personal dilemmas. These findings suggest that people may rationalise low conflict dilemmas in a manner which contrasts responding to high conflict dilemmas; evidenced by the way people respond to different dilemmas (Nakamura, 2013; Gubbins & Byrne, 2014; Manfrinati et al., 2013).

Emotion regulation in moral dilemma conflict

The theoretical basis for this conflict utilitarian and deontological reasoning has many explanations. Ascertaining what brings together the rational and the emotional within the brain is subject to broad interpretation. One process which this study argues does bring these two together is the process of emotion regulation. Emotional regulation, as defined by Gross (2015), is a deliberate, cognitive process used to attend to, appraise, and respond to the experience and expression of emotions. Emotional regulation allows for the inhibition, expression, or modulation of emotions, depending on the context in which emotional regulation is enacted (Compare et al., 2014). Thus, emotional regulation can lead to both maladaptive and adaptive cognitive and behavioural functioning, which can predict well-being across contexts and age (Cappeliez et al., 2008; Kimhy et al., 2012; Fry et al., 2012). The individual differences in capacity to regulate emotions can also produce significant differences in the way people respond to cognitively and emotionally demanding conditions (Koole & Fockenburg, 2011). Koole and Fockenburg (2011) experimentally extended upon prior research by Kuhl (1981; 1994; 2000) in Personality Systems Interaction (PSI) theory, implicating emotional regulation capacity with adaptive responding to demanding stimuli. It was found that people with an action-orientation in emotional regulation were able to regulate

their emotions more effectively under demanding conditions than state-oriented individuals. Action-oriented individuals are also less susceptible to negative affect after priming to it (Koole & Fockenburg, 2011). The underlying difference between action- and state-oriented individuals lies in the cognitive nature of emotional regulation, and the influence of emotion on cognition. Higher levels of emotional arousal trigger autonomic responses in the nervous system, which in turn cause deficits in processing and problem-solving (Pham, 2007; Scherer, 2011). How action-oriented individuals respond to emotionally distressing stimuli better, compared to state-oriented individuals, is due to the more efficient recruitment of cognitive resources to override inhibitory behaviours and sensations from distressing stimuli, which would prevent action (Kuhl, 1992). Empirical findings by Starcke and colleagues (2011) found that those who were more affected by induced stress (state-oriented individuals), had increased cortisol levels and responded to high conflict dilemmas in a deontological manner more frequently (Starcke et al., 2011).

This study hypothesises that emotional regulation may be an underlying process in moral decision making. It has been observed that individual differences in psychopathy, where increased psychopathy leads to increased utilitarianism (Bartels & Pizzaro, 2011); and gender, where women are more prone to deontological decisions, while men are more frequently utilitarian (Arutyunova, Alexandrov & Hauser, 2016; Gawronski et al., 2017), produce meaningful differences in responding to moral dilemmas. If these differences have been observed, then it is plausible to suggest that individual differences in emotion regulation may produce differences in responding to moral dilemmas. To the knowledge of the research team of this study, this study may be one of the few studies to examine the role of emotion regulation in the context of sacrificial moral dilemmas. Because research in this specific area of moral psychology is limited, this paper will draw from Szekely & Miu (2015) and Zhang, Kong, and Li (2017), as these studies are some of the few which address this topic directly.

Previous studies have found evidence that emotion regulation, and its processes have some influence in moral decision making. A key finding from Szekely and Miu (2015), examining four specific emotion regulation processes, reappraisal, acceptance, catastrophising, and rumination, was that only reappraising a negative situation led to decreased deontological responding. That is, reframing the negative action of taking a life to save five others into a positive action led to decreased deontological responding. Furthermore, it was found that by reducing emotional arousal, via the recruitment of reappraisal, reduced deontological responding was observed (Szekely & Miu, 2015). Koole and Fockenberg (2011) identify that people with a greater capacity for emotion regulation can respond to demanding situations more efficiently, as a greater global capacity for emotion regulation leads to reduced emotional arousal, and thus, reduced deontological responding.

Extending from the prior study, Zhang and colleagues (2017a), explored emotion regulation as a global skill, and they looked at the relationship between emotion regulation and moral judgement. Compared to Szekely and Miu's (2015) narrow conceptualisation of emotion regulation, characterised by four independent processes based on self-report; a global skill of emotion regulation, involves the recruitment of multiple emotion regulating processes simultaneously. This conceptualisation may help explore the nature of emotion regulation in moral decision making more accurately. As it is possible to recruit multiple processes simultaneously to achieve situational goals (Gross, 2015). It was found in their study that greater difficulties with emotion regulation led to increased deontological responding (Zhang et al., 2017a). The items of this study were low conflict, often involving morally questionable actions, rather than sacrifice involving loss of life, which would produce less emotional salience (as per Greene et al., 2001, 2004). Zhang and colleagues (2017b) followed up their own research by examining the role that emotion regulation has in moral judgements, that is, dilemmas where people must decide on the appropriateness of

another's action. The dilemmas presented in this study were high conflict, and it was found that difficulties in emotion regulation were related to increased deontological responding (Zhang et al., 2017b).

The current study aims to extend findings by Zhang and colleagues (2017a, 2017b), examining the role that emotion regulation has on moral choice in low and high conflict dilemmas. Ascertaining to examine if the effect of greater emotion regulation capacity varies between these types of dilemmas. The key findings of Zhang and colleagues (2017a, 2017b), and Szekely and Miu (2015), where greater emotion regulatory difficulties lead to increased deontological responding and reduced emotional arousal via recruitment of emotion regulating processes, leads to decreased deontological responding; provide the basis for the hypothesis of this study.

Hypothesis

The hypothesis of this study is that a weaker global capacity for emotion regulation, characterised by greater difficulty in emotion regulation, should predict decreased utilitarian responding, and subsequently, increased deontological responding. As those with greater difficulties in emotion regulation cannot recruit regulatory processes to overcome the conflict between deontological and utilitarian processes. This influence of emotion regulation should be more pronounced in high conflict dilemmas, than in low conflict dilemmas. As those with greater difficulties in emotion regulation will not be able to recruit regulatory processes effectively in high conflict dilemmas. Because this increased conflict will inhibit regulatory processes, resulting in increased deontological responding (Zhang et al., 2017a, 2017b).

For this hypothesis to be supported, a significant difference in utilitarian responding between individuals with a weaker global capacity and those with a strong global capacity for emotion regulation. With those with greater regulatory difficulties responding more

deontologically. In high conflict dilemmas, this difference should be more pronounced, in comparison to low conflict dilemmas.

Methods

Design and Overview

To investigate the hypothesis of this study, this study utilised a 2 (high emotion regulation/low emotion regulation; between subjects) x 2 (high emotion content/low emotion content; within subjects) mixed design. This study was split into two separate experiments, with both studies being identical in nature, except that study two counterbalanced the presentation of moral dilemmas. To collect participant response data, the survey service LimeSurvey was used. Participants were first assessed on their global capacity for emotion regulation. Participants were then assigned to a group based on their emotion regulation score. After being assigned a group, participants responded to a series of moral dilemmas.

Participants

Eighty-four participants were recruited for study one, comprising of fifty-one participants recruited by the primary researcher in person and via social media, while thirty-three participants were recruited via the first-year undergraduate psychology participant recruitment service, SONA. Twenty-three participants were excluded from this study, nine due to incomplete responding, and a further fourteen participants due to scoring over the DERS30 cut-off score to respond to the dilemmas of interest of this study. This resulted in sixty-one participants (39 female, $M = 31.36$ years) comprising the final analyses of this study.

Participants in study two were recruited through the participant recruitment platform, Prolific, and these participants were compensated $3.50AUD for their time. One hundred and forty participants were initially recruited for this study. Forty participants were excluded from

this study for incomplete responding, four for incomplete responding and a further thirty-six as they exceeded the DERS30 cut-off score. One hundred participants (76 female, $M = 31.29$ years) comprised the participant sample for analyses in study two.

Materials

Difficulties in Emotion Regulation Scale

To assess participants' capacity to regulate emotions, the Difficulties in Emotional Regulation Scale (DERS), developed by Gratz and Roemer (2004) was utilised. The original DERS is a psychometric tool comprising of thirty-six questions capturing six underlying factors: nonacceptance, goals, impulsivity, awareness, strategies, and clarity (Gratz & Roemer, 2004). For this study, an amended version of the DERS will be used. The decision to utilise an amended, thirty item, five-factor version (referred to now as the DERS-30), is based on exploratory factor analyses by Bardeen et al. (2012) and Lee et al. (2016). The findings from these studies indicated that removing six items related to the construct 'awareness' led to enhanced diagnostic capabilities in capturing emotional regulation.

Other emotional regulation scales, such as the Emotion Regulation Questionnaire (ERQ) by Gross and John (2003) and Cognitive Emotion Regulation Questionnaire (CERQ) by Garnefski and colleagues (2001) assess cognitive strategies of emotional regulation, rather than assessing it as a global cognitive process (Gratz & Roemer, 2004; Hallion et al., 2018; Rice et al., 2018; Preece et al., 2021). As these scales do not match this study's conceptualisation of emotion regulation, the DERS by Gratz and Roemer (2004); used by Zhang in their conceptualisation of emotion regulation, was selected as this study's psychometric scale.

The amended DERS-30 uses a Likert scale from 1-5 (almost never to almost always), and participant scores on the DERS-30 will be summed to provide a global score (range 30 to

150). Higher scores on the DERS indicates greater difficulty in capacity to regulate emotions. Questions on the DERS-30 ask participants about their emotional experiences and expression (Gratz & Roemer, 2004) (see Appendix B for DERS-30 items). Participants were coded as high and low in emotional regulation capacity based on their global scores. Those with a DERS score between 31-59 will be coded as high in emotion regulation capacity. While participants whose scores are between 60-89 will be coded as low in emotion regulation capacity. Participants in both the high- and low-capacity groups responded to twelve dilemmas from Greene and colleagues (2004).

Participants who score above the proposed DERS-30 cut-off value of 90 will not be used in this study, and instead will respond to a series of five trolley and footbridge problems. This task was produced for additional content for participants in study one, partaking for course credit in their undergraduate studies.

To best safeguard the welfare of participants who may experience clinically significant poor emotional regulatory capacity, as manifested by symptoms of depression, anxiety and/or stress (Markarian et al., 2013), the DERS-30 score of 90 was used as a cut-off value for participants to not respond to the more emotionally salient dilemmas of this study. This DERS value of 90 has been set based on a diffuse array of evidence examining DERS-36 scores. In prior studies, healthy samples (characterised by an absence of mental illness history) and general population samples have produced DERS-36 scores below 90 (Ehring et al., 2008; Freudenthaler, Turba & Tran, 2017; Giromini et al., 2017; Tolin et al., 2018; Sörman et al., 2021). Populations of people with clinical presentations of depressive disorders ($M = 93$) and bipolar disorders (M = 103) have produced higher mean DERS-36 scores (Choudhury, Sahoo & Dash, 2020). Giromini and associates (2017) do identify that scores which are one and a half standard deviations above mean scores are indicative of clinically significant issues. Examining the adjusted mean scores from the array of evidence discussed

prior, does appear to produce +1.5SD scores around the high nineties, though to maintain a conservative and safe cut-off DERS-30 value, a value of 90 has been assigned to reduce risk to participants.

Although it is possible to score 30 on the DERS30 by responding 'almost never' to all thirty questions, participants who score 30 on the DERS will not have their data used in the analyses of this study. This precautionary action was taken to prevent malingering and false reporting, as prior observations of DERS scores being equal to the number of administered items has been found only in a study by Hallion and colleagues (2018).

Moral Dilemma Battery

Participants responding to the twelve moral dilemmas will respond to six dilemmas rated low in emotional content, and six which are rated high in emotional content. These dilemmas are low and high conflict dilemmas, as the difference in emotional content produces more conflict between internal utilitarian and deontological cognitive processes. In these dilemmas, participants will be positioned as the central actor, and will be asked whether they would act in the presented scenario. Participants must respond in the affirmative or negative when responding to these dilemmas (see Appendix C for the battery of moral dilemmas). Ratings of the relative strength of emotional content, and subsequent conflict, of moral dilemmas is provided by the findings of Koenigs et al. (2007), where participants gave ratings of fifty dilemmas presented by Greene et al. (2004). To be considered as high in emotional content, dilemmas had to consist of the following characteristics: participants must report some level of discomfort thinking about the dilemma, have a mean rating of six or more on a participant-rated emotion scale (where higher scores indicate greater emotional salience; range 1-7), and have a longer reaction time than low emotion-rated dilemmas. Low emotion dilemmas will have little to no reported distress, with mean emotion ratings between

five and six. To further validate the low-high dichotomy of the moral dilemmas, Hutcherson et al. (2015) demonstrate that dilemmas with an element of active engagement of the dilemma (making the participant the central actor of an action deemed disturbing) increases emotional salience of the dilemma and thus, generated more conflict. When examining the twelve dilemmas which are divided into low and high in emotional salience, there is a thematic overlap between this active engagement in a moral dilemma and the rating provided by participants in Koenig et al. (2007).

Procedure and Analysis

This study will treat scores as a categorial variable rather than as a continuous variable, based on the prior studies examining DERS36 scores in healthy and (sub)clinical populations. Because healthy samples of participants' mean scores fell between the high thirties to low fifties, with +/- 1.5SD (based on Giromini et al., 2017) of scores producing a range between 30-65 across studies (Roemer et al., 2009; Tolin et al., 2018). To be categorised as having strong emotion regulatory capacity, participants must have a DERS30 score in line with healthy samples from prior studies (accounting for DERS36 scores, minus the awareness subfactor score), falling between 30-60. Whereas participants in subclinical and clinical groups, produced mean scores between the mid-seventies and low nineties. After accounting for the difference in scores between the DERS36 and DERS30, as well as capturing +/- 1.5SD of scores, this produced a range between 65-90 (Roemer et al., 2009; Hallion et al., 2018; Choudhury, Sahoo & Dash, 2020). Thus, to be catagorised as low in emotion regulation capacity, a participant must score in line with (sub)clinical populations and produce a DERS30 score between 60-90. By using this low-strong dichotomy, it allows for between-group comparisons of scores based on results of prior studies using relevant samples to the groups of interest.

To assess the difference between participants in the strong and low emotion regulation groups, mean scores from the battery of low and high conflict dilemmas will be calculated from the participants' summed 'Yes' responses. Individuals will score between 0-12 based on the amount of 'Yes' responses when asked if they would act in the presented dilemma. These scores are further broken down assessing the six low and high conflict dilemmas, where participants can score between 0-6 from the amount of 'Yes' responses. This provided each participant with a utilitarian rate score for both low and high conflict dilemmas, with a maximum of six per set of dilemmas.

Using a Bayesian Repeated Measures ANOVA, for the hypothesis of this study to be supported, the evidence from the data should support a model with an interaction between DERS30 scores and emotional content of the dilemma, with a Bayes factor greater than one. Higher Bayes factors indicate a higher degree of support for the alternate hypothesis from the null. Inversely, values below one are indicative of a higher degree of support for the null hypothesis over an alternative hypothesis (Wagenmakers et al., 2018) (see Appendix D for a table of Bayes factor values and subsequent interpretations). A follow-up analysis using a Bayesian independent samples t-test will then be used to compare groups. Based on the hypothesis of this study, it is anticipated that participants strong in emotion regulation capacity will have a significantly higher mean 'Yes' response, indicative of a greater utilitarian response rate. **5121**

Results

Study One Preliminary Analysis

In study one, participants were no more or less utilitarian or deontological in their moral choices across the twelve dilemmas ($M = 6.475$, SD = 3.118, range: 1-12). Participants were numerically more deontological in the six high conflict dilemmas ($M = 3.131$, SD =

1.866) than the six low conflict dilemmas (M = 3.344, SD = 1.692). The mean DERS30 score

for this sample (n = 61) was 59.557, with a standard deviation of 15.421 (range: 35-89).

Thirty-four participants were in the strong emotion regulation group (M = 47.735, SD =

6.77), while twenty-seven participants were in the weak emotion regulation group (M =

74.444, SD = 8.816) (see Table 1 and 2 for full descriptive statistics). Assumption checks of

normality were also run for participant data. Examining the histograms indicated non-normal

distribution for responding high conflict dilemmas, as well as DERS scores. Significant

Shapiro-Wilk p-tests for these two variables, as well as low conflict dilemmas, further

indicating non-normal distribution. Q-Q plots were then run to visually assess distribution,

with light-tailed distributions for low and high conflict dilemmas, and slight bimodality in

utilitarian rate (see Appendix E for pre-analysis tests of normality). Due to no extreme

skewness present, a Bayesian repeated measures ANOVA without corrections was utilised to

analyse participant data.

Table 1

Descriptive statistics for study one

Descriptives

	Age	DERS30Score	UtilRate	Total_L	Total_H
N	61	61	61	61	61
Mean	30.590	59.557	6.475	3.344	3.131
Standard deviation	13.213	15.421	3.118	1.692	1.866
Minimum	18	35	1	0	0
Maximum	80	89	12	6	6
Shapiro-Wilk W	0.796	0.943	0.938	0.921	0.932
Shapiro-Wilk p	< .001	0.007	0.004	< .001	0.002

Table 2

Descriptive statistics for study one, split by emotion regulation (DERS) group

Descriptives

	DERS_Group	DERS30Score	UtilRate	Total_L	Total_H
N	Strong	34	34	34	34
	Weak	27	27	27	27
Mean	Strong	47.735	6.147	3.088	3.059
	Weak	74.444	6.889	3.667	3.222
Standard deviation	Strong	6.770	2.819	1.658	1.740
	Weak	8.816	3.468	1.710	2.044
Minimum	Strong	35	1	0	0
	Weak	61	1	1	0
Maximum	Strong	59	12	6	6
	Weak	89	12	6	6

Study One Hypothesis Testing

Using a Bayesian Repeated Measures ANOVA, a null model best fit the data, with a Bayes factor of 1.00; being the highest of the five possible models (see Table 3). The inclusion of participant data provides the most evidence for the null model, against the priori odds of 0.2. This model was chosen over a DERS group model, which had a Bayes factor of .439, based on two reasons. Firstly, this Bayes value below one indicates that there is more support for a null model under this main effect. Secondly, under any model that isn't the null (except DERS Group) the data generates more evidence for the null hypothesis, reflected in lower quantified posterior probabilities after seeing the data (shown as BF_M on Table 5). Subsequently, there would be increased belief for a null hypothesis if a model were to be selected other than the null. In examining the model of interest for the hypothesis, it was found that the hypothesis was not supported, with strong evidence for a null effect of the

interaction between DERS grouping and emotional content in study one ($BF_{10} = .099$) (see

Table 4 for Bayes inclusion factor).

Table 3

Study one Bayesian Repeated Measures ANOVA

Model Comparison

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model (incl. subject)	0.200	0.516	4.265	1.000	
Emotional Content	0.200	0.166	0.795	0.321	10.626
DERS_Group	0.200	0.226	1.171	0.439	0.882
Emotional Content + DERS_Group	0.200	0.068	0.290	0.131	2.662
Emotional Content + DERS_Group + Emotional Content ✳ DERS_Group	0.200	0.024	0.099	0.047	2.337

Table 4

Study one Analysis of Effects under a Bayesian Repeated Measures ANOVA

Analysis of Effects

Effects	P(incl)	P(incl|data)	$BF_{Inclusion}$
Content	0.600	0.269	0.246
DERS_Group	0.600	0.389	0.424
Content ✳ DERS_Group	0.200	0.026	0.099

Unexpectedly, when responding to the twelve dilemmas, those who were classed as

low in their emotion regulation capacity ($M = 6.889$, SD = 3.468), were numerically more

utilitarian than those strong in emotion regulation capacity ($M = 6.14$, SD = 2.819) (see Table

5 for full group descriptive statistics). A Bayesian independent samples t-test showed

anecdotal evidence (BF_{10} = .374) for a null hypothesis, suggesting that these differences do

not support the hypothesis that strong regulators are more utilitarian than weak regulators

(see Table 6 for t-test output and Figure 1 for descriptive plot).

Table 5

Study one Bayesian independent samples t-test group descriptive statistics

Group Descriptives

	Group	N	Mean	SD	SE	95% Credible Interval	
						Lower	Upper
UtilRate	Strong	34	6.147	2.819	0.483	5.163	7.131
	Weak	27	6.889	3.468	0.667	5.517	8.261

Table 6

Study one follow-up Bayesian t-test

Bayesian Independent Samples T-Test

	BF_{10}	error %
UtilRate	0.374	0.003

Figure 1

Study one Bayesian independent samples t-test descriptive plot
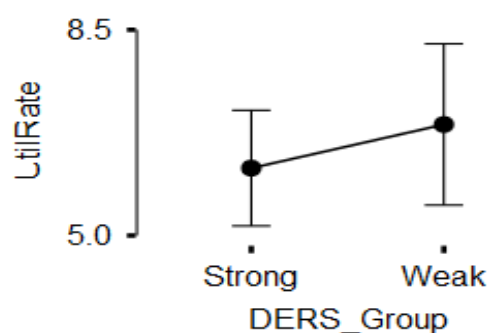
Study Two Preliminary Analysis

In study two, participants showed no greater preference for utilitarian or deontological moral choices, when responding to the twelve dilemmas (M = 6.41, SD = 2.818, range: 0-12). Participants were numerically more deontological in the six high conflict dilemmas (M = 2.76, SD = 1.634), than the six low conflict dilemmas (M = 3.65, SD = 1.553). The mean DERS30 score for this sample (n = 100) was 59.94, with a standard deviation of 14.434 (range: 33-88). Fifty-five participants were in the strong emotion regulation group (M = 49.455, SD = 8.085), while forty-five participants were in the weak emotion regulation group (M = 72.756, SD = 9.118) (see Tables 7 and 8 for full descriptive statistics). Assumption checks of normality were also run for participant data. Examining the histograms indicated normal distribution, however Shapiro-Wilk p-tests indicated non-normal distribution for responding to low and high conflict dilemmas, as well as DERS30 scores. Q-Q plots were then run to visually assess distribution. No significant indications of skewness were found, except for slight bimodality in DERS30 scores (see Appendix G for pre-analysis tests of normality). Based on this, the research team proceeded with a Bayesian repeated measures ANOVA to analyse participant data.

Table 7

Descriptive statistics for study two

Descriptives

	DERS	**UtilRate**	**total_L**	**total_H**
N	100	100	100	100
Mean	59.940	6.410	3.650	2.760
Standard deviation	14.434	2.818	1.553	1.634
Minimum	33	0	0	0
Maximum	88	12	6	6
Shapiro-Wilk W	0.969	0.974	0.941	0.942
Shapiro-Wilk p	0.017	0.047	< .001	< .001

Table 8

Descriptive statistics for study two, split by emotion regulation (DERS) group

Descriptives

	DERS_Group	DERS	UtilRate	total_L	total_H
N	Strong	55	55	55	55
	Weak	45	45	45	45
Mean	Strong	49.455	6.218	3.636	2.582
	Weak	72.756	6.644	3.667	2.978
Standard deviation	Strong	8.085	2.514	1.393	1.548
	Weak	9.118	3.163	1.745	1.725
Minimum	Strong	33	0	0	0
	Weak	60	0	0	0
Maximum	Strong	59	11	6	6
	Weak	88	12	6	6

Study Two Hypothesis Testing

In study two, an emotional content model (labelled 'Content' in Table 9) best fit the data, with a Bayes factor of 279508.66, providing strong evidence for an alternate hypothesis over the null, and other models. Like study one, study two provided anecdotal evidence for a null effect of the interaction of interest (DERS Group * Content) for the hypothesis (BF_{10} = .423). This significant difference between the interaction model and the emotional content model is accounted for by the strong evidence for the Bayes inclusion factor of a content model (see Table 10). Again, participants low in emotion regulation capacity (M = 6.644, SD = 3.163) were numerically more utilitarian than those strong in their emotion regulation capacity (M = 6.218, SD = 2.514) (see Table 11 for group descriptive statistics). A Bayesian independent samples t-test showed strong evidence (BF_{10} = .272) for a null hypothesis, suggesting that these differences do not support the hypothesis that strong regulators are more

utilitarian than weak regulators (see Table 12 for group descriptive statistics and Figure 3 for descriptive plot).

Table 9

Study two Bayesian Repeated Measures ANOVA

Model Comparison

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model (incl. subject)	0.200	2.429e-6	9.716e-6	1.000	
DERS_Group	0.200	7.369e-7	2.948e-6	0.303	0.881
Content	0.200	0.679	8.457	279508.660	1.096
DERS_Group + Content	0.200	0.226	1.165	92856.028	1.153
DERS_Group + Content + DERS_Group ✶ Content	0.200	0.096	0.423	39344.026	1.842

Table 10

Study two Analysis of Effects under a Bayesian Repeated Measures ANOVA

Analysis of Effects

Effects	P(incl)	P(incl|data)	$BF_{Inclusion}$
DERS_Group	0.600	0.321	0.315
Content	0.600	1.000	210581.222
DERS_Group ✶ Content	0.200	0.096	0.423

Table 11

Study two Bayesian independent samples t-test group descriptive statistics

Group Descriptives

	Group	N	Mean	SD	SE	95% Credible Interval	
						Lower	Upper
UtilRate	Strong	55	6.218	2.514	0.339	5.538	6.898
	Weak	45	6.644	3.163	0.472	5.694	7.595

Table 12

Study two follow-up Bayesian t-test

Bayesian Independent Samples T-Test

	BF_{10}	error %
UtilRate	0.272	0.035

In study two, the data has extremely strong evidence for an effect of emotional content (BF_{10} = 279508.66). A Bayesian paired-sample t-test investigating this evidence, revealed extremely strong evidence (BF_{10} = 319520.904) (see Table 13) against a null difference in utilitarian responding to high conflict dilemmas (*M* = 2.76, SD = 1.634) and low conflict dilemmas (*M* = 3.65, SD = 1.553) (see Table 14 for full descriptive statistics) (see Figure 3 for a descriptive plot).

Table 13

Output for a Bayesian paired samples t-test examining evidence for a difference in utilitarian responding between low and high conflict dilemmas

Bayesian Paired Samples T-Test

|			BF$_{10}$	error %
total_L	-	total_H	319520.904	1.605e-11

Table 14

Descriptive statistics for low and high conflict dilemmas, using a Bayesian paired samples t-test

Descriptives

	N	Mean	SD	SE	95% Credible Interval	
					Lower	Upper
total_L	100	3.650	1.553	0.155	3.342	3.958
total_H	100	2.760	1.634	0.163	2.436	3.084

Figure 2

Study two descriptive plot representing the difference in mean utilitarian rate, split by dilemma emotional content

TotalL-TotalH
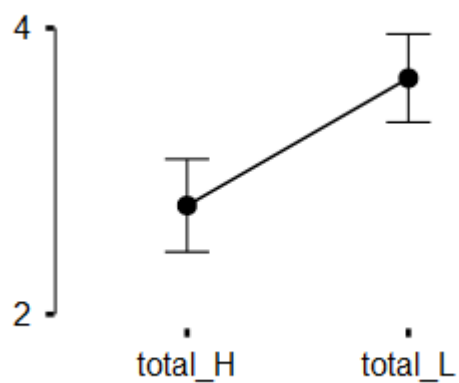
To further investigate the relationship between DERS30 scores and utilitarian responding in high conflict dilemmas, a regression analysis was undertaken. It was found that for every one unit increase on the DERS30, there was a subsequent increase in utilitarianism responding by .027 ($p = .016$) (see Appendix I for regression analysis). This was an unexpected, and theoretically conflicting finding, as Zhang and colleagues (2017b) found increased scored on the DERS36 was associated with increased deontological responding.

Discussion

Interpretations

The aim of this study was the uncover the relationship emotion regulation has in moral choice decision making. It was hypothesised that a weaker global capacity for emotion regulation, reflected in higher DERS30 scores, would be associated with decreased utilitarian responding. This effect was hypothesised to be more pronounced in high conflict dilemmas, than low conflict dilemmas. The results of this study indicate that the hypothesis of this study was not supported, in either study one or study two. Emotion regulation appeared to have no effect on responding to moral dilemmas, as the hypothesised interaction between DERS30 scores and moral dilemma emotional content. In the context of this study, this finding means that participants' responses were not informed through a global regulatory process, and instead was informed by other factors, such as the contextual factors of the dilemma, which will be discussed. Both studies found that the evidence from the data set supported a null hypothesis more so, than a model with the interaction of interest to the hypothesis. This was an unexpected result, as it was anticipated that an interaction effect would exist, where a greater emotion regulation capacity would be related to a stronger capacity to overcome the emotional content of the dilemma, and thus, respond in a more utilitarian manner. Instead, what the data indicates, is that participants with greater difficulties in capacity to regulate their emotions (as reflected in higher scores on the DERS30), were numerically more

utilitarian in high conflict dilemmas, than those with a stronger capacity to regulate their emotions.

Compared to the studies by Zhang and colleagues (2017a, 2017b) examining the relationship between scores on the DERS36 and moral dilemma responding, there are two key divergences which may explain why the hypothesis was not supported, and why this study failed to replicate previous findings. Firstly, this study opted to remove the DERS36 subscale 'awareness' which led to the removal of six items to form the DERS30. Though this was a decision based on metanalyses by Bardeen and colleagues (2012) and Lee and colleagues (2016), as this led to a better diagnostic capacity of a five-factor DERS model; the omitted subscale of awareness may have prevented the capture of meaningful variance between groups. Theoretically, the subscale 'awareness' in the DERS36 could be linked to the initial engagement of more deliberate cognition used to regulate emotions. As awareness of emotional experience precedes efforts to regulate the experience and expression of the emotion to achieve situational goals (Gratz & Roemer, 20004; Gross, 2015). Hypothetically, it is plausible to suggest that the awareness subscale could have a meaningful impact in detecting differences between strong and weak emotion regulators; as this awareness can inform appropriate regulatory processing skills in those with a strong capacity to regulate their emotions (Kimhy et al., 2012). Without this awareness of emotional experience, it is difficult to inhibit the influence of automatic, emotional processes, which would result in increased deontological responding (Compare et al., 2014). This is a pattern apparent in the results of study two, where there were no differences observed between those strong and weak in emotion regulation capacity.

A second point of divergence in this study, is that this study examined emotion regulation in moral choice, rather than moral judgement. In both studies by Zhang and colleagues (2017a, 2017b), participants were positioned as moral judges, who evaluated the actions of a

third party. In this study, participants were positioned in the first person, as the central actor of the presented dilemma, meaning they must choose to either act or not. The difference between moral choice and judgement could change the relationship of the conflict between these processes; as being the central actor of a dilemma may engage emotional and/or rational processes differently, compared to making moral judgements. What underlies this difference between moral choice and moral judgement has many potential explanations. Williams and Gantt (2012) suggest that this difference may simply derive from people not always acting out their own moral principles. Eyal and colleagues (2008) empirically demonstrated that people more readily apply their own individual moral principles to distant acts, rather than proximal ones. This would converge with the idea raised by Williams and Gantt (2012) where people may not act in accordance with their own principles. Thus, it is possible to conclude that differences between moral choices and moral judgements have abstract components of personal distance and immediacy. These components do have further empirical support, as personal methods of killing a person (such as in the Crying Baby dilemma) are deemed more immoral than impersonal methods (such as the trolley problem) and increase emotional salience; resulting in increased deontological responding (Greene et al., 2004; Gubbins & Byrne, 2014).

The manipulation of emotional content across dilemmas was not of primary interest in this study. However, in study two, there was extreme evidence for a significant main effect of emotional content on moral decision-making. This main effect indicated that all participants on average made more deontological decisions to high conflict dilemmas. Although this was not part of the hypothesis of this study, it was expected based on the evidence surrounding the role of emotional salience on deontological responding (Greene et al., 2001, 2004; Gubbins & Byrne, 2014). However, this effect was not found in study one, with anecdotal evidence for a null hypothesis model when examining this main effect.

One explanation which may explain why this occurred is the difference in sample size between studies one and two. There were thirty-nine less participants involved in the analyses of study one than in study two. This may mean that there was insufficient evidence available to sufficiently determine if there is a meaningful difference in responding due to dilemma emotional content. This could then result in a potential non-replication for the effect of emotional salience of the presented dilemma. A second potential explanation for this observation may be due to anchoring effects. Because study one was not counterbalanced, where low-conflict dilemmas were presented first, this may have inadvertently produced the effect of prior responses anchoring late responding (Caputo, 2014). In study one, participants responded to low conflict dilemmas first, which may have established a pattern of responding to subsequent dilemmas. This translates to participants potentially responding to high-conflict dilemmas in a manner consistent with the anchored effects of responding to low-conflict dilemmas. Thus, to address this, study two counterbalanced the presentation of the dilemmas to remove the influence of any potential anchoring effect.

Limitations and recommendations

An immediate limitation to this study which can be observed is the conservative DERS30 cut-off score for this study. Between studies one and two, 50 of a possible 211 valid participants were not included in the analyses of this study. This equates to an approximate 23.7% cut-off rate for the study. Though the true impact of this lost data is unknown, having these participants would have increased the statistical power of this study's analyses. For future iterations of this study, it may be beneficial to remove this DERS30 cut-off, and instead filter participants for significant psychological history. The use of assessment tools like the Depression Anxiety Stress Scale, or a combination of the Beck Depression Index, and Beck Anxiety Index, to filter participants who have moderate to extreme presentations of anxiety or depression, may lead to a more accurate assessment of the hypothesis of this study.

This is of particular importance, as a high score on the DERS30 is not in itself indicative of mental illness (Choudhury, Sahoo & Dash, 2020), but the presence of mental illness history does indicate some issues with emotion regulation (Markarian et al., 2013). Thus, basing the DERS30 cut-off on the comparison of DERS scores between healthy samples and samples of people with mental illness could have hindered the capacity to properly explore the hypothesis. By removing this constraint and allowing participants who score over 90 on the DERS30 to respond to the high conflict dilemmas, it may be possible to capture the effect of emotion (dys)regulation more adequately on moral dilemma responding. If a between-group design were to be used again, establishing what is classed as strong or weak in emotion regulation capacity may need to be reconceptualised. A potential method to achieve this could be to administer the DERS30 to a broad, representative sample to establish a low-high emotion regulatory dichotomy based on population scores on the DERS30. However, this could potentially be resource heavy.

A second limitation identified is the use of the DERS30 score as a categorical rather than a continuous variable. If the previous recommendation of removing the DERS30 cut-off and allowing all screened participants to respond to high conflict dilemmas were to be implemented, using DERS30 scores as a continuous variable may reveal the true relationship between emotion regulation and utilitarian responding, as this would capture a more holistic concept of global emotion regulation capacity. By utilising the full range of scores on the DERS30, it would then also allow for future between-groups comparisons, if that study methodology were to be used again in the future. Though logically, it would not make sense that a higher DERS score would result in higher rates of utilitarianism, as higher scores are indicative of greater emotion dysregulation (Gratz & Roemer, 2004). Thus, higher scorers would be expected to have increased conflict between their deontological and utilitarian principles; resulting in more deontological responding (Szekely & Miu, 2015; Zhang et al.,

2017a, 2017b). However, based on the linear regression examining DERS30 scores and utilitarian responding, where every one unit increase on the DERS resulted in a significant per-unit increase in utilitarianism; the relationship found between emotion regulation difficulties and utilitarian responding did not replicate the findings from Zhang and colleagues (2017a, 2017b). Though because this study used the DERS30 cut-off value of 90, the capacity to investigate this relationship is limited.

A third limitation identified in this study is the conceptualisation that a low score on the DERS30, represented by a score below 60 may have also been too strict. Though healthy samples were found to score quite low on the DERS36 (Roemer et al., 2009; Tolin et al., 2018), two general representative samples produced mean scores of 66 (Ehring et al., 2008) and 80 (Gratz & Roemer, 2004) with wide standard deviations. While studies by Zhang and colleagues (2017a, 2017b) which resembles this study the closest, DERS36 scores were around 90. Therefore, it may have been too conservative to base a strong regulatory capacity, exclusively off healthy samples. Therefore, it may be beneficial to revise what is understood as healthy and unhealthy emotion regulation. Generally, the literature surrounding DERS36 scores in the general population do not undergo the same rigorous administration as other psychometric tests like intelligence testing, as shown by a lack of general population statistics beyond Gratz and Roemer (2004) and Ehring and colleagues (2008).

Though this study did not replicate prior findings utilising a Bayesian analysis, based on the null finding of study one, it is recommended that future studies could take on the Bayesian approach again. The Bayesian approach does hold one advantage over a frequentist approach, which may make it favourable to utilize in future studies like this. Bayesian analysis can be continually updated and monitored as more data is input into the analysis. Subsequently, this can either strengthen or weaken the evidence for a specific model (Wagenmakers et al., 2018). This allows for greater flexibility in data collection and analysis,

as it does not rely on hypothetical datasets and requires a strict data collection methodology, like null hypothesis significance testing approaches. While this does result in conclusions not being definitive at the time of testing, it does allow for beliefs to be changed based on increased collection of evidence for or against a hypothesis. The use of Bayesian analysis was also informed by the exploratory nature of the hypothesis, as the hypothesis was guided by prior findings in emotion regulation literature (Zhang et al., 2017a, 2017b). By gathering more evidence through increasing data collection, it will become more possible to uncover the degree of evidence for the null and alternate hypotheses of studies such as this one. Future directions from this, if future evidence finds support for this study's hypothesis, could begin to take on frequentist analyses to begin quantifying individual differences necessary for making utilitarian decisions under stressful circumstances. This could hypothetically have broad implications if the aforementioned evidence were to be found.

Strengths, implications, and conclusions

Although the hypothesis of this study was not supported, this study does advance the understanding of what role that emotion regulation has in moral choices. Bauman and colleagues (2014) identify that many low-conflict dilemmas from early research into moral decision-making failed to fully encapsulate human decision making, as many of these dilemmas were difficult to imagine occurring in real life. Thus, placing participants as the central actor of high conflict dilemmas may best simulate real life moral decision making. Enabling this will allow for deeper examination of the processes underlie moral decision making. One such process which this research team argues has merit is emotion regulation as a global process (similar to the conceptualisation of Zhang and colleagues (2017a)), contrasting the work of Szekely and Miu (2015). Basing emotion regulation capacity solely off specific emotion regulation processes alone (as in Szekely and Miu's study), such as reappraisal, suppression, or rumination, realistically, is ineffective. As emotion regulation can

recruit multiple strategies and processes simultaneously to achieve goals (Gross, 2015). Applying this concept of simultaneous regulatory processes to real life outcomes has been supported empirically. With studies showing that engaging multiple regulation processes have been associated with positive outcomes in body image (Nejati et al., 2017), alcohol dependence (Petit et al., 2015), and unipolar depression (Liverant et al., 2008).

Although this study may have been a failed replication of the findings by Zhang and colleagues (2017a, 2017b), it is plausible to suggest that emotion regulation may not play as much of a significant role in moral choice, compared to moral judgement. Further studies in line with the recommendations made, are necessary before it is possible to ascertain the role that emotion regulation may have in moral choice. Though if emotion regulation were not to be as significant in moral choice, there may be other factors which influence decision making in these circumstances. One explanation which has been observed from this study that may explain this difference between moral judgement and moral choice is the situational context of the dilemma. The significant result found in study two successfully replicated findings that high conflict dilemmas create more deontological decisions (Koole & Fockenberg, 2011). Therefore, it is possible to extend this finding to the difference in context between moral choice and judgement, where the participant becomes the central actor of the dilemma, accounts for the differences in responding to moral dilemmas. However, future studies could explore the differences between moral choice and moral judgement, while examining the mediating role that emotion regulation may have between these two processes.

The significant effect of emotional content on deontological responding also generates implications beyond understanding human decision making. If emotionally provocative situations tend to create more deontological decisions, it is possible to apply this to non-human decision making. Applying this human quality to something like autonomous vehicles would eliminate this potential issue where emotions may prevent utilitarian decision making.

As this would eliminate the potential for conflict to arise due to emotional influences on deontological responding. However, this in itself can generate a paradoxical reality; where it would be wrong to harm those outside of the vehicle, but the role of the vehicle is to protect the passengers. Bonnefron and colleagues (2016) found that utilitarian autonomous vehicles were rated more favourably, as it was consensually understood as the right thing to do (Awad et al., 2018). Though if this deontological principle found in human responding were to be applied to autonomous technology, it could lead to greater harm than good (Bonnefron et al., 2016). The ambiguous nature of what is considered morally right or wrong has large implications in this matter. However, understanding that the context of moral choices influences decision making can shape other aspects of psychological research.

The direct implications of the finding that salient emotional contexts produce increased deontological responding is limited on its own. However, this can inform future studies investigating how individuals overcome the conflict of these situations. Although this study found that emotion regulation has no role in moral decision making, it is anticipated that future investigations into the nature of emotion regulation under stressful circumstances may yield valuable information. If this relationship were to be established, it could inform societies on individual differences which are necessary in leaders, police, and other people in positions of power, for utilitarian decisions to be made. Though a link between emotion regulation and utilitarian decision making in high conflict scenarios must be established first, before these potential implications can be cemented.

These two points highlight two important areas of moral psychology. Firstly, there will always be conflict in what is considered right and wrong. Secondly, and subsequently from the first, this highlights the necessity for understanding the role that context has in moral decision making generally. Studies such as the Moral Machine experiment have begun to address some of the contextual nuances which create differences in responding to sacrificial

dilemmas (Awad et al., 2018). However, more research into these contextual factors is necessary, as well as more generally, to bring forth a consensual view on morality in the research space.

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Appendix A

Ethics Approval Letter

Research Integrity and Ethics Unit

Ethics Approval Letter

27/07/2021

To: Dr Palmer

Project ID: 17588

Project Title: Moral decision-making study

The amendment received in support of the above named project has been approved by the University of Tasmania Human Research Ethics Committee on 27 July 2021.

Approval has been granted for the following:

- Additional Staff: Anna Hopwood, Zachary Richards, Eli Halliwell
- Remove Staff: Emily Reid

Submission Document Name	Submission Document File Name	Submission Document Type	Submission Document Date	Submission Document Version
Difficulties in Emotion Regulation Scale (DERS)	Difficulties in Emotion Regulation Scale (DERS).pdf	Other Documents	13/07/2021	1
Empathic Response Scale	Empathic Response Scale.docx	Other Documents	13/07/2021	1
Social-Sciences-Minimal-Risk-Application-moral decisions v3 - track changes	Social-Sciences-Minimal-Risk-Application-moral decisions v3 - track changes.doc	Application (Tracked)	19/07/2021	3
Social-Sciences-Minimal-Risk-Application-moral decisions v3 - clean	Social-Sciences-Minimal-Risk-Application-moral decisions v3 - clean.doc	Application (Tracked)	19/07/2021	3
Information Sheet v3 track changes	Information Sheet v3 track changes.docx	PARTICIPANT INFORMATION AND CONSENT FORM	19/07/2021	3
Information Sheet v3 clean	Information Sheet v3 clean.docx	PARTICIPANT INFORMATION AND CONSENT FORM	19/07/2021	3
Dimensions of Anger Scale (DAR-5)	Dimensions of Anger Scale (DAR-5).docx	Other Documents	19/07/2021	1

Please ensure that all investigators involved with this project have cited the approved versions of the documents listed within this letter and use only these versions in conducting this research project.

This approval constitutes ethical clearance by the University of Tasmania Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approvals of other bodies or authorities are required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

In accordance with the National Statement on Ethical Conduct in Human Research, it is the responsibility of institutions and researchers to be aware of both general and specific legal requirements, wherever relevant. If researchers are uncertain they should seek legal advice to confirm that their proposed research is in compliant with the relevant laws. University of Tasmania researchers may seek legal advice from Legal Services at the University.

The University of Tasmania Human Research Ethics Committee (HREC) operates under and is required to comply with the National Statement on the Ethical Conduct in Human Research.

Therefore, the Chief Investigator's responsibility is to ensure that:

(1) All investigators are aware of the terms of approval, and that the research is conducted in compliance with the HREC approved protocol or project description.

(2) Modifications to the protocol do not proceed until **approval** is obtained in writing from the HREC. This includes, but is not limited to, amendments that:

(i) are proposed or undertaken in order to eliminate immediate risks to participants;
(ii) may increase the risks to participants;
(iii) significantly affect the conduct of the research; or
(iv) involve changes to investigator involvement with the project.

Page 1 of 2

Please note that all requests for changes to approved documents must include a version number and date when submitted for review by the HREC.

(3) Reports are provided to the HREC on the progress of the research and any safety reports or monitoring requirements as indicated in NHMRC guidance.

Guidance for the appropriate forms for reporting such events in relation to clinical and non-clinical trials and innovations can be located under the ERM "Help Tab" in "Templates". All adverse events must be reported regardless of whether or not the event, in your opinion, is a direct effect of the therapeutic goods being tested.

(4) The HREC is informed as soon as possible of any new safety information, from other published or unpublished research, that may have an impact on the continued ethical acceptability of the research or that may indicate the need for modification of the project.

(5) All research participants must be provided with the current Participant Information Sheet and Consent Form, unless otherwise approved by the Committee.

(6) This study has approval for four years contingent upon annual review. A Progress Report is to be provided on the anniversary date of your approval. Your first report is due on the anniversary of your approval, and you will be sent a courtesy reminder closer to this due date. Ethical approval for this project will lapse if a Progress Report is not submitted in the time frame provided.

(7) A Final Report and a copy of the published material, either in full or abstract, must be provided at the end of the project.

(8) The HREC is advised of any complaints received or ethical issues that arise during the course of the project.
(9) The HREC is advised promptly of the emergence of circumstances where a court, law enforcement agency or regulator seeks to compel the release of findings or results. Researchers must develop a strategy for addressing this and seek advice from the HREC.

Kind regards,

Ethics Executive Officer

UNIVERSITY of TASMANIA

Appendix B

DERS-30 Inventory

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below:

- (1) Almost never (0-10% of the time)
- (2) Sometimes (11-35% of the time)
- (3) About half of the time (36-65% of the time)
- (4) Most of the time (66-90% of the time)
- (5) Almost always (91-100% of the time)

Items:

1) I am clear about my feelings.
2) I experience my emotions as overwhelming and out of control.
3) I have no idea how I am feeling
4) I have difficulty making sense out of my feelings
5) I know exactly how I am feeling
6) I am confused about how I feel
7) When I'm upset, I become angry with myself for feeling that way.
8) When I'm upset, I become embarrassed for feeling that way.
9) When I'm upset, I have difficulty getting work done.
10) When I'm upset, I become out of control.
11) When I'm upset, I believe that I will remain that way for a long time.
12) When I'm upset, I believe that I will end up feeling very depressed.
13) When I'm upset, I have difficulty focusing on other things.
14) When I'm upset, I feel out of control.
15) When I'm upset, I can still get things done.
16) When I'm upset, I feel ashamed at myself for feeling that way.
17) When I'm upset, I know that I can find a way to eventually feel better.
18) When I'm upset, I feel like I am weak.
19) When I'm upset, I feel like I can remain in control of my behaviours.
20) When I'm upset, I feel guilty for feeling that way.
21) When I'm upset, I have difficulty concentrating.
22) When I'm upset, I have difficulty controlling my behaviours.
23) When I'm upset, I believe there is nothing I can do to make myself feel better.
24) When I'm upset, I become irritated at myself for feeling that way.
25) When I'm upset, I start to feel very bad about myself.
26) When I'm upset, I believe that wallowing in it is all I can do.
27) When I'm upset, I lose control over my behaviour.
28) When I'm upset, I have difficulty thinking about anything else.
29) When I'm upset, it takes me a long time to feel better.
30) When I'm upset, my emotions feel overwhelming.

Appendix C

Moral Dilemma Battery

Low Emotion Dilemmas

Trolley Problem
You are at the wheel of a runaway trolley quickly approaching a fork in the tracks. On the tracks extending to the left is a group of five railway workmen. On the tracks extending to the right is a single railway workman. If you do nothing the trolley will proceed to the left, causing the deaths of the five workmen. The only way to avoid the deaths of these workmen is to hit a switch on your dashboard that will cause the trolley to proceed to the right, causing the death of the single workman. Would you hit the switch in order to avoid the deaths of the five workmen?

Watchman
You are the late-night watchman in a hospital. Due to an accident in the building next door, there are deadly fumes rising up through the hospital's ventilation system. In a certain room of the hospital are five patients. In another room there is a single patient. If you do nothing the fumes will rise up into the room containing the five patients and cause their deaths. The only way to avoid the deaths of these patients is to hit a certain switch, which will cause the fumes to bypass the room containing the five patients. As a result of doing this the fumes will enter the room containing the single patient, causing his death. Would you hit the switch in order to avoid the deaths of the five patients?

Army General
You are an army general in an offsite office. One day, the alarm unexpectedly warns people that a missile is about to be launched. A hacker announces by radio that he can direct this missile at any time on the intelligence building where five people are working. The hacker announces that if you accept to direct the missile yourself on the medical annex of the building, then the five people will be saved. However, one person is working in the medical annex, and will be killed. The only way for you to save the five people in the intelligence building is to direct the missile on the medical annex and kill the person who is working there. Would you direct the missile on the medical annex and kill the person who is working there?

Antibodies
You are the chief surgeon in a small hospital. One day, your ward receives five badly hurt patients from an accident. The patients all need rare antibodies, or they will die. Your hospital has no antibodies to distribute, however, there is a patient with these antibodies in abundance. This patient has been in a coma for several weeks and it seems unlikely that he will wake up again. You could terminate his life support and take his antibodies for the five accident victims, so that their lives will be saved. Would you, in this case, terminate the patient's life support to harvest these necessary antibodies?

Vaccine
You are one of the lead researchers in a large pharmaceutical company. A highly infectious, deadly virus has spread in a part of the building where five people work. These people are now confined, and they will die if they do not get the proper antidote. Two chemical

compounds were recently designed in the lab, one of which is the antidote, you cannot tell which is which. There are two other men with you, both under your responsibility. The only way for you to save the five employees is to inject each compound to one of these men, killing one in the process. Would you administer the compounds to the two men, killing one of these men to save the five other employees?

Footbridge
A runaway trolley is heading down the tracks toward five workmen who will be killed if the trolley proceeds on its present course. You are on a footbridge over the tracks, in between the approaching trolley and the five workmen. Next to you on this footbridge is a stranger who is ignorant to the trolley's current course. The only way to save the lives of the five workmen is to push this stranger off the bridge and onto the tracks below where his body will stop the trolley. The stranger will die if you do this, but the five workmen will be saved. Would you push the stranger on to the tracks in order to save the five workmen?

High Emotion Dilemmas:

Church Official
You are a church official during the Nazi occupation of the Netherlands. You have an official agreement with the occupying forces that protects anyone under your care. You publicly spoke on behalf of a Jewish man, angering the Nazis. To demonstrate their power, the Nazis demand that you kill the Jewish man. Otherwise, they will execute five Dutch people they have incarcerated for political reasons. Would you kill the Jewish man in this case?

Torture Dilemma

You are a member of a special police department who is trained to obtain information in particularly difficult cases. You are dealing with a case involving a male adult who has kidnapped five children. You don't know where the children are, and he refuses to tell you where the children are located. The children will die of dehydration if they are not found within the next 24 hours. You have tried every legal interrogation technique, but none of them were successful. To get information on where the children are located, you consider the use of illegal techniques that are deemed torture. These torture methods will kill the man, but you will uncover the location of the children and save them. Would you use illegal interrogation techniques and kill the man, in order to save the children?

Crying Baby
Enemy soldiers have taken over your village. They have orders to kill all remaining civilians and capture leading resistance members, such as yourself. You and five 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 begins to cry loudly. You cover his mouth to block the sound. If you remove your hand from his mouth his crying will summon the attention of the soldiers who will kill the child, and the others hiding out in the cellar. To save yourself from being captured and the others being killed, you must smother the child to death. Would you smother the child to save the five townspeople?

Lawrence of Arabia
You are the leader of a small army that consists of warriors from two tribes, the hill tribe and the river tribe. You belong to neither tribe. Overnight, a hill tribesman got into an argument

with a river tribesman and murdered him. Five zealous members of the river tribe will attack the hill tribe, but will be killed by the hill tribe unless the murderer is put to death. However, the hill tribe refuses to kill one of its own warriors. The only way for you to avoid the five river tribesmen from fighting to their deaths, is to publicly execute the murderer by cutting off his head with your sword. Would you cut off this man's head to prevent the five river tribesmen from fighting to their death?

Hostage
You are negotiating with a powerful and determined terrorist who is about to set off a bomb in a government office. Your one advantage is that you have his teen-age son in your custody. There is only one thing that you can do to stop him from detonating his bomb, which will kill five people if detonated. To stop him, you must contact him over the satellite hook-up that he has established and, in front of the camera, kill his son if he does not give himself up. Would you kill the terrorist's son in order to prevent the terrorist from killing the five people with his bomb?

Sacrifice
You and six others are crossing a mountain range on your return journey to your homeland. You have inadvertently set up camp on a local clan's sacred ritual ground. The leader of the clan says that according to the local laws, those who are with you must be put to death. However, he will let yourself and five others live if you yourself will kill one of the people accompanying you as a sacrifice for disrespecting their sacred grounds. Would you kill one of the others to save the other five?

Group C Dilemmas:

Trolley Problem
You are at the wheel of a runaway trolley quickly approaching a fork in the tracks. On the tracks extending to the left is a group of x railway workmen. On the tracks extending to the right is a single railway workman. If you do nothing the trolley will proceed to the left, causing the deaths of the x workmen. The only way to avoid the deaths of these workmen is to hit a switch on your dashboard that will cause the trolley to proceed to the right, causing the death of the single workman. Would you hit the switch in order to avoid the deaths of the x workmen?

Footbridge
A runaway trolley is heading down the tracks toward x workmen who will be killed if the trolley proceeds on its present course. You are on a footbridge over the tracks, in between the approaching trolley and the x workmen. Next to you on this footbridge is a stranger who is ignorant to the trolley's current course. The only way to save the lives of the x workmen is to push this stranger off the bridge and onto the tracks below where his body will stop the trolley. The stranger will die if you do this, but the x workmen will be saved. Would you push the stranger on to the tracks in order to save the x workmen?

x = 5, 10, 50, 500, 5000

Appendix D

Bayes Factor Values and Interpretations

(From Wagenmakers et al., 2018)

H1: Alternate Hypothesis

H0: Null Hypothesis

Bayes factor Evidence category

- 100 Extreme evidence for H1
- 30 - 100 Very strong evidence for H1
- 10 - 30 Strong evidence for H1
- 3 - 10 Moderate evidence for H1
- 1 - 3 Anecdotal evidence for H1
- 1 No evidence
- 1/3 - 1 Anecdotal evidence for H0
- 1/10 - 1/3 Moderate evidence for H0
- 1/30 - 1/10 Strong evidence for H0
- 1/100 - 1/30 Very strong evidence for H0
- < 1/100 Extreme evidence for H0

Appendix E

Study One Pre-analysis

Table 1

Descriptive statistics for study one

Descriptives

	Age	**DERS30Score**	**UtilRate**	**Total_L**	**Total_H**
N	61	61	61	61	61
Mean	30.590	59.557	6.475	3.344	3.131
Standard deviation	13.213	15.421	3.118	1.692	1.866
Minimum	18	35	1	0	0
Maximum	80	89	12	6	6
Shapiro-Wilk W	0.796	0.943	0.938	0.921	0.932
Shapiro-Wilk p	< .001	0.007	0.004	< .001	0.002

Table 2

Descriptive statistics for study one, split by emotion regulation (DERS) group

Descriptives

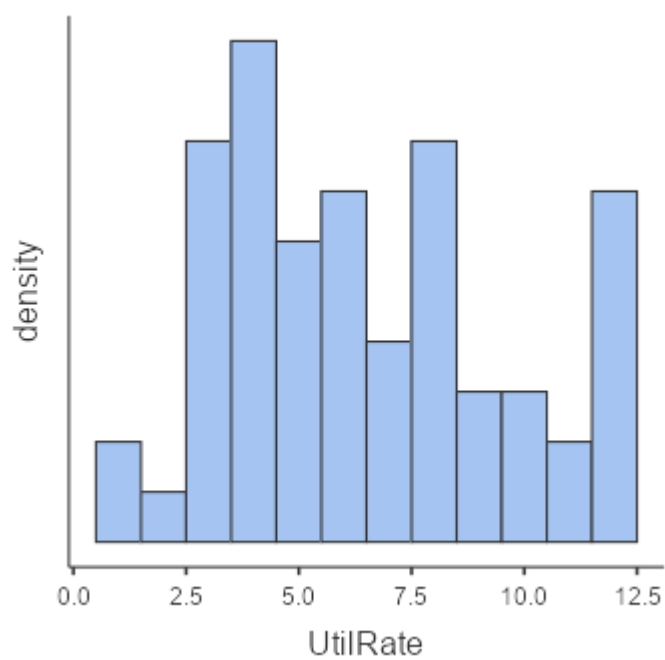|	**DERS_Group**	**DERS30Score**	**UtilRate**	**Total_L**	**Total_H**
N	Strong	34	34	34	34
	Weak	27	27	27	27
Mean	Strong	47.735	6.147	3.088	3.059
	Weak	74.444	6.889	3.667	3.222
Standard deviation	Strong	6.770	2.819	1.658	1.740
	Weak	8.816	3.468	1.710	2.044
Minimum	Strong	35	1	0	0
	Weak	61	1	1	0
Maximum	Strong	59	12	6	6
	Weak	89	12	6	6

DERS30 Scores
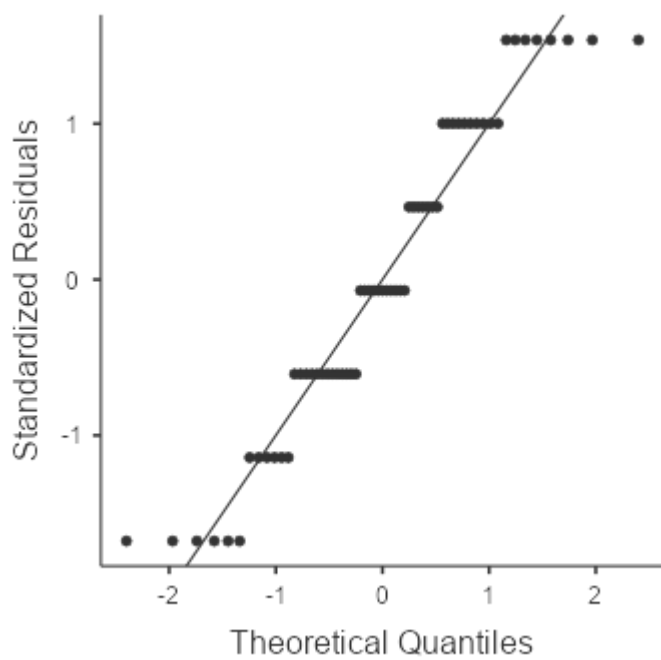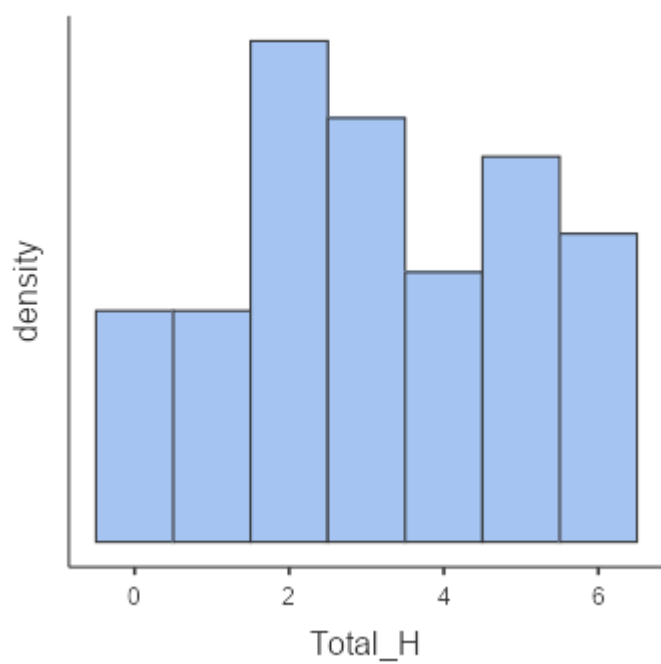
Histogram and Q-Q plot
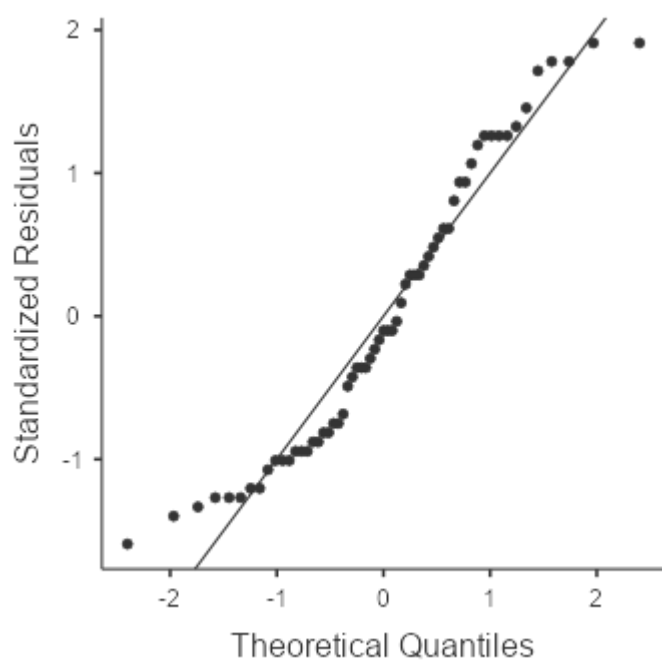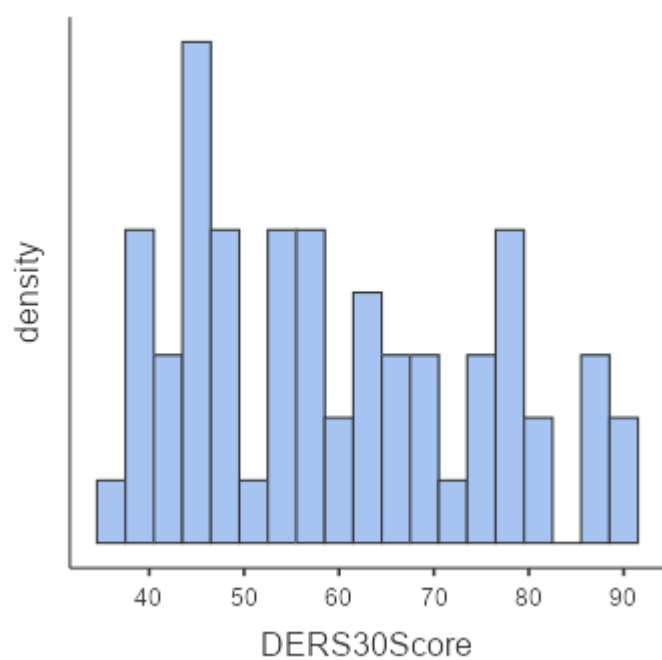
Utilitarian Rate

Histogram and Q-Q plot
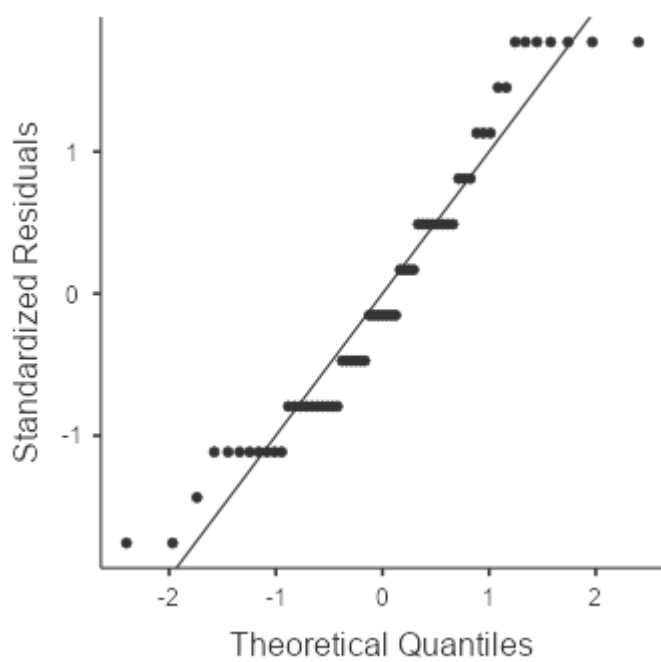
Total_L

Histogram and Q-Q plot
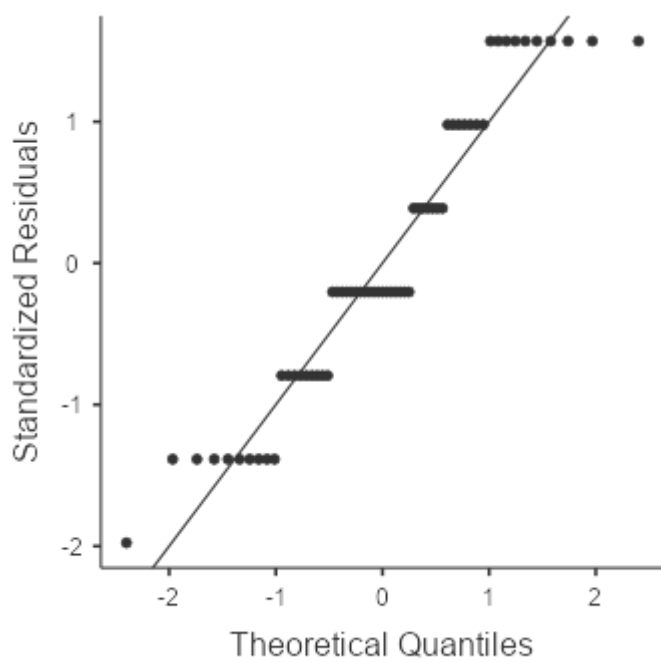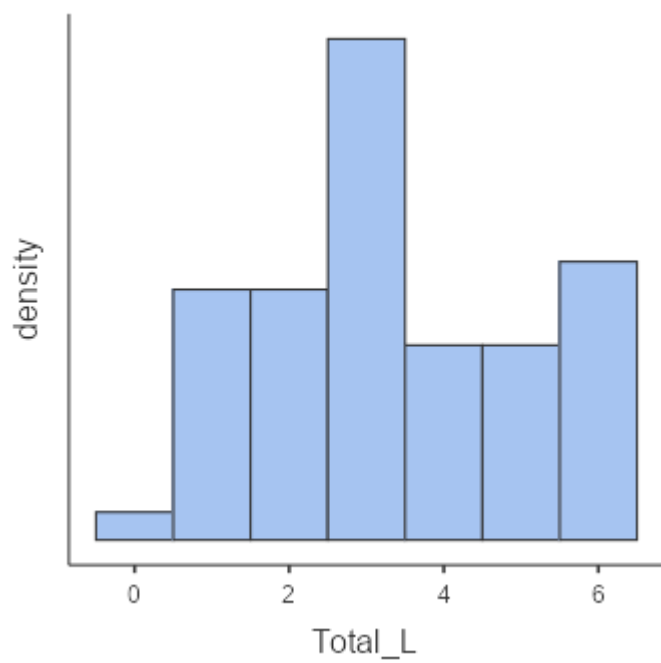
Total_H

Histogram and Q-Q plot

Appendix F

Study One Jamovi Output

Table 5

Study one Bayesian Repeated Measures ANOVA Jamovi output

Model Comparison

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model (incl. subject)	0.200	0.516	4.265	1.000	
Emotional Content	0.200	0.166	0.795	0.321	10.626
DERS_Group	0.200	0.226	1.171	0.439	0.882
Emotional Content + DERS_Group	0.200	0.068	0.290	0.131	2.662
Emotional Content + DERS_Group + Emotional Content ✻ DERS_Group	0.200	0.024	0.099	0.047	2.337

Table 6

Study one Analysis of Effects table under the Bayesian Repeated Measures ANOVA Jamovi

output

Analysis of Effects

Effects	P(incl)	P(incl|data)	$BF_{Inclusion}$
Emotional Content	0.600	0.258	0.231
DERS_Group	0.600	0.318	0.311
Emotional Content ✻ DERS_Group	0.200	0.024	0.099

Table 5

Study 1: Estimated marginal means of the interaction between DERS30 group and dilemma emotional content

Estimated Marginal Means – Emotional Content ✻ DERS_Group

DERS_Group	Content	Mean	SE	95% Confidence Interval	
				Lower	**Upper**
Strong	Low	3.088	0.288	2.511	3.665
	High	3.059	0.322	2.414	3.704
Weak	Low	3.667	0.324	3.019	4.314
	High	3.222	0.362	2.498	3.946

Table 6

Study one follow-up Bayesian t-test

Bayesian Independent Samples T-Test

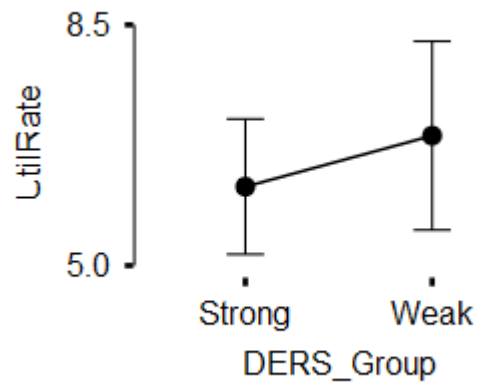|	BF$_{10}$	error %
UtilRate	0.374	0.003

Table 7

Study one Bayesian independent samples t-test group descriptive statistics

Group Descriptives

	Group	N	Mean	SD	SE	95% Credible Interval	
						Lower	**Upper**
UtilRate	Strong	34	6.147	2.819	0.483	5.163	7.131
	Weak	27	6.889	3.468	0.667	5.517	8.261

Figure 1

Study one Bayesian independent samples t-test descriptive plot

Appendix G

Study Two Pre-analysis
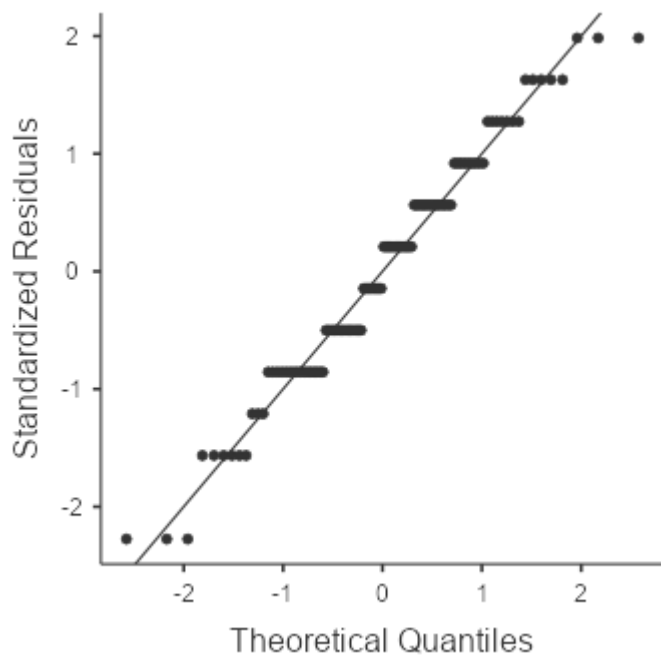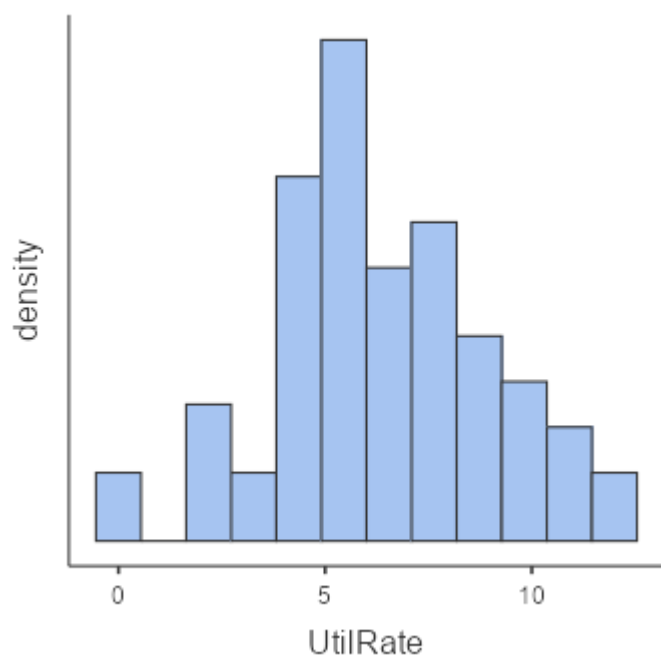
Table 8

Descriptive statistics for study two

Descriptives

|	DERS	UtilRate	total_L	total_H
N	100	100	100	100
Mean	59.940	6.410	3.650	2.760
Standard deviation	14.434	2.818	1.553	1.634
Minimum	33	0	0	0
Maximum	88	12	6	6
Shapiro-Wilk W	0.969	0.974	0.941	0.942
Shapiro-Wilk p	0.017	0.047	< .001	< .001

Table 9

Descriptive statistics for study two, split by emotion regulation (DERS) group

Descriptives

	DERS_Group	DERS	UtilRate	total_L	total_H
N	Strong	55	55	55	55
	Weak	45	45	45	45
Mean	Strong	49.455	6.218	3.636	2.582
	Weak	72.756	6.644	3.667	2.978
Standard deviation	Strong	8.085	2.514	1.393	1.548
	Weak	9.118	3.163	1.745	1.725
Minimum	Strong	33	0	0	0
	Weak	60	0	0	0
Maximum	Strong	59	11	6	6
	Weak	88	12	6	6

DERS

Histogram and Q-Q Plot
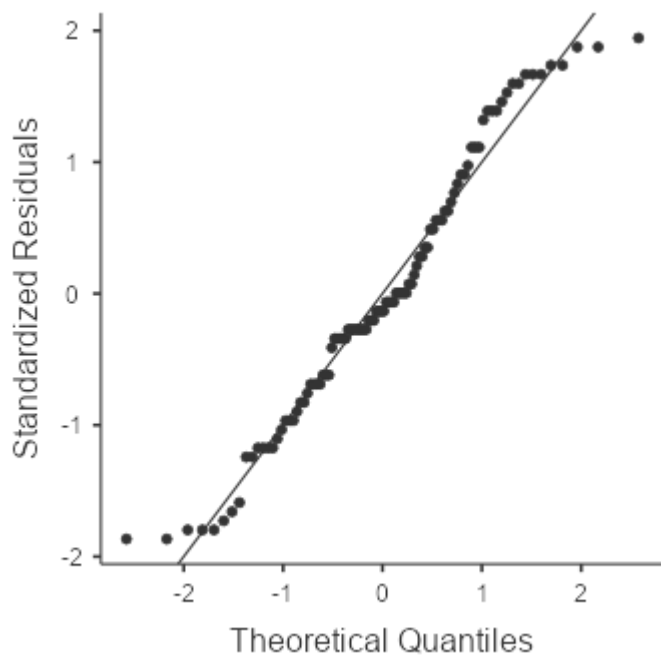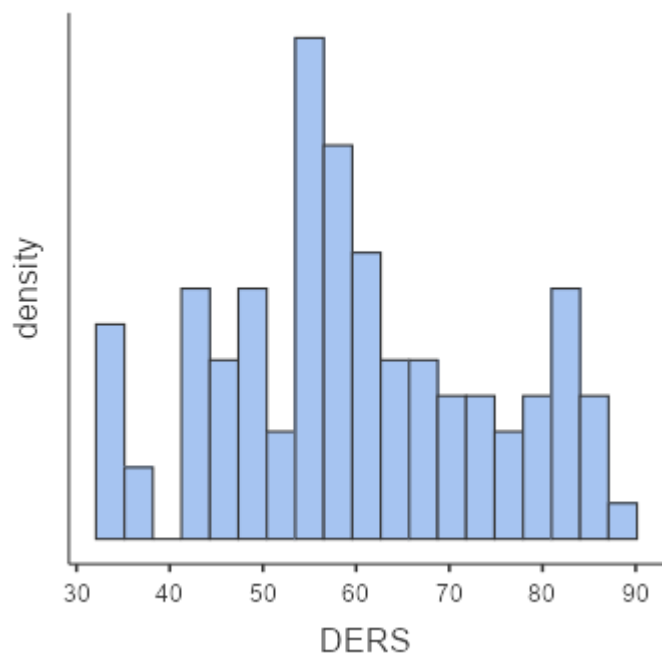
UtilRate

Histogram and Q-Q Plot

Total_L

Histogram and Q-Q Plot
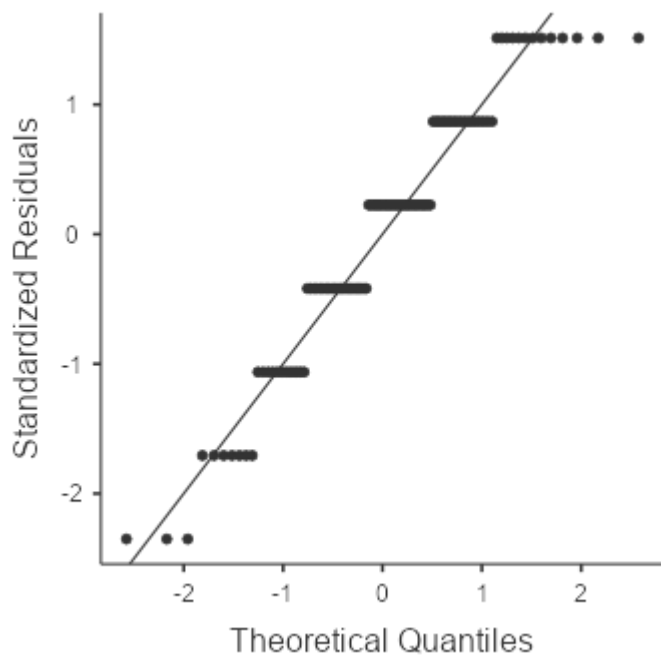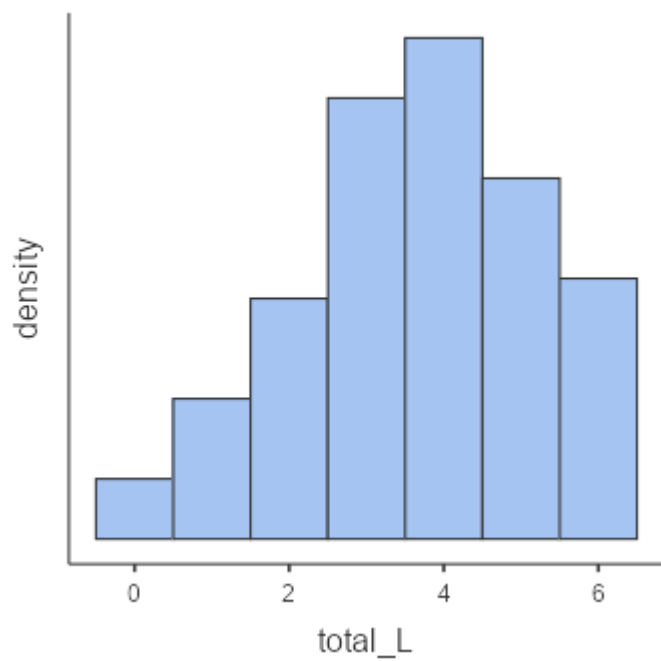
Total_H

Histogram and Q-Q Plot
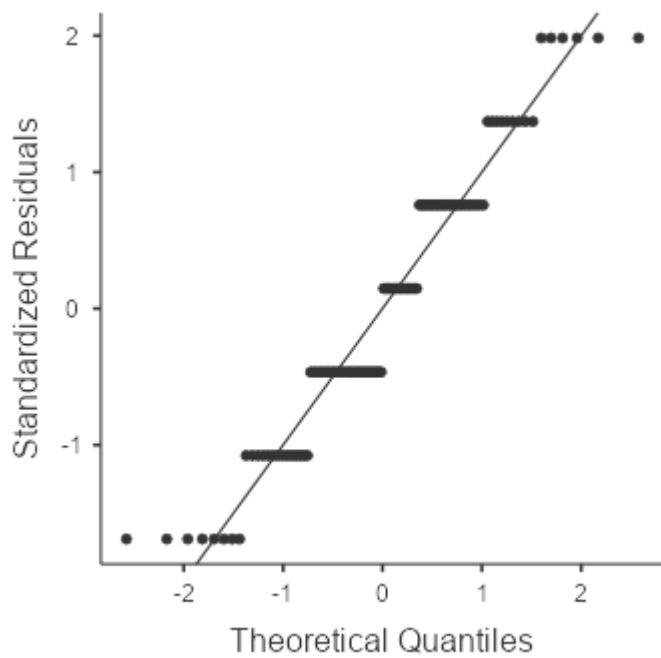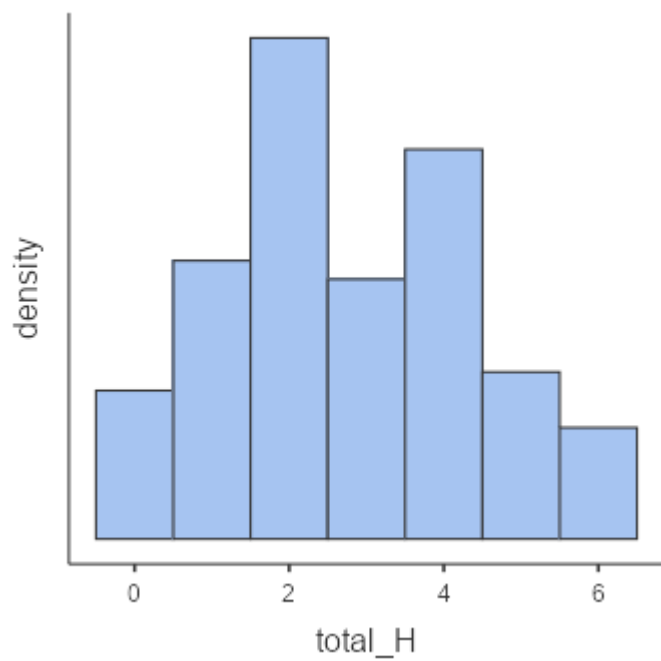
Appendix H

Study Two Jamovi Output

Table 10

Study two Bayesian Repeated Measures ANOVA Jamovi Output

Model Comparison

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model (incl. subject)	0.200	2.429e-6	9.716e-6	1.000	
DERS_Group	0.200	7.369e-7	2.948e-6	0.303	0.881
Content	0.200	0.679	8.457	279508.660	1.096
DERS_Group + Content	0.200	0.226	1.165	92856.028	1.153
DERS_Group + Content + DERS_Group ✳ Content	0.200	0.096	0.423	39344.026	1.842

Table 11

Study two Analysis of Effects table from the Bayesian Repeated Measures ANOVA Jamovi

Output

Analysis of Effects

Effects	P(incl)	P(incl|data)	$BF_{Inclusion}$
DERS_Group	0.600	0.321	0.315
Content	0.600	1.000	210581.222
DERS_Group ✳ Content	0.200	0.096	0.423

Table 12

Study two Bayesian independent samples t-test examining mean differences between low and high emotional content dilemmas and utilitarian response rate

Bayesian Independent Samples T-Test

	BF_{10}	error %
UtilRate	0.272	0.035

Table 13

Study two Bayesian independent samples t-test group descriptive statistics

Group Descriptives

	Group	N	Mean	SD	SE	95% Credible Interval Lower	95% Credible Interval Upper
UtilRate	Strong	55	6.218	2.514	0.339	5.538	6.898
	Weak	45	6.644	3.163	0.472	5.694	7.595

Figure 2

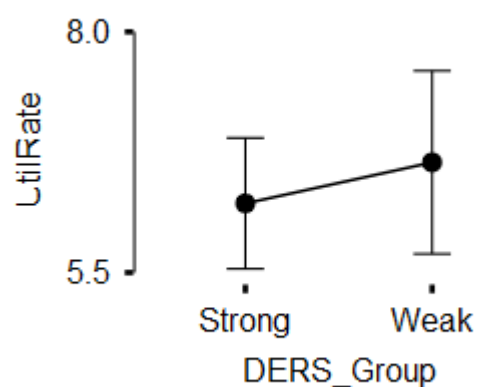*Study two Bayesian independent samples t-test descriptive plot*

Table 14

Study 2: Estimated marginal means of the interaction between DERS30 group and dilemma emotional content

Estimated Marginal Means - Content ＊ DERS_Group

DERS_Group	Content	Mean	SE	95% Confidence Interval	
				Lower	Upper
Strong	Low	3.636	0.210	3.219	4.054
	High	2.582	0.220	2.146	3.018
Weak	Low	3.667	0.233	3.205	4.128
	High	2.978	0.243	2.496	3.460

Figure 3

Study two mean differences in utilitarian response rate split by dilemma emotional content
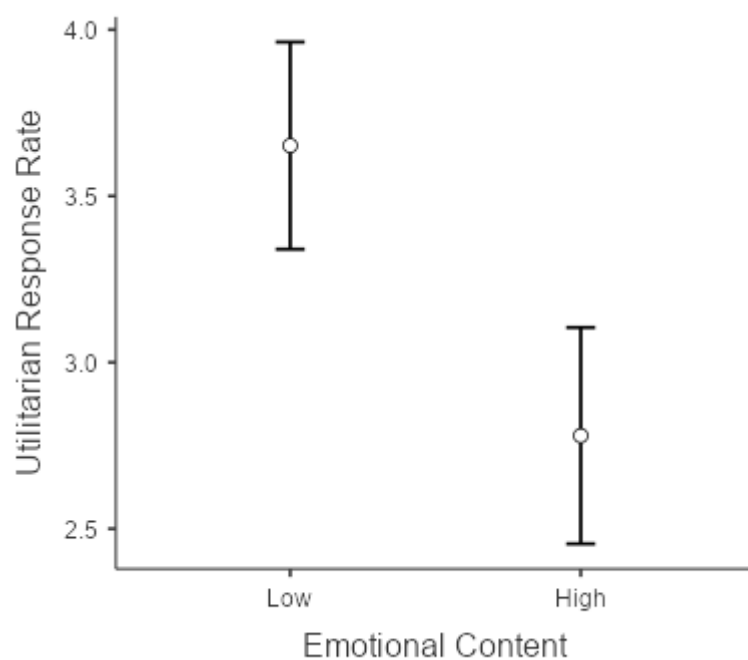
Appendix I

Study Two Regression Analysis

Table 15

Model fit measures for the regression analysis examining the relationship between

DERS30   scores and utilitarian responding to high conflict moral dilemmas

Model Fit Measures

			Overall Model Test			
Model	**R**	**R²**	**F**	**df 1**	**df2**	**p**
1	0.240	0.058	5.996	1	98	0.016

Table 16

Model coefficients for the relationship between DERS30 scores and utilitarian responding to

high conflict moral dilemmas

Model Coefficients - total_H

Predictor	**Estimate**	**SE**	**t**	**p**
Intercept	1.131	0.684	1.653	0.101
DERS	0.027	0.011	2.449	0.016