



Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Insecure and insensitive: Avoidant and anxious attachment predict less concern for others in sacrificial moral dilemmas

Heather M. Maranges^{a,*}, Susan K. Chen^b, Paul Conway^c^a Program for Leadership and Character and Department of Psychology, Wake Forest University, United States of America^b Department of Psychology, University of Utah, United States of America^c Department of Psychology, University of Portsmouth, United Kingdom

ARTICLE INFO

Keywords:

Morality
Sacrificial dilemmas
Process dissociation
Avoidant attachment
Anxious attachment

ABSTRACT

Developmentally calibrated, adult attachment guides social decision making. We examined how insecure attachment styles relate to complex social decisions—moral dilemmas. Prior work failed to dissociate deontological (harm-rejecting) from utilitarian (outcome-maximizing) decisions, treating them as inversely related. Using process dissociation, we found avoidant attachment predicted less harm rejection—partially through lower empathic concern—whereas anxious attachment was not associated with moral responses across two samples (Study 1). Measuring attachment via inclusive multi-scale composites, we replicated the finding that people high in avoidance rejected harm less often, and also found that people high in anxious attachment rejected harm and maximized wellbeing less often (Study 2, preregistered). These relationships were mediated by lower empathic concern, lower desire to help others, and higher need to belong. Insecure attachment, whether avoidant or anxious, may distract from the emotional and moral concerns involved in avoiding harming others and increasing their wellbeing.

1. Introduction

For humans, social relationships are central to survival. Strong social ties facilitate cooperation and provide diverse benefits, including physical and emotional resources (Baumeister & Leary, 1995). Human social and emotional functioning is shaped by early relationships, namely, with caregivers, and these are the basis of adult attachment (Feeney & Noller, 1990; Hazan & Shaver, 1987; Mikulincer & Shaver, 2003, 2007). In particular, neglectful or punishing caregiving may engender an intense need for independence, lower empathic concern, and social disconnectedness—avoidant attachment. Inconsistent caregiving may engender intense fear of abandonment, need for social approval, and high empathic concern—anxious attachment (Mikulincer & Shaver, 2003, 2007).

Prior work has linked attachment to moral decisions with clear-cut right and wrong responses (e.g., Gillath et al., 2005; Kogut & Kogut, 2013). However, many decisions in relationships and life feature competing moral norms. For example, sacrificial moral dilemmas entail competition between two moral concerns—to not harm others (consistent with *deontological* ethics) and to maximize total wellbeing (consistent with *utilitarian* ethics). Moral dilemma research suggests that a

confluence of processes, including affective reactions to harm, cognitive evaluations of outcomes, and concern for the group drives decisions (e.g., Amit & Greene, 2012; Bartels, 2008; Conway et al., 2018; Conway & Gawronski, 2013; Gleichgerrcht & Young, 2013; Greene et al., 2004; Li et al., 2018; Moore et al., 2008; Reynolds & Conway, 2018) and these processes are shaped by early experiences (Maranges et al., 2021).

The present investigation examined how insecure attachment styles relate to responses to moral dilemmas, across three studies. Prior work examining this question (e.g., Robinson et al., 2015) treated deontological and utilitarian decisions as inversely related—potentially obscuring true associations between attachment style and dilemma decisions. To overcome this limitation, we employed Process dissociation to assess harm-rejection and outcome-maximization tendencies independently (Conway & Gawronski, 2013).

1.1. Attachment

Early experiences with caregivers shape socioemotional development and how individuals form and maintain relationships later in life (Bowlby, 1982). These patterns of socioemotional functioning can be considered *secure* or *insecure* (Bowlby, 1982; for reviews, see Mikulincer

* Corresponding author at: Department of Psychology and Program for Leadership and Character, Winston-Salem, NC 27109, United States of America.
E-mail address: marangeh@wfu.edu (H.M. Maranges).

<https://doi.org/10.1016/j.paid.2021.111274>

Received 12 April 2021; Received in revised form 28 August 2021; Accepted 15 September 2021

Available online 27 September 2021

0191-8869/© 2021 Elsevier Ltd. All rights reserved.

& Shaver, 2003, 2007). Secure attachment results from the presence of consistent parental warmth, attention, and support from caregivers, whereas insecure attachment results from their absence (Mikulincer & Shaver, 2003, 2007). Specifically, *anxious attachment* results from emotionally inconsistent or unavailable caregiving. People with anxious attachment worry that they will be abandoned by (Hazan & Shaver, 1987), seek proximity with (Bowlby, 1982), and depend on close others (Feeney & Noller, 1990). In contrast, *avoidant attachment* results from emotionally punishing or chronically unavailable caregiving (Bowlby, 1982). People with avoidant attachment experience discomfort with intimacy (Feeney & Noller, 1990), suppress negative emotions and cognitions related to rejection or neglect (Mikulincer & Shaver, 2003, 2007), and seek autonomy and independence from others (Hazan & Shaver, 1987).

Such constellations of dependent or distant emotional patterns influence the way people experience and navigate their social relationships. For example, in close relationships, people with anxious attachment demonstrate accurate readings of their social partners' emotions (Simpson et al., 2011), heightened sensitivity to conflict (Campbell et al., 2005), and excessive efforts to increase intimacy (Brennan & Shaver, 1995). Conversely, people with avoidant attachment fail to accurately detect their social partners' feelings (Simpson et al., 2011), attend to their partners' needs (Feeney & Collins, 2001), and cultivate intimacy (Feeney & Noller, 1990). In sum, people higher in anxious attachment display intense emotional concern about their social partners, whereas people higher in avoidant attachment emotionally distance themselves from their social partners.

1.2. Attachment and morality

Approaches to social relationships go hand-in-hand with approaches to moral decision making (e.g., Koleva et al., 2014; Robinson et al., 2015). For example, feelings of social connectedness enhance moral concern for the group (Lucas & Livingston, 2014), and concern for the group influences what people find morally acceptable (Rai & Fiske, 2011). If attachment styles influence relationships and concern for others, then attachment styles should also influence how people approach moral decisions—and they do.

Anxious attachment predicts heightened moral concerns focused on harm and fairness, and this is mediated by higher emotional concern for others (Koleva et al., 2014). More, people high (vs. low) in anxious attachment appear motivated by the reward of social approval to help others (Gillath et al., 2005), to volunteer for non-profit organizations (Gillath et al., 2005), and to donate more money to identified victims in vulnerable situations (Kogut & Kogut, 2013).

In contrast, avoidant attachment is associated with lower emotional and, in turn, moral concern for other people (Koleva et al., 2014). People with avoidant attachment remain emotionally distant even when their partners require support (Shaver et al., 2010), donate less to charities that evoke emotional reactions (Richman et al., 2015) and to both identified and unidentified victims in vulnerable situations (Kogut & Kogut, 2013), and are less likely to volunteer their time (Gillath et al., 2005). Attachment clearly contributes to moral decision making. Less clear is how attachment contributes to moral decisions in which multiple moral considerations can be brought to bear—moral dilemmas. The current work aims to add clarity to prior work (Robinson et al., 2015) in examining this association.

1.3. Moral dilemmas

Sacrificial moral dilemmas are ethical conundrums wherein causing harm maximizes overall outcomes, or increases wellbeing or decreases suffering (Foot, 1967). Philosophically, accepting harm to maximize outcomes violates *deontological* ethics but upholds *utilitarian* ethics (Greene et al., 2004). Deontological ethics hold that the morality of an action (e.g., causing harm) is intrinsically wrong, regardless of

consequences (Kant, 1785; 1959). Utilitarian ethics—a variety of consequentialism—suppose that the morality of an action (e.g., causing harm) results from subsequent gains in overall wellbeing (Mill, 1861; 1998). Hence, theorists descriptively refer to decisions to cause harm as deontological and to accept harm as utilitarian; however, philosophical concerns rarely drive lay dilemma judgments (Conway et al., 2018).¹

Instead, lay judgments reflect a constellation of psychological processes. The dual process model suggests that emotional aversion to harming other people primarily underpins harm rejection, whereas cognitive deliberation about consequences primarily underpins harm acceptance to maximize outcomes (Greene et al., 2004). Indeed, emotional reactions to harm and concern for others contribute importantly to harm rejection, even harm that benefits many people. For example, deontological responding increases when individuals experience stressful (Starcke et al., 2012), affiliative, or empathic emotions (Strohinger et al., 2011), or vividly imagine harm (Bartels, 2008). Conversely, deontological responding decreases when emotional processing is hampered (Patil & Silani, 2014), harm is trivialized, emotional distance to victims increases (Petrinovich et al., 1993), or a busied visual working memory reduces harm visualization (Amit & Greene, 2012). In contrast, cognitive processes particularly contribute to utilitarian decisions to sacrifice to increase wellbeing. For example, increased working memory capacity (Moore et al., 2008), deliberative versus intuitive thinking (Bartels, 2008), and performance on the cognitive reflection test (Patil et al., 2021) predict utilitarian responses.

That said, there is more complexity to dilemma judgments. For example, some kinds of affective processing (e.g., reactions to witnessing suffering) increase both utilitarian and deontological responding, as do some kinds of cognitive processing (e.g., syllogistic reasoning; Conway et al., 2018; Reynolds & Conway, 2018; Byrd & Conway, 2019). Researchers have also identified other factors, including adherence to moral rules (Piazza & Landy, 2013) general inaction tendencies (Gawronski et al., 2017); and self-presentation concerns (Rom & Conway, 2018). Nonetheless, the dual process model is not so much incorrect as incomplete, and considerable evidence supports it.

1.4. Attachment and moral dilemmas

Only one paper to our knowledge examined the link between attachment and moral dilemma decisions (Robinson et al., 2015). Robinson et al. (2015) found that both anxious and avoidant attachment predicted more utilitarian versus deontological judgments and different socioemotional concerns underpinned such judgments. Specifically, high need to belong and empathy for the group mediated the positive relationship between anxious attachment and utilitarian decisions. In contrast, high discomfort with caregiving and lower levels of empathy for the victim mediated the positive relationship between avoidant attachment and utilitarian decisions. Theoretically, they suggested that anxiety was associated with higher utilitarian concerns, and avoidance was associated with lower deontological concerns. However, this work relied on conventional dilemma judgments, which cannot disentangle higher utilitarian from lower deontological responding, nor detect cases of suppression (i.e., when an attachment style predicts lower levels of both response tendencies). To clarify these findings, we used process dissociation.

Process dissociation (PD) has been widely employed (e.g., see Payne & Bishara, 2009; for details see supplemental materials, henceforth SM). PD requires not only incongruent classic dilemmas that pit one response tendency (harm-rejection) against another (outcome-maximization), but also parallel congruent dilemmas where the two response tendencies theoretically lead to the same outcome (i.e., causing harm cannot

¹ For example, lay people often report sacrificial harm is acceptable, but almost never say it is mandatory, which would be required if philosophical considerations drive judgments (Royzman et al., 2015).

maximize outcomes). Using a processing tree (see Fig. 1S in SM), researchers can algebraically estimate the degree to which each participant's responses align with deontological considerations (consistent harm-rejection) and utilitarian considerations (selective harm-acceptance only when harm maximizes outcomes) or with some other response pattern (e.g., accepting harm that cannot maximize outcomes).

If Robinson and colleagues are correct, analyses should demonstrate that attachment anxiety predicts higher levels of utilitarian but not deontological responding, and avoidance predicts lower levels of deontological but not utilitarian responding. In contrast, we predicted that both attachment dimensions would be associated with deontological response tendencies, but in different directions. Because emotional concern for victims primarily contributes to deontological decisions (Conway & Gawronski, 2013; Greene et al., 2004) and emotional concern for others is heightened with anxious and dampened with avoidant attachment (Koleva et al., 2014), we expect attachment anxiety to be positively associated and attachment avoidance to be negatively associated with deontological inclinations. Furthermore, we expected that heightened other-focused emotional tendencies would mediate the relationship between anxious attachment and deontological responding, whereas blunted other-focused emotional tendencies would mediate the relationship between avoidant attachment and deontological responding.

We did not have strong predictions about the relationships between attachment dimensions and utilitarian inclinations. Decisions to accept harm to maximize outcomes reflect factors such as cognitive deliberation (e.g., Patil et al., 2021) and concern for the group (Conway et al., 2018; Lucas & Livingston, 2014). Neither anxious nor avoidant attachment feature (dis)advantages in cognitive consideration of outcomes, to our knowledge. Although anxious attachment may be related to concerns about harming others (Koleva et al., 2014), we are unsure if this will manifest as maximizing outcomes given people with anxious attachment appear motivated to treat others in ways that reap social rewards (Gillath et al., 2005), as there are serious social costs to accepting sacrificial harm (Everett et al., 2018). Avoidant attachment predicts weaker concern about others' wellbeing, harm, and fairness (Koleva et al., 2014). Whereas it seems plausible this will reduce concern for specific individuated victims, it remains less clear whether this will translate into reduced concern for the abstract, less emotion-laden concept of group well-being.

1.5. The current work

In Study 1, we measured anxious and avoidant attachment, empathic concern, and moral dilemma decisions. We expected anxious attachment to positively and avoidant attachment to negatively predict deontological responding through higher and lower empathic concern, respectively. (See SM for a direct replication of Study 1). In Study 2 (preregistered), we replicated and extended the prior studies. Specifically, we included a composite of multiple measures of adult attachment to ensure results of Study 1 were not an artifact of a single scale. Furthermore, we replicated and extended Robinson et al. (2015)'s mediational insights: we tested whether empathic concern, need to belong, concerns for the group and the individual, discomfort with helping, and emotional control partially accounted for the relationship between insecure attachment and dilemma responses. Across all studies, we report all measures, conditions, and exclusions, and followed APA and our institution's IRB ethical guidelines; all participants gave consent and received debriefing.

2. Study 1

2.1. Method

2.1.1. Participants

G*power analysis indicated that for the predicted effect size $r = 0.25$,

we needed 100 participants to reach 90% power (Faul et al., 2007).² To increase power in light of attention check failures, 150 students at a large public university completed an online survey. We excluded participants who failed an attention check ($n = 33$; Oppenheimer et al., 2009) or to answer all dilemmas ($n = 1$), leaving a final sample of 116 individuals (90 women, 26 men; $M_{age} = 19.81$, $SD = 1.21$; 73 White, 26 Hispanic or Latino, 11 Black, 28 Asian, 4 multiracial, 1 Middle Eastern).

2.1.2. Procedure and materials

Participants completed measures of attachment, empathic concern, moral dilemmas, and demographics.

2.1.2.1. Attachment. Participants responded to the 40-item Attachment Style Questionnaire (ASQ, Feeney et al., 1994) on scales from 1 (*totally disagree*) to 7 (*totally agree*), which refers to relationships in general rather than romantic or close relationships. Sample avoidance items include *While I want to get close to others, I feel uneasy about it* and *Achieving things is more important than getting on with others* ($M = 3.71$, $SD = 0.85$, $\alpha = .84$). Anxiety items include *It is important to me that others like me* and *I worry a lot about my relationships* ($M = 3.75$, $SD = 0.86$, $\alpha = .86$).

2.1.2.2. Empathic concern. Participants responded to seven items (Davis, 1983), such as *When I see someone being taken advantage of, I feel kind of protective toward them*, on scales from 1 (*does not describe me well*) to 7 (*describes me very well*; $M = 5.41$, $SD = 0.86$, $\alpha = .78$).

2.1.2.3. Moral dilemma battery. Participants responded to two nearly identical sets of 10 moral dilemmas in a fixed random order (Conway & Gawronski, 2013). Each dilemma detailed a scenario and action that would harm a target to produce a consequence, which either maximized overall outcomes or did not. Participants responded to each dilemma with whether they find each potential action appropriate (*yes, I find this appropriate vs. no, I find this inappropriate*).

Ten *incongruent* dilemmas described scenarios in which causing harm could maximize overall outcomes, as in conventional high-conflict dilemmas (Koenigs et al., 2007). In these cases, harm is relatively easy to justify on utilitarian grounds (e.g., torturing a man to stop a bomb from killing and maiming many). On these dilemmas, decisions to reject harm, consistent with deontological ethics, are incongruent with decisions to maximize outcomes, consistent with utilitarian ethics. Each incongruent dilemma has a congruent version. *Congruent* dilemmas describe similar scenarios, but harm does not maximize overall outcomes. In these cases, harm is relatively difficult to justify on utilitarian grounds, such that avoiding harm is congruent with both deontological and utilitarian ethics (e.g., torturing a man to stop a paint bomb that will make a mess). On congruent dilemmas, people may accept harm for other, amoral or immoral reasons, such as sadism or self-interest. Therefore, PD disentangles outcome maximizing harm, which is consistent with utilitarian ethics, from outcome-insensitive harm, which cannot reasonably be justified on utilitarian grounds. See SM for how to calculate the deontological (D) and utilitarian (U) parameters via a processing tree.

The deontology and utilitarian parameters are most often not significantly correlated but sometimes weakly positively correlated with each other and tend to correlate with conventional relative dilemma judgments (see meta-analysis by Friesdorf et al., 2015). PD also provides a conventional relative judgment score: the number of times people accept outcome-maximizing harm on incongruent dilemmas, with higher scores reflecting more utilitarian/fewer deontological responses,

² We decided a priori on an expected r of 0.25 given that (a) our measure of deontological responding may be more sensitive than Robinson et al.'s (2015) findings (r s around 0.15), and (b) measures of constructs related to attachment style (e.g., empathic concern, childhood unpredictability) correlate with the parameters much more highly (i.e., r s = 0.3–0.5).

Table 1
Correlations among variables, Study 1.

	1	2	3	4	5	6	7
1. Conventional Judgments	–						
2. Deontology Parameter	-.72***	–					
3. Utilitarian Parameter	.61**	.08	–				
4. Avoidant Attachment	.12	-.20*	-.03	–			
5. Anxious Attachment	-.05	.02	-.01	.59***	–		
6. Empathic Concern	-.16†	.24*	.02	-.38***	-.07	–	
7. Gender (w = 1, m = 2)	.23*	-.23*	.09	.04	-.13	-.33***	–
8. Age	.05	.02	.10	.03	.05	.08	-.09

Significant correlations are bolded. †*p* < .10, **p* < .05, ***p* < .01, ****p* < .001.

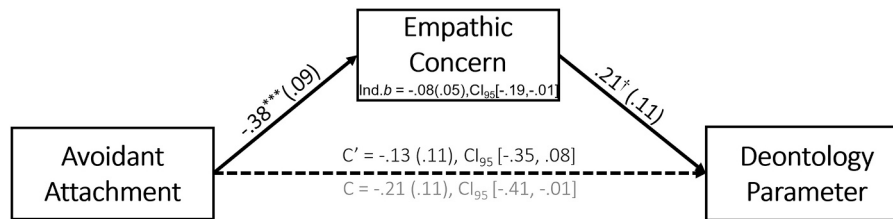


Fig. 1. Empathic concern mediates between avoidant attachment and deontological responding.

Note: Solid lines indicate significant effects, dotted lines indicate non-significant effects. †*p* < .10, **p* < .05, ***p* < .01, ****p* < .001.

paralleling Robinson et al.'s (2015) operationalization.

2.2. Results and discussion

2.2.1. Conventional analyses

We correlated conventional dilemma judgments (higher scores coded more utilitarian, lower scores coded more deontological) with avoidant and anxious attachment, and empathic concern, paralleling Robinson et al.'s (2015) analyses. See Table 1. Conventional judgments did not correlate significantly with avoidant and anxious attachment and were not significantly related to empathic concern, in contrast to Robinson et al.'s findings. It is unclear, however, whether anxious or avoidant attachment are merely unassociated or are associated with these response tendencies in a way that obscures associations with the conflated measure.

2.2.2. Process dissociation analysis

We tested our primary predictions that avoidant attachment would negatively and anxious attachment would positively predict the D parameter (Table 1). As expected, avoidance negatively correlated with D: people higher, versus lower, in general avoidant attachment less often rejected harm. Avoidance was not related to the U parameter. Here and across studies, we corroborate correlations with regression analyses controlling for the other parameter, the other attachment style, age, and gender. Regression analyses replicated correlational patterns. Avoidance predicted the D parameter, *b* = -0.31, *SE* = 0.12, *t*(109) = -2.52, *p* = .013, 95% CI [-0.56, -0.07]; but not the U parameter, *b* = -0.05, *SE* = 0.13, *t*(109) = -0.34, *p* = .73, 95% CI [-0.30, 0.21].³ Contrary to predictions, anxious attachment was not associated with either parameter: D parameter, *b* = 0.18, *SE* = 0.13, *t*(109) = 1.39, *p* = .167, 95% CI [-0.08, 0.45]; U parameter, *b* = -0.002, *SE* = 0.14, *t*(109) = -0.02, *p* = .987, 95% CI [-0.27, 0.21].

2.2.3. Mediation analysis

Finally, we tested whether avoidant attachment predicted lower

³ For all regression and mediation analyses, both parameters are standardized.

deontological responding indirectly through lower empathic concern. We conducted a 10,000 bootstrapping resample mediation analysis using Model 4 PROCESS Macro (Preacher & Hayes, 2004), controlling for U. As expected and illustrated in Fig. 1, avoidant attachment predicted less harm aversion (D parameter) through lower empathic concern, *b* = -0.08, *SE* = 0.05, 95% CI [-0.19, -0.01], accounting for about 38% of the total effect.

2.2.4. Discussion

This study is possibly the first to test whether attachment styles uniquely relate to deontological and utilitarian response tendencies on sacrificial moral dilemmas by using PD. Prior work (Robinson et al., 2015) conflated these tendencies and found that both avoidant and anxious attachment were positively related to utilitarian responses. Using a more expansive and varied set of dilemmas, we replicated the link between conventional measure and avoidant, but not anxious, attachment. However, we did not replicate Robinson's finding that insecure attachment styles predict utilitarian judgments. Instead, we found that avoidant attachment was related to the deontological, not utilitarian, responding—partially through lower levels of empathic concern. Finally, anxious attachment was not related to either utilitarian or deontological decisions. We replicate this pattern with a non-student sample (see SM). Still, the first study employed only one attachment measure (which Robinson et al. used) that may be too general to capture people's socioemotional functioning with respect to specific others. We address this limitation in Study 2.

3. Study 2

Study 2 (aspredicted.org/#26081) replicated and extended Study 1. We included several measures of attachment to test whether our results generalize to superordinate operationalizations, assessed via composites reflecting attachment across more diverse types of relationships (e.g., in general, with close others, with romantic partners). We also included additional candidate mediators to understand the socioemotional tendencies that help explain the relationship between avoidant attachment and lower deontological responding. Building on the attachment and moral dilemma literatures, we expected that lower empathic concern (as in prior studies), comfort with helping others, need to belong, concerns

for the individual and group, and higher emotional control would partially account for that relationship.

Recall that Robinson et al. (2015) found that low empathy/concern for the victim and high discomfort with caregiving mediated the positive relationship between avoidant attachment and utilitarian decisions, which likely picked up on lower deontological responding (per our first study). Indeed, empathic concern, which entails emotional consideration of others' wellbeing, contributes to more harm-aversion in (i.e., deontological) moral decision making (e.g., Conway & Gawronski, 2013; Reynolds & Conway, 2018; Maranges et al., 2021), and avoidant attachment is characterized by a lack of this concern (e.g., Koleva et al., 2014; Shaver et al., 2010). Similarly, the desire to and tendency to help others is associated with more deontological responding (e.g., Maranges et al., 2021), but is blunted in avoidant attachment (e.g., Gillath et al., 2005; Kogut & Kogut, 2013; Richman et al., 2015; Shaver et al., 2010). Moreover, not only do people with higher levels of avoidant attachment demonstrate lower levels of need to belong (i.e., prioritize autonomy and independence from others, Hazan & Shaver, 1987), but also control their experience and expression of negative emotions (Mikulincer & Shaver, 2003, 2007). Feeling connected to others and experiencing negative feelings about other people's harm are drivers of deontological responding, too (e.g., Conway & Gawronski, 2013; Patil & Silani, 2014; Petrinovich et al., 1993; Strohminger et al., 2011).

In summary, we expect that lower empathic concern, comfort with helping others, need to belong, concerns for the individual and group, and higher emotional control would partially account for the association between avoidant attachment and deontological responding. Robinson et al. (2015) also found that high need to belong mediated the positive relationship between anxious attachment and utilitarian vs. deontological decisions, so we explore mediation by these factors in the relationships between anxious attachment and deontological and utilitarian responding.

3.1. Method

3.1.1. Participants

Power analysis for effect sizes of 0.26⁴ for the X→M and M→Y pathways suggested 162 people would be needed to reach 80% power (Fritz & MacKinnon, 2007). To increase power, and due to high levels of attention check failures, we planned to collect data from at least 260 participants via Amazon's Mechanical Turk; 302 people responded (and another 36 people partially responded). After removing people who failed an attention check ($n = 91$) or to answer all dilemmas ($n = 40$, 1 who failed the attention check), the final sample included 247 individuals (131 women, 115 men, 1 nonbinary; $M_{age} = 35.48$, $SD = 10.39$; 186 White, 39 Black, 14 Hispanic or Latino, 9 Asian).

3.1.2. Procedure and materials

Participants reported empathic concern on a 5-point ($M = 3.80$, $SD = 0.75$, $\alpha = .77$) and the Attachment Style Questionnaire on a 7-point scale (this time the short form, ASQ-SF; Karantzas et al., 2010; avoidant, $M = 3.62$, $SD = 0.87$, $\alpha = .87$; anxious, $M = 3.15$, $SD = 0.94$, $\alpha = .86$). Participants responded to additional measures of attachment (see below) and candidate mediators (see below). Participants then responded to the moral dilemmas (i.e., described in Study 1) before providing demographics.

3.1.2.1. Attachment measures. To reduce multicollinearity concerns in the mediation analysis, we z-scored each questionnaire score, and computed the average of avoidant and anxious items from all scales, as all attachment measures correlated $r > 0.5$. We describe each measure

⁴ This is between a small and medium effect, based on the assumption that our other mediators will be more weakly associated with avoidance and D parameter than empathic concern.

below.

Romantic attachment categories (RAC). Participants selected one of three choices that "best describes how [they] feel in romantic relationships" (note that the items are truncated here): (a) *I am somewhat uncomfortable being close to others...*, (b) *I find it relatively easy to get close to others...*, (c) *I find that others are reluctant to get as close as I would like...* (Hazan & Shaver, 1987). Participants were classified as avoidant if they chose the first (33%), secure if they chose the second (52%), and anxious if they chose the last description (15%).

Relationships questionnaire (RQ). Participants responded to a two-part measure of adult attachment. In the first part, they selected the choice that best describes them (note that the items are truncated here): (a) *It is easy for me to become emotionally close to others...*, (b) *I am uncomfortable getting close to others...*, (c) *I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like...*, and (d) *I am comfortable without close emotional relationships...* In the second part, participants rated the extent to which each of the relationship styles above corresponds to their general relationship style on a scale from 1 (*disagree strongly*) to 7 (*agree strongly*; Bartholomew & Horowitz, 1991). We calculated avoidance scores by taking the continuous rating of the first (a) and last type (d) for people who selected those types in part one ($M = 4.68$, $SD = 1.78$) and calculated anxious scores by taking the continuous scores of the third type (c) for people who selected that in part one ($M = 3.72$, $SD = 1.95$).

Experiences in close relationships (ECR-SF). Participants responded to 12 items (Fraley et al., 2006; Wei et al., 2007), such as *I need a lot of reassurance that I am loved by my partner* (anxious) and *I am nervous when partners get too close to me* (avoidant), on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). We averaged across items (avoidant, $M = 3.37$, $SD = 0.97$, $\alpha = .78$; anxious, $M = 3.81$, $SD = 1.40$, $\alpha = .82$).

3.1.2.2. Candidate mediators. Participants responded to four measures that captured potential mediating socioemotional processes, which we decided a priori would be z-scored and averaged if $r > 0.5$.

Need to belong. Participants responded to 10 items (Leary et al., 2013), such as *I try hard not to do things that will make other people avoid or reject me* and *If other people don't seem to accept me, I don't let it bother me* (reversed) on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*; $M = 3.10$, $SD = 0.65$, $\alpha = .73$).

Discomfort with helping. Participants responded to the 10-item caregiving subscale (Shaver et al., 2010), with items such as *I don't often feel an urge to help others* and *I have no problems helping people who are troubled or distressed* (reversed) on a scale from 1 (*not at all descriptive of me*) to 7 (*very descriptive of me*; $M = 3.16$, $SD = 1.57$, $\alpha = .95$). This measure and need to belong correlated at -0.71 so we z-scored and averaged them to create a composite (described in the results section. No other mediators correlated above 0.5).

Emotional suppression. Participants rated the extent to which each of 12 items described how they generally react to their negative emotions (i.e., anger, fear, sadness; Watson & Greer, 1983), such as *I keep quiet* and *I refuse to argue or say anything*, on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*; $M = 4.40$, $SD = 1.08$, $\alpha = .93$).

Concerns for the group and the individual. As in Robinson et al.'s (2015) second study, participants responded to four questions on a scale from 1 (*didn't affect my judgments at all*) to 7 (*affected my judgments strongly*). Two captured their concern for the individual who might be harmed, e.g., *When answering the dilemmas, how much were your judgments affected by the welfare of the person being sacrificed?* ($M = 5.15$, $SD = 1.34$, $\alpha = .68$). Two reflected concern for the group, e.g., *When answering the dilemmas, how much were your judgments affected by the welfare of all the people involved as a whole?* ($M = 5.85$, $SD = 1.19$, $\alpha = .79$).

3.2. Results and discussion

First, we examine the correlations among the attachment styles and socioemotional functioning mediators (i.e., empathic concern, need to belong, discomfort with helping others, emotional control, concerns for the individual and group). Second, we assess associations between the conventional measure and attachment dimensions as well as mediators. Next, we test to what extent the comprehensive attachment dimensions and the mediators relate to the moral dilemma decision inclinations (i.e., U and D). Finally, we model the mediation pathways from anxious and avoidant attachment to Utilitarian and Deontological responding through the mediators simultaneously. Associations among all variables can be found in [Table 2](#). For associations between each attachment subscale and the mediators and PD parameters as well as the control analyses (i.e., assessment of associations over and above age, gender, the other attachment dimension, and the other PD parameter), see SM.

3.2.1. Attachment and socioemotional functioning

3.2.1.1. Avoidant attachment. Avoidant attachment was positively related to discomfort with helping and emotion suppression but negatively related to empathic concern—suggesting that people high (vs. low) in avoidant attachment are less willing to help others, experience and display emotions, and demonstrate emotional concern for others. Avoidant attachment was not associated with need to belong, concern for the individual, or concern for the group.

3.2.1.2. Anxious attachment. As expected, anxious attachment was positively associated with need to belong, such that people higher in anxious attachment experience a more intense desire for affiliation with others than those lower in anxious attachment. Unexpectedly, anxious attachment was negatively associated with empathic concern and positively associated with discomfort with helping others and emotion suppression. That is, the more anxiously attached people are, the less they experience emotional consideration of others, desire to help others, and show their negative emotions. Anxious attachment was not correlated with either concern for the individual or for the group.

3.2.2. Conventional dilemma analysis

Second, we computed correlations between conventional dilemma judgments and avoidant and anxious attachment style composites as well as with the potential mediators (see [Table 2](#)). As in Study 1, conventional judgments correlated positively with avoidance. New to this study, and consistent with Robinson et al.'s findings, conventional judgments also correlated positively with anxious attachment. However, this does not relay whether people high in avoidance and anxiety prioritize harm avoidance less or outcome maximization more, or both to different extents. Replicating Study 1, empathic concern was negatively related to conventional judgments. In this study, discomfort with helping, need to belong, emotion suppression and concern for the group were positively related to conventional judgments, or more utilitarian versus deontological responding. Conventional judgments were not correlated with concern for the individual.

3.2.3. Process dissociation analysis

3.2.3.1. Attachment. Next, we examined the associations between anxious and avoidant attachment composites and the PD parameters.

Avoidance. Consistent with predictions and Study 1, the avoidant attachment composite was negatively related to the D parameter. That is, on an inclusive measure of attachment, avoidantly attached

people appear to prioritize rejection of harm less than people who are relatively more securely attached. Avoidant attachment was also marginally correlated with the U parameter.

Anxiety. Contrary to predictions and findings in Study 1, anxious attachment was negatively related to both parameters. That is, people with higher anxious attachment were both less harm-averse and less outcome-maximizing. This fits with work suggesting people who experienced unpredictable childhoods experience less empathy and therefore less concern about harm to and outcomes for others on moral dilemmas (Maranges et al., 2021). However, this is inconsistent with Robinson et al.'s arguments that anxious attachment is associated with more concern for the group and therefore higher U.

3.2.3.2. Socioemotional individual differences. We next assessed the associations between the PD parameters and potential mediators. Empathic concern was significantly positively related to D and positively to U, but this did not reach conventional levels of significance: people who are more emotionally considerate of others more often reject harm and somewhat more often maximize outcomes. Unexpectedly, need to belong was negatively associated with both parameters. Put another way, the stronger people's desire to be accepted by others, the less they prioritized rejecting harm or maximizing outcomes. This pattern is similar to that of anxious attachment and fits with work indicating that intense need to belong predicts social comparison and focus on the self, which predict less deontological and utilitarian responding (e.g., Fleischmann et al., 2021; Reynolds & Conway, 2018). Presumably, that focus on the self precludes focus on the wellbeing of others, both as individuals and groups.

Discomfort with helping was negatively associated with both parameters; people who felt highly uncomfortable, versus comfortable, helping others were less likely to avoid harm and maximize outcomes. The tendency to suppress negative emotions was negatively associated with the D parameter, but unrelated to the U parameter. Neither concern for the individual nor for the group were correlated with the D parameter. In contrast, concern for the individual was negatively and concern for the group was positively associated with U parameter. This fits with Robinson et al.'s findings and suggests that specific concerns about harm to an individual or the group contribute to moral calculus when deciding whether harm is worth maximizing outcomes (U), rather than deciding about harm regardless of outcomes (D).

3.2.3.3. Mediation analyses. Finally, we tested whether empathic concern, need to belong, concerns for the individual and the group, emotion suppression, and discomfort with helping simultaneously accounted for a significant portion of indirect variance between anxious and avoidant attachment styles and the D and U parameters. As pre-registered, we calculated correlations among the mediators and combined those which correlated above 0.5 (see [Table 2](#)). The only correlation to meet this criterion was a negative association between empathic concern and discomfort with helping. Accordingly, we reverse coded discomfort with helping, z-scored both scales, and averaged across the two to produce an empathic concern/comfort with helping factor. We then conducted four 10,000 bootstrapping resample simultaneous mediation analyses using Model 4 PROCESS Macro (Preacher & Hayes, 2004)—one for each parameter with each attachment style per our preregistration.

Avoidant attachment. Empathic concern/desire to help others significantly accounted for variance from avoidant attachment to D (see Fig. 3S in SM), $b = -0.16$, $SE = 0.05$, 95% CI $[-0.28, -0.06]$. With controls, this held, $b = -0.10$, $SE = 0.05$, 95% CI $[-0.19, -0.01]$. We

Table 2
Correlations among variables, Study 2.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Conventional judgments	–											
2. Deontology parameter	–.85**	–										
3. Utilitarian parameter	.20**	.28***	–									
4. Avoidant attachment	.16*	–.20**	–.12†	–								
5. Anxious attachment	.19**	–.27**	–.20**	.28***	–							
6. Gender (<i>w</i> = 1, <i>m</i> = 2)	.18**	–.17**	.01	–.03	.03	–						
7. Age	–.23**	.25***	.04	–.06	–.20**	–.06	–					
8. Empathic concern	–.18**	.20**	.11†	–.42***	–.21**	–.18**	.04	–				
9. Discomfort with helping	.23***	–.32***	–.26***	.51***	.40***	.15*	–.11†	–.70***	–			
10. Need to belong	.15*	–.23**	–.23**	–.10	.54***	.07	–.17**	.09	.09	–		
11. Emotion suppression	.16*	–.19**	–.06	.48***	.19**	.06	–.10	–.34***	.38***	–.08	–	
12. Concern for individual	–.08	.01	–.18**	.07	.09	–.08	–.09	.24***	–.03	.18**	–.00	–
13. Concern for group	.14*	–.05	.18**	.02	–.01	–.14*	–.07	.28***	–.19**	.03	.06	.27***

Significant correlations are bolded. †*p* < .10, **p* < .05, ***p* < .01, ****p* < .001.

found a similar pattern for utilitarian inclinations (see Fig. 4S in SM), *b* = –0.11, *SE* = 0.05, 95% CI [–0.21, –0.01]. This suggests that people higher, versus lower, in avoidant attachment experienced less concern about the wellbeing and helping of others, which was associated with less concern about causing harm or maximizing outcomes on moral dilemmas.

Anxious attachment. We conducted the same analyses with anxious attachment as the outcome. Both empathic concern/desire to help others, *b* = –0.10, *SE* = 0.04, 95% CI [–0.19, –0.06], and need to belong, *b* = –0.14, *SE* = 0.05, 95% CI [–0.24, –0.05], carried significant indirect variance from anxious attachment to D (see Fig. 5S in SM). Similarly, both empathic concern/desire to help others, *b* = –0.07, *SE* = 0.03, 95% CI [–0.15, –0.02] and need to belong, *b* = –0.12, *SE* = 0.05, CI⁹⁵[–0.23, –0.03], partially accounted for the link between anxious attachment and the U parameter (see Fig. 6S in SM). That is, people higher, versus lower, in anxious attachment experience less concern for the wellbeing of or helping others and a higher need to belong, which predicts less harm rejection to individuals and maximization of wellbeing for the group.

3.2.3.4. Path analysis. In order to simultaneously model the associations between avoidant and anxious attachment and deontological and utilitarian response tendencies as mediated by the socioemotional functioning factors (i.e., empathic concern/comfort with helping others, need to belong, emotion concern, concern for the individual, and concern for the group) while controlling for age and gender, we employed structural equation modeling (SEM; namely, path analysis as all factors were measured, not latent).⁵ Using AMOS (version 27, Arbuckle, 2014), we modeled maximum likelihood estimates with means and intercepts estimated. See Fig. 2. This analysis replicated our simple mediation analyses: People higher in avoidant attachment were less harm-averse (deontological) and less outcome maximizing (utilitarian), and both associations were mediated by empathic concern/comfort with helping. Moreover, people with high levels of anxious attachment were less harm-averse (deontological) and less outcome maximizing (utilitarian), and these links were partially accounted for by less empathic concern/comfort with helping and more need to belong. We also found that people higher in avoidant attachment experience relatively low need to belong, which in turn predicted lower concerns about harm and outcome maximizing—i.e., weaker deontological and utilitarian tendencies. That pattern was only detectable when partialling out variance due to other predictors, mediators, and demographic controls.

3.2.4. Discussion

These findings support some and contrast with others of Robinson

and colleagues' Robinson et al. (2015) findings and underscore the importance of dissociating utilitarian and deontological judgments. Individuals may be concerned about both harm and outcomes, just one, or neither—and conventional dilemma judgment measures can obscure these patterns. We replicated the finding that people higher in avoidant attachment are less concerned about harm, consistent with deontology, but we also showed they are not more utilitarian. Moreover, we demonstrated that people with anxious attachment were less concerned about harm *and* about maximizing outcomes for others. In these cases, lower levels of empathic concern and willingness to help mediate the association between attachment and less other-focused moral decision making on dilemmas—a pattern of results which provides novel insights about the consequences of insecure attachment and antecedents of moral dilemma judgments.

4. General discussion

Early experiences calibrate the way people feel about and relate to other people, including when it comes to moral decision making when causing harm can save lives—sacrificial moral dilemmas (Maranges et al., 2021). One important system of social calibration is the attachment system. Avoidantly attached people evince an intense need for independence, lower empathic concern, and social disconnectedness, whereas those with anxious attachment demonstrate intense fear of abandonment, need for social approval, and attention to partners' emotions (Mikulincer & Shaver, 2007). We investigated how attachment styles predicted moral dilemma decision making.

Although Robinson et al. (2015) found that both avoidance and anxious attachment predict utilitarian decision making through decreased empathic concern and increased concern for the group, respectively, they used conventional dilemma judgments—conflating harm rejection and outcome maximization. To disentangle these two response tendencies, we used process dissociation. Across Studies 1 and 2, avoidantly attached people appeared to be more utilitarian, as assessed by conventional judgments, consistent with Robinson et al.'s findings. However, our use of PD clarified that this is due to avoidant individuals' lower deontological concerns compared to those of more securely attached individuals, with no link with utilitarian judgments.

The fact that Robinson and colleagues found a correlation between anxiety and conventional judgments, whereas we did not in Study 1, could reflect either reduced power (they sampled over 1000 people), the subset of questions they selected from the ASQ (whereas we measured the entire scale), or the specific dilemma pool they assessed which partially overlapped and partially diverged from the current dilemma battery. However, we replicated this finding in Study 2 using a larger sample and battery of attachment measures. Moreover, in Study 2, we find that attachment anxiety predicts both deontological and utilitarian responses, which would have been obscured without PD.

Furthermore, and in contrast to Robinson and colleague's findings,

⁵ We thank an astute reviewer for this suggestion.

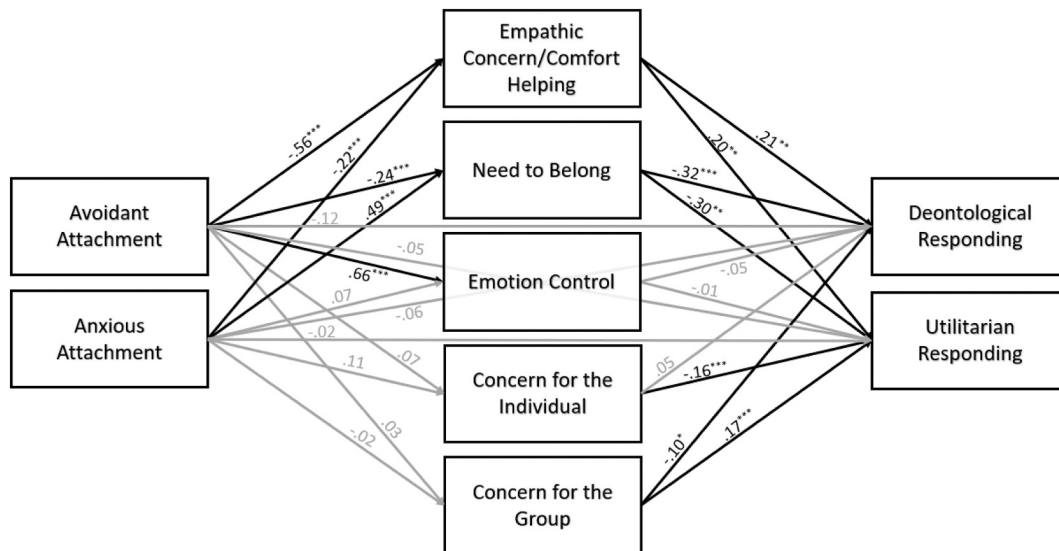


Fig. 2. Path Analysis, Study 2. Note: numerical values represent unstandardized regression weights. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

we find that people with avoidant or anxious attachment experience lower levels of empathic concern and willingness to care for others by their own actions, and, in turn, were less concerned about rejecting harm to others. More, people with anxious attachment were less concerned about the emotional wellbeing of and help to others, and, in turn, about maximizing outcomes for others. People high in anxious attachment also experience more intense feelings of needing to belong than people more securely attached, and this is associated with less concern about harming others (i.e., deontological responding). Consistent with past work, across studies, women displayed stronger deontological inclinations than men (Friedorf et al., 2015). Importantly, our results were robust to controlling for gender (also age, the other parameter and attachment dimension). These findings have implications for models of adult attachment and moral decision making.

4.1. Implications for attachment models

Avoidant and anxious attachment entail different socioemotional approaches to social relationships and decisions. These socioemotional processes are also brought to bear in one of the most important parts of social life: morality. The current work examined morality in terms of sacrificial moral dilemma decisions and highlights how anxious and avoidant attachment feature different patterns of activation. This has implications for broader social decision making.

Avoidant attachment predicted less harm avoidance across all three studies. The emotional deactivation strategies characteristic of avoidant attachment may chronically impede or decrease empathic responding even in morally difficult situations. This idea fits with a large body of work on avoidant attachment and attachment deactivation (Mikulincer & Shaver, 2003, 2007); whether these empathic responses manifest in broader social interactions involving harm is an avenue for future research.

Although anxious attachment features hyperactive emotional strategies, such as preoccupation with and sensitivity to signs of abandonment from close others (Mikulincer & Shaver, 2003, 2007), it was unrelated in Study 1, but negatively related to harm avoidance and outcome maximization in Study 2. Perhaps empathic concern in attachment anxiety requires a specific target to activate emotional

consideration. In line with previous work, people with anxious attachment may find it difficult to attend to the wellbeing of other people due to their preoccupation with one person (e.g., Collins & Feeney, 2000; Feeney & Hohaus, 2001). Indeed, we found that attachment anxiety predicts less harm aversion and outcome maximization through higher need to belong. Need to belong prompts social comparison and a focus on the self, which predict less deontological and utilitarian responding (e.g., Fleischmann et al., 2021; Reynolds & Conway, 2018).

Finally, had we not used composite measures of attachment in Study 2, we may not have been able to detect associations between anxious attachment and harm aversion and outcome maximization—underscoring the value of employing composite measures. Unlike the ASQ (which captures relationships more broadly; Feeney et al., 1994) used in Study 1, the measures used in Study 2 involved more specific interpersonal targets, e.g., close others, romantic partners. If anxious attachment is target-specific, then it may explain why we were able to detect an effect when employing a diverse range of attachment measures. Moreover, exploratory analyses suggest that all measures displayed similar negative relationships with both response tendencies, except the RAC (Hazan & Shaver, 1987). The forced choice design of this scale may limit response variability and sensitivity to individual differences (Fraleigh et al., 2015; Frías et al., 2015).

4.2. Implications for moral decision-making models

The current work adds to a growing literature that demonstrates dilemma judgments result from two separable response tendencies—to avoid harm and maximize outcomes. Furthermore, this work focused on the contributions of socioemotional tendencies to moral decisions and is well-suited to test a primary tenet of the dual process theory: intuitive, emotional processes underlie deontological inclinations. Hence, we also tested if and how these socioemotional, rather than cognitive, processes contribute to utilitarian inclinations.

That anxious attachment did not predict deontological response tendencies in the first two studies and negatively predicted deontological response tendencies the third study furnishes important nuance to the premise that emotional processes or tendencies reliably underlie harm aversion. Anxious attachment captures a combination of

emotional sensitivity and concern specific to the attachment figure (Bowlby, 1982; Brennan et al., 1998). Our findings suggest that these concerns may not extend to other people. Our findings also hint that preoccupation with an individual comes at the cost of consideration for other people—those high in a broader measure of anxious attachment reported lower empathic concern for/willingness to help others and higher need to belong, which in turn predicted less concern about harming others (Study 2). These findings highlight that the dual process theory should specify the emotional processes and tendencies that underlie harm aversion: in addition to the well-established emotional concern about the *victim*, it might predict that *generalized* rather than *non-victim-specific* emotional concern is essential. Finally, the same pattern emerged for outcome-maximizing responses—emotional concern matters for utilitarian decisions as well.

4.3. Limitations and future directions

Although preregistration, sufficient power, and replication can strengthen confidence in the results reported here, there are several limitations worth noting, which should guide future research. First, the use of moral dilemmas entails assuming participants will accept the premises laid out in the dilemma, such that causing harm would bring about the desired outcome—*closed world assumptions* (Bennis et al., 2010). Second, because we focused on pre-existing individual differences, we employed correlational designs—this precludes causal claims. Relatedly, significant indirect effects are necessary but not sufficient for identifying causal mediators (Fiedler et al., 2011). Third, some correlations were “marginally” significant (i.e., deontology with anxiety in Study 1 replication, utilitarian responding with avoidance and with empathic concern in Study 2), which is problematic insofar as marginal significance is associated with risk of inflating false-positives, altering decision rules, and having lower evidential value (Olsson-Collentine et al., 2019). However, in regression analyses, these associations were significant over and above associations with control variables (i.e., age, gender, and the other parameter)—a more conservative test—and in Study 2 where we measured attachment dimensions more thoroughly.

Finally, although we collected data from both student and broader populations, our samples are largely WEIRD (Western, Educated, Industrialized, Rich, and Democratic), limiting generalizability of results (Henrich et al., 2010). Not only do dilemma decisions vary across cultures (Awad et al., 2018), but sociocultural factors may shape attachment (e.g., Agishtein & Brumbaugh, 2013; Belsky et al., 1991; Figueredo et al., 2005) and attachment may be expressed differently based on strong cultural norms (Markus & Kitayama, 1991). Prior work finds that people in the United States from South Asia report lower attachment anxiety whereas people from East Asian countries reported high levels of attachment anxiety, compared to people from the rest of the world (Agishtein & Brumbaugh, 2013). Furthermore, national differences are not the only relevant sociocultural differences that might shape how people relate socially and emotionally, and therefore morally, to other people—there are within-culture sub-cultural factors (e.g., Zhu et al., 2018). For example, people who grew up experiencing unpredictable home and school lives are lower in empathy for others and less willing to invest in close relationships and, in turn, less likely to avoid harm or maximize outcomes on moral dilemmas (Maranges et al., 2021). Together, prior work suggests that both cultural and subcultural factors appear to shape the psychological processes that feed into moral decision making. Future work may benefit from investigating how different cultural and subcultural factors shape attachment and, in turn, moral decision making.

5. Conclusion

Early social experiences mold socioemotional approaches, which in turn shape moral concerns in adulthood (e.g., Koleva et al., 2014; Maranges et al., 2021). Yet, no prior work has linked attachment to the two independent concerns that contribute to decisions on moral dilemmas. We demonstrate consistently that avoidantly attached people are less emotionally concerned about others, and therefore about causing harm to them, regardless of outcomes. Similar patterns emerge for people with anxious attachment across various relationships: they evinced less deontological and utilitarian decision making when facing moral conundrums. Socioemotional processes calibrated by early social relationships appear to affect moral decision making in some expected ways, but also unexpected ways. Insecure attachment—and the concomitant focus on self—may preclude the moral concerns essential to improving the wellbeing of single individuals and groups.

CRedit authorship contribution statement

Heather M. Maranges: Conceptualization, Methodology, Validation, Formal analysis, Data curation, Investigation, Project administration, Writing – original draft, Writing – review & editing. **Susan K. Chen:** Conceptualization, Investigation, Writing – original draft, Writing – review & editing. **Paul Conway:** Conceptualization, Resources, Writing – review & editing, Supervision.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2021.111274>.

References

- Agishtein, P., & Brumbaugh, C. (2013). Cultural variation in adult attachment: The impact of ethnicity, collectivism, and country of origin. *Journal of Social, Evolutionary, and Cultural Psychology*, 7, 384–405. <https://doi.org/10.1037/h0099181>.
- Amit, E., & Greene, J. D. (2012). You see, the ends don't justify the means: Visual imagery and moral judgment. *Psychological Science*, 23, 861–868.
- Arbuckle, J. L. (2014). *Amos (Version 23.0) [computer program]*. Chicago: IBM SPSS.
- Awad, E., Dsouza, S., Kim, R., Schulz, J., Henrich, J., Shariff, A., ... Rahwan, I. (2018). The moral machine experiment. *Nature*, 563(7729), 59–64.
- Bartels, D. M. (2008). Principled moral sentiment and the flexibility of moral judgment and decision making. *Cognition*, 108, 381–417. <https://doi.org/10.1016/j.cognition.2008.03.001>.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61, 226–244.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497.
- Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development*, 62(4), 647–670.
- Bennis, W. M., Medin, D. L., & Bartels, D. M. (2010). The costs and benefits of calculation and moral rules. *Perspectives on Psychological Science*, 5, 187–202. <https://doi.org/10.1177/1745691610362354>.
- Bowlby, J. (1982). *Attachment and loss* (2nd ed.) (2nd ed., Vol. 1). New York: Basic Books.
- Brennan, K. A., & Shaver, P. R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality and Social Psychology Bulletin*, 21(3), 267–283.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). *Self-report measurement of adult attachment: An integrative overview*.
- Byrd, N., & Conway, P. (2019). Not all who ponder count costs: Arithmetic reflection predicts utilitarian tendencies, but logical reflection predicts both deontological and utilitarian tendencies. *Cognition*, 192, Article 103995.
- Campbell, L., Simpson, J. A., Boldry, J., & Kashy, D. A. (2005). Perceptions of conflict and support in romantic relationships: The role of attachment anxiety. *Journal of Personality and Social Psychology*, 88(3), 510–531.

- Collins, N. L., & Feeney, B. C. (2000). A safe haven: An attachment theory perspective on support seeking and caregiving in intimate relationships. *Journal of Personality and Social Psychology*, 78(6), 1053–1073.
- Conway, P., & Gawronski, B. (2013). Deontological and utilitarian inclinations in moral decision making: A process dissociation approach. *Journal of Personality and Social Psychology*, 104(2), 216–235.
- Conway, P., Goldstein-Greenwood, J., Polacek, D., & Greene, J. D. (2018). Sacrificial utilitarian judgments do reflect concern for the greater good: Clarification via process dissociation and the judgments of philosophers. *Cognition*, 179, 241–265.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44(1), 113.
- Everett, J. A., Faber, N. S., Savulescu, J., & Crockett, M. J. (2018). The costs of being consequentialist: Social inference from instrumental harm and impartial beneficence. *Journal of Experimental Social Psychology*, 79, 200–216.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). GPower 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191. <https://doi.org/10.3758/BF03193146>.
- Feeney, B. C., & Collins, N. L. (2001). Predictors of caregiving in adult intimate relationships: An attachment theoretical perspective. *Journal of Personality and Social Psychology*, 80(6), 972–994.
- Feeney, J. A., & Hohaus, L. (2001). Attachment and spousal caregiving. *Personal Relationships*, 8(1), 21–39.
- Feeney, J. A., & Noller, P. (1990). Attachment style as a predictor of adult romantic relationships. *Journal of Personality and Social Psychology*, 58(2), 281–291.
- Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling, & W. H. Berman (Eds.), *Attachment in adults: Clinical and developmental perspectives* (pp. 128–152). New York: Guilford Press.
- Fiedler, K., Schott, M., & Meiser, T. (2011). What mediation analysis can (not) do. *Journal of Experimental Social Psychology*, 47(6), 1231–1236.
- Figueredo, A. J., Vásquez, G., Brumbach, B. H., Sefcek, J. A., Kirsner, B. R., & Jacobs, W. J. (2005). The K-factor: Individual differences in life history strategy. *Personality and Individual Differences*, 39(8), 1349–1360.
- Fleischmann, A., Lammers, J., Conway, P., & Galinsky, A. D. (2021). Kant be compared: People high in social comparison orientation make fewer—not more—deontological decisions in sacrificial dilemmas. *Social Psychological and Personality Science*, 12(6), 984–995.
- Foot, P. (1967). The problem of abortion and the doctrine of double effect. *Oxford Review*, 5, 5–15.
- Fraley, C. R., Niedenthal, P. M., Marks, M., Brumbaugh, C., & Vicary, A. (2006). Adult attachment and the perception of emotional expressions: Probing the hyperactivating strategies underlying anxious attachment. *Journal of Personality*, 74(4), 1163–1190.
- Fraley, R. C., Hudson, N. W., Heffernan, M. E., & Segal, N. (2015). Are adult attachment styles categorical or dimensional? A taxometric analysis of general and relationship-specific attachment orientations. *Journal of Personality and Social Psychology*, 109(2), 354.
- Frias, M. T., Shaver, P. R., & Mikulincer, M. (2015). Measures of adult attachment and related constructs. In *Measures of personality and social psychological constructs* (pp. 417–447). Academic Press.
- Friesdorf, R., Conway, P., & Gawronski, B. (2015). Gender differences in responses to moral dilemmas: A process dissociation analysis. *Personality and Social Psychology Bulletin*, 42, 696–713. <https://doi.org/10.1177/0146167215575731>.
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, 18(3), 233–239.
- Gawronski, B., Armstrong, J., Conway, P., Friesdorf, R., & Hütter, M. (2017). Consequences, norms, and generalized inaction in moral dilemmas: The CNI model of moral decision-making. *Journal of Personality and Social Psychology*, 113(3), 343.
- Gillath, O., Shaver, P. R., Mikulincer, M., Nitzberg, R. E., Erez, A., & Van Ijzendoorn, M. H. (2005). Attachment, caregiving, and volunteering: Placing volunteerism in an attachment-theoretical framework. *Personal Relationships*, 12(4), 425–446.
- Gleichgerrcht, E., & Young, L. (2013). Low levels of empathic concern predict utilitarian moral judgment. *PLoS One*, 8, 1–9. <https://doi.org/10.1371/journal.pone.0060418>.
- Greene, J. D., Nystrom, L. E., Engell, A. D., Darley, J. M., & Cohen, J. D. (2004). The neural bases of cognitive conflict and control in moral judgment. *Neuron*, 44, 389–400. <https://doi.org/10.1016/j.neuron.2004.09.027>.
- Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, 52, 511–524.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Beyond WEIRD: Towards a broad-based behavioral science. *Behavioral and Brain Sciences*, 33, 111–135.
- Kant, I. (1959). In L. W. Beck (Ed.), *Foundation of the metaphysics of morals*. Indianapolis, IN: Bobbs-Merrill. Trans. (Original work published 1785).
- Karantzas, G. C., Feeney, J. A., & Wilkinson, R. (2010). Is less more? Confirmatory factor analysis of the attachment style questionnaires. *Journal of Social and Personal Relationships*, 27(6), 749–780.
- Koenigs, M., Young, L., Adolphs, R., Tranel, D., Cushman, F., Hauser, M., & Damasio, A. (2007). Damage to the prefrontal cortex increases utilitarian moral judgments. *Nature*, 446, 908–911. <https://doi.org/10.1038/Nature05631>.
- Kogut, T., & Kogut, E. (2013). Exploring the relationship between adult attachment style and the identifiable victim effect in helping behavior. *Journal of Experimental Social Psychology*, 49(4), 651–660.
- Koleva, S., Selterman, D., Iyer, R., Ditto, P., & Graham, J. (2014). The moral compass of insecurity: Anxious and avoidant attachment predict moral judgment. *Social Psychological and Personality Science*, 5(2), 185–194.
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the nomological network. *Journal of Personality Assessment*, 95(6), 610–624.
- Li, Z., Xia, S., Wu, X., & Chen, Z. (2018). Analytical thinking style leads to more utilitarian moral judgments: An exploration with a process-dissociation approach. *Personality and Individual Differences*, 131, 180–184. <https://doi.org/10.1016/j.paid.2018.04.046>.
- Lucas, B. J., & Livingston, R. W. (2014). Feeling socially connected increases utilitarian choices in moral dilemmas. *Journal of Experimental Social Psychology*, 53, 1–4.
- Maranges, H. M., Hastly, C. R., Maner, J. K., & Conway, P. (2021). The behavioral ecology of moral dilemmas: Childhood unpredictability, but not harshness, predicts less deontological and utilitarian responding. *Journal of Personality and Social Psychology*, 120, 1696–1719. <https://doi.org/10.1037/pspp0000368>.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.
- Mikulincer, M., & Shaver, P. R. (2003). The attachment behavioral system in adulthood: Activation, psychodynamics, and interpersonal processes. *Advances in Experimental Social Psychology*, 35, 56–152.
- Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. Guilford Press.
- Mill, J. S. (1998). *Utilitarianism* (R. Crisp). New York, NY: Oxford University Press (Original work published 1861).
- Moore, A. B., Clark, B. A., & Kane, M. J. (2008). Who shalt not kill? Individual differences in working memory capacity, executive control, and moral judgment. *Psychological Science*, 19, 549–557. <https://doi.org/10.1111/J.1467-9280.2008.02122.x>.
- Olsson-Collentine, A., Van Assen, M. A., & Hartgerink, C. H. (2019). The prevalence of marginally significant results in psychology over time. *Psychological Science*, 30(4), 576–586.
- Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology*, 45, 867–872. <https://doi.org/10.1016/j.jesp.2009.03.009>.
- Patil, I., & Silani, G. (2014). Reduced empathic concern leads to utilitarian moral judgments in trait alexithymia. *Frontiers in Psychology*, 5(2014), 501.
- Patil, I., Zucchelli, M. M., Kool, W., Campbell, S., Fornasier, F., Calò, M., ... Cushman, F. (2021). Reasoning supports utilitarian resolutions to moral dilemmas across diverse measures. *Journal of Personality and Social Psychology*, 120, 443.
- Payne, B. K., & Bishara, A. J. (2009). An integrative review of process dissociation and related models in social cognition. *European Review of Social Psychology*, 20, 272–314.
- Petrinovich, L., O'Neill, P., & Jorgensen, M. (1993). An empirical study of moral intuitions: Toward an evolutionary ethics. *Journal of Personality and Social Psychology*, 64, 467–478.
- Piazza, J., & Landy, J. (2013). “Lean not on your own understanding”: Belief that morality is founded on divine authority and non-utilitarian moral thinking. *Judgment and Decision Making*, 8(6), 639–661.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717–731.
- Rai, T. S., & Fiske, A. P. (2011). Moral psychology is relationship regulation: Moral motives for unity, hierarchy, equality, and proportionality. *Psychological Review*, 118(1), 57.
- Reynolds, C. J., & Conway, P. (2018). Not just bad actions: Affective concern for bad outcomes contributes to moral condemnation of harm in moral dilemmas. *Emotion*. <https://doi.org/10.1037/emo0000413>.
- Richman, S. B., DeWall, C. N., & Wolff, M. N. (2015). Avoiding affection, avoiding altruism: Why is avoidant attachment related to less helping? *Personality and Individual Differences*, 76, 193–197.
- Robinson, J. S., Joel, S., & Plaks, J. E. (2015). Empathy for the group versus indifference toward the victim: Effects of anxious and avoidant attachment on moral judgment. *Journal of Experimental Social Psychology*, 56, 139–152.
- Rom, S. C., & Conway, P. (2018). The strategic moral self: Self-presentation shapes moral dilemma judgments. *Journal of Experimental Social Psychology*, 74, 24–37.
- Royzman, E. B., Landy, J. F., & Leeman, R. F. (2015). Are thoughtful people more utilitarian? CRT as a unique predictor of moral minimalism in the dilemmatic context. *Cognitive Science*, 39(2), 325–352.
- Shaver, P. R., Mikulincer, M., & Shemesh-Iron, M. (2010). A behavioral systems perspective on prosocial behavior. In *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 73–91).
- Simpson, J. A., Kim, J. S., Fillo, J., Ickes, W., Rholes, W. S., Oriña, M. M., & Winterheld, H. A. (2011). Attachment and the management of empathic accuracy in relationship-threatening situations. *Personality and Social Psychology Bulletin*, 37(2), 242–254.

- Starcke, K., Ludwig, A., & Brand, M. (2012). Anticipatory stress interferes with utilitarian moral judgment. *Judgment and Decision making*, 7, 61–68. <https://doi.org/10.1016/j.jpsyneuen.2010.07.010>.
- Strohming, N., Lewis, R. L., & Meyer, D. E. (2011). Divergent effects of different positive emotions on moral judgment. *Cognition*, 119, 295–300. <https://doi.org/10.1016/j.cognition.2010.12.012>.
- Watson, M., & Greer, S. (1983). Development of a questionnaire measure of emotional control. *Journal of Psychosomatic Research*, 27(4), 299–305.
- Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationship Scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88(2), 187–204.
- Zhu, N., Hawk, S. T., & Chang, L. (2018). Living slow and being moral. *Human Nature*, 29, 186–209.