Judging Those Who Judge: Perceivers Infer the Roles of Affect and Cognition

Underpinning Others' Moral Dilemma Responses

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Text word count: 12,750

Total word count: 16,699

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Abstract

Whereas considerable research examines antecedents of moral dilemma judgments where causing harm maximizes outcomes, this work examines social consequences: whether participants infer personality characteristics from others' dilemma judgments. We propose that people infer the roles of affective and cognitive processing underlying other peoples' moral dilemma judgments, and use this information to inform personality perceptions. In Studies 1 and 2, participants rated targets who rejected causing outcome-maximizing harm (consistent with deontology) as warmer but less competent than targets who accepted causing outcome-maximizing harm (consistent with utilitarianism). Studies 3a and 3b replicated this pattern and demonstrated that perceptions of affective processing mediated the effect on warmth, whereas perceptions of cognitive processing mediated the effect on competence. In Study 4 participants accurately predicted that affective decision-makers would reject harm, whereas cognitive decision-makers would accept harm. Furthermore, participants preferred targets who rejected causing harm for a social role prioritizing warmth (pediatrician), whereas they preferred targets who accepted causing harm for a social role prioritizing competence (hospital management, Study 5). Together, these results suggest that people infer the role of affective and cognitive processing underlying others' harm rejection and acceptance judgments, which inform personality inferences and decision-making.

Keywords: moral dilemmas, social perception, meta-perceptions, lay theories, affect and cognition

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"Non-violence, which is the quality of the heart, cannot come by an appeal to the

brain."   ― Mahatma Gandhi

"The sign of an intelligent people is their ability to control their emotions by the

application of reason."   ― Marya Mannes

Imagine a passenger jet has been hijacked by terrorists, and is now heading towards a

densely populated urban center. Is it acceptable to shoot this plane down—including the innocent

civilians on board—in order to prevent it from wreaking widespread carnage? In 2003 the

German government decreed that doing so was acceptable. However, in 2006, the German courts

overruled this decision, arguing that the German military is forbidden from harming civilians

regardless of circumstances (Whitlock, 2006). Imagine a discussion where one person supported

the government's position, and another supported the court's position. What impressions do

these decisions convey about each person: Who is warmer, and who is more competent? Who

should be selected to work with children, and who to run a large organization?

The hijacked airplane dilemma is one example of a class of conundrums where causing

harm maximizes overall outcomes. Philosophers (Foot, 1967) and lay people (Greene,

Sommerville, Nystrom, Darley, & Cohen, 2001) disagree over whether causing harm to

maximize outcomes is the appropriate course of action. According to the dual process model,

resolving such dilemmas depends on two psychological processes: affective reactions to harm

drive harm rejection—consistent with deontological ethical positions where the nature of an

action defines its morality (Kant, 1785/1959). Conversely, cognitive deliberation regarding costs

and benefits drives harm acceptance—consistent with utilitarian ethical positions where the

outcome of an action defines its morality (Mill, 1861/1998). Hence, in the hijacked airplane

dilemma, people disapprove of shooting down the airplane based on their affective reactions to

that gruesome thought (e.g., sympathy for the victim, horror at the thought of committing

murder).[1] Conversely, people approve of shooting down the airplane based on an abstract cost-

benefit analysis regarding the total lives saved in each case, thereby logically deducing that

causing harm results in the lesser of the two evils. A great deal of research supports the dual-

process model of moral judgment (e.g., Bartels, 2008; Conway & Gawronski, 2013; Greene et

al., 2004; Nichols & Mallon, 2006; Suter & Hertwig, 2011; c.f. Mikhail, 2007). However,

researchers have examined primarily the antecedents of such judgments—comparatively little is

known regarding their consequences, including social consequences.

     One consequence may be that people's dilemma judgments influence how others perceive

them. Haidt (2001) argued that moral judgments are social in nature: they communicate

important information about the speaker. Are listeners picking up on this information, and

inferring psychological processes behind the speaker's moral judgments? People appear quite

sensitive to psychological factors driving other kinds of moral decisions (e.g., Cushman, 2008;

Pizarro & Tannenbaum, 2011; Weiner, 1985). Recent work suggests that perceivers are indeed

drawing personality inferences from others' dilemma judgments (Everett, Pizarro, and Crocket,

2016; Kreps & Monin, 2015; Uhlmann, Zu, and Tannenbaum, 2013). However, the question

remains as to whether lay people infer the *processing* behind others' judgments—do they

surmise that affect compels people to reject and logic motivates people to accept outcome-

maximizing harm?

We propose that people infer how affect and cognition underpin others' moral dilemma judgments, and use this information to draw inferences about others' warmth and competence. Specifically, perceivers should rate targets who make characteristically[2] deontological judgments (i.e. *causing harm is inappropriate regardless of outcomes*) as relatively warm, because they appear to experience stronger tenderhearted affective reactions to the thought of harming someone (consistent with research linking harm rejection judgments to empathic concern, e.g., Conway & Gawronski, 2013). Conversely, perceivers should rate targets who make characteristically utilitarian judgments (i.e. *causing harm is appropriate when it maximizes overall outcomes*) as relatively more competent, because they appear to engage in more dispassionate, outcome-focused cognitive processing that weighs various outcomes and selects the most favorable ones (consistent with research linking harm acceptance dilemma judgments to individual differences in reasoning and deliberation, e.g., Bartels, 2008; Royzerman, Landy, & Leeman, 2014).[3] However, these perceptions should only pertain when causing harm maximizes outcomes, rather than when people accept non-outcome-maximizing harm.

Moreover, we predict that inferences flexibly operate in the other direction as well: people are capable of predicting dilemma decisions based on information about target processing styles. Specifically, people should expect sensitive, affective targets to reject harm, but rational, logical targets to accept outcome-maximizing harm. Finally, we predict that these inferences will influence subsequent social decision-making. For example, people should select targets who reject harm for social roles prioritizing warm, but select targets who accept harm for social roles prioritizing competence. We tested these hypotheses across six studies.

Warmth and Competence: Fundamental Dimensions of Social Perception

Traditionally, researchers have argued that perceptions of personality (e.g., Wiggins, 1979) and behavior (e.g., Wojciszke, 1994) involve two fundamental dimensions: how *warm* and how *competent* the target is (Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). Although researchers use somewhat different taxonomies to describe these dimensions (e.g., communion/agency, Bakan, 1956, sociable/intellectual, Rosenberg, Nelson & Vivekananthan, 1968, other-profitable/self-profitable, Peeters, 1983, and morality/competence Wojciszke, 1998), they all appear to cohere with core warmth and competence constructs (Imhoff, Woelke, Hanke, & Dotsch, 2013).

Classically, warmth perceptions are theorized to track how benevolent targets appear to be, whereas competence perceptions generally track how effective targets appear to be at reaching their goals (Fiske et al., 2006).[5] Importantly, people tend to link warmth-related constructs—such as empathy, emotional expressivity, emotionality, and popularity—with an affect-laden, intuitive thinking style characterized by heuristic processing and emotional reactivity (Epstein, Pacini, Denes-Raj, Heier, 1996; Shilo, Salton, Sharabi, 2002; Norris & Epstein, 2011). Hence, when determining whether someone is warm, people may consider how much that person appears to experience affective reactions to the thought of causing harm, such as sympathy and compassion for victims or outrage at contemplating becoming a murderer. If so, then people may infer that a target is warm when that target makes judgments consistent with such affective reactions to harm (i.e., rejecting causing harm regardless of outcomes).

Conversely, people generally link competence-related constructs—such as ego strength, creativity, academic achievement, and self-esteem—with rational, systematic, cognitive processing (Epstein et al., 1996; Pacini & Epstein, 1999). Hence, when determining whether someone is competent, people may consider how much that person appears to engage in

cognitive operations such as abstract cost-benefit analyses that weight five lives against one life.,

More generally, people may infer that a target is competent when that target makes judgments

consistent with rational, cognitive processing (i.e., accepting outcome-maximizing harm). Recent

work has even found that individual differences in need for affect influence warmth perceptions,

whereas individual differences in need for cognition influence competence perceptions (Aquino,

Haddock, Maio, Wolf, & Alparone, 2016). If so, then perceptions of affective processing ought

to mediate the effect harm rejection on warmth judgments, and perceptions of cognitive

processing ought to mediate the effect of harm acceptance on competence judgments.

Warmth and competence perceptions pertain not only to individuals, but also to social

groups: people perceive stereotypically benevolent groups as warm and stereotypically powerful

groups as competent (Fiske, Xu, Cuddy, & Glick, 1999; Fiske, Cuddy, Glick, & Xu, 2002;

Cuddy, Fiske, & Glick, 2007; Imhoff et al., 2013). Moreover, people often match personality

with group membership: People prefer recruiting warm people to fulfill stereotypically warm

roles, and competent people to fulfill stereotypically competent roles (Rudman & Glick, 1999).

Accordingly, we examined whether people show similar selection effects depending on

inferences based on target dilemma judgments—selecting targets who reject harm for roles that

prioritize warmth, whereas targets who accept harm for roles that prioritize competence.

Inferring Moral Processing

There is some preliminary support for the contention that people draw personality and

processing inferences from moral dilemma judgments. Uhlmann and colleagues (2013) found

that targets who made characteristically utilitarian judgments were perceived as more pragmatic,

but lower in empathy than people who made characteristically deontological judgments. Kreps

and Monin (2014) found that decision-makers who espoused deontological arguments were

regarded as moralizing more than decision-makers who espoused utilitarian arguments—the latter appeared primarily pragmatic. Furthermore, Tetlock (2002) found that participants used the length of time others took to make a moral dilemma judgment as a cue to infer personality: Agents who made the utilitarian choice quickly were evaluated more negatively, as this rapid response suggested they found it easy to endorse murder. Finally, Everett and colleagues (2016) found that perceivers view people who reject causing harm on classic dilemmas as more moral and trustworthy (and offered them higher endowments in trust games) than people who accept causing harm to maximize outcomes.[4] Together, these findings suggest that perceivers draw reliable personality inferences from others' moral judgments.

What remains unclear is perceptions of *processing*: whether perceivers naturally understand the link between sympathetic affective reactions and harm-rejection, and logical outcome-focused processing and harm-acceptance judgments. If so, this finding would suggest that ordinary people essentially intuit the dual-process model of moral judgments (Greene et al., 2001). Not only would this be an impressive case of lay people intuiting a widespread scientific theory, but it has ramifications for theory. According to the person-centered approach to moral judgment (Uhlmann, Pizarro, & Diermeier, 2015), people care about more than just acts outcomes—they care about people's moral character. Accordingly, inferences about the processes by which people arrive a given judgment may be more important than the judgment itself in determining whether the decision-maker is a good interaction partner (Critcher, Inbar, Pizarro, 2013; Everett et al., 2016). Moreover, if people intuit affective and cognitive processing from dilemma judgments, they may use this information to select people for social roles where those abilities are prized—but this has yet to be demonstrated.

Furthermore, this finding would have ramifications for public policy: It suggests that public opinion of Germany's government and courts following their respective hijacking decisions may be colored by inferences of differential application of affect and cognition—something lawmakers might consider as they grapple with similar decisions pitting individual rights against group welfare. Do they wish to come across as primarily driven by affect or by logic? Additionally, if lay intuitions accord with the dual-process model of moral judgments, this opens the possibility that social considerations causally impact moral dilemma judgments—that people might reject harm in order to convey warmth to others, or accept harm in order to convey competence. Although such a question is beyond the scope of the current work, these studies lay the foundation for a challenge to dual-process theory to consider higher-order social processes in dilemma judgment formation.

However, first plausible alternative hypotheses must be ruled out. Harm-rejection dilemma judgments are associated with deontological philosophy, which prioritizes rationality (Kant, 1785/1959), whereas harm-acceptance judgments are associated with utilitarian philosophy (Mill, 1861/1998), which is historically viewed as prioritizing emotions and sentiments (e.g., happiness) rather than logic (Kagan, 1998). Hence, it is plausible that lay people view harm-rejection judgments as indicative of high competence (due to serious rational thinking), whereas harm-acceptance judgments as indicative of warmth (due to affective concerns with happiness)—after all, accepting harm in moral dilemmas saves the most lives. Alternatively, perceivers might view both targets who accept and reject harm as low in both warmth and competence, given that both decisions result in serious harm to someone. We rule out these alternatives in the studies that follow.

Overview and Hypotheses

Across six experiments, we investigated whether people draw inferences about others'
moral processing, and use this information in personality assessment, when predicting dilemma
decisions, and when forming meta-perceptions. First, we predicted that people would rate targets
as warmer when those targets rejected causing harm, and rate targets as more competent when
those targets accepted causing harm (Studies 1 & 2). Second, we measured participants'
perceptions of the target's affective and cognitive processing in order to clarify the mechanisms
behind this effect: we expected that perceptions of affective processing would mediate the effect
of dilemma decision on warmth ratings, whereas perceptions of cognitive processing would
mediate the effect of dilemma decision on competence ratings (Studies 3a & 3b). Third, we
hypothesized that people would use these lay theories to predict social decision-making (Study
4): people would expect sensitive, affective targets to reject causing harm, and expect rational,
logical targets to accept causing (outcome-maximizing) harm (Study 4). Finally, we predicted
that people would select targets who reject harm for warm roles, but select targets who accept
harm for competent roles (Study 5).

Study 1

In Study 1, we examined whether participants rate targets who reject causing outcome-
maximizing harm as warmer but less competent than targets who accept such harm. Following
Fiske and colleagues (2002), we measured perceptions of morality as well. Some theorists
conceptualize morality and warmth interchangeably (Wojciszke, 1998) whereas others have
distinguished between them (Goodwin et al., 2014; Leach, Ellemers, & Barreto, 2007). We were
agnostic as to whether participants would distinguish between perceptions of warmth and
morality in the current work.

Method

Participants and design. We obtained 100 American participants (77 males, 23 females, M_{age} = 31.98, SD = 11.68) via Amazon's Mechanical Turk (www.amazon.com, 2014), who received $0.25. We aimed to obtain ~50 people per cell in all between-subjects designs. Although we did not conduct a priori power analyses, this heuristic resulted in ~90% power to detect the key contrast of interest across all studies (see p-curve analysis below). Participants were randomly assigned to one of two conditions (target decision: harm inappropriate vs. appropriate).

Procedure. Participants viewed a photo of a university student named Brad, and learned that Brad ostensibly responded to three moral dilemmas. Participants read each dilemma, presented on individual screens, in a fixed random order. Each dilemma entailed performing a harmful action in order to achieve a particular outcome. Each dilemma screen also presented Brad's ostensible judgment of whether causing harm was appropriate or not appropriate. Brad's answer was always consistent across dilemmas.

Next, participants rated Brad's warmth, competence, and morality using items adapted from Fiske and colleagues (2002). Participants indicated how well four warmth traits (*warm, good-natured, tolerant, sincere*), five competence traits (*competent, confident, independent, competitive, intelligent*), and one moral trait (*moral*) described Brad on 7-point scales anchored at 1(*not at all*) and 7(*very much*). Item order was randomized for each participant. We averaged judgments into composites of warmth (α = .87), competence (α = .82), and morality.

Moral Dilemmas. Participants viewed three incongruent (i.e., high-conflict, Koenigs et al., 2007) moral dilemmas ostensibly answered by Brad: the *Vaccine Dilemma* where a doctor contemplates administering a vaccine that will kill some patients but save many others, the

Crying Baby Dilemma where smothering a baby will save other townspeople (both employing

the exact wording from Conway & Gawronski, 2013), and the *Drug Lord Dilemma* which read:

> *You own a restaurant in a small South American town where a gang of drug dealers*
>
> *operate. They bring violence to the streets; several people from the community have lost*
>
> *their lives as a result of gang activity. One day the gang leader demands you make him a*
>
> *delicious meal. You know he is highly allergic to peanuts. You bring out two dishes: one*
>
> *without peanuts and one with enough peanuts to kill him. You could give the peanut dish*
>
> *to the leader, which would kill him but reduce gang violence in the area. Is it appropriate*
>
> *to serve the peanut dish to the gang leader in order to reduce gang violence, even though*
>
> *this will kill him?*

Each dilemma ended with a sentence describing a harmful action that would produce a

specific outcome. After reading each dilemma, participants learned that Brad indicted either *yes,*

harm is appropriate (consistent with utilitarianism) or *no, harm is not appropriate* (consistent

with deontology). As the specific dilemma question asked impacts responses (Tassy, Oullier,

Mancini, & Wicker, 2013) and therefore possibly inferences, we opted to employ the wording

from Conway and Gawronski (2013), which was adapted from the original wording by Greene

and colleagues (2001).

Results and Discussion

We submitted ratings to a 2 (target decision: harm inappropriate vs. appropriate) $\times$ 2

(personality measure: warmth competence) repeated-measures ANOVA with the first factor

between-subjects and the last factor within-subjects (see Figure 1). There was no main effect of

decision, $F(1, 98) = .79$, $p < .376$, $\eta_p^2 = .01$, 95% CI [0.00, 0.08], and no main effect of

personality measure, $F(1, 98) = 3.13$, $p = .080$, $\eta_p^2 = .03$, 95% CI [0.00, 0.12]. However, the two-

way interaction between target decision and personality measure was significant, $F(1, 98) =$ 49.36, $p < .001$, $\eta_p^2 = .34$, 95% CI [0.22, 0.50]. Post-hoc tests demonstrated that participants rated Brad as warmer when he rejected ($M = 5.45$, $SD = 1.09$), versus accepted causing harm ($M = 4.50$, $SD = 1.20$), $F(1, 98) = 16.73$, $p < .001$, $\eta^2 = .14$, 95% CI [0.04, 0.27]. Conversely, participants rated Brad as less competent when he rejected ($M = 4.86$, $SD = 1.20$) versus accepted causing harm ($M = 5.49$, $SD = 0.80$), $F(1, 98) = 9.86$, $p = .002$, $\eta^2 = .09$, 95% CI [0.01, 0.21]. Morality ratings were similar to warmth judgments: Participants rated Brad as more moral when he rejected ($M = 5.80$, $SD = 1.30$) versus accepted causing harm ($M = 4.70$, $SD = 1.60$), $t(98) = 3.74$, $p < .001$, $\eta^2 = .12$, 95% CI [0.04, 0.23], which makes sense as warmth and morality were highly correlated (see Table 1). However, morality ratings also correlated moderately with competence.

These results provide initial evidence for our argument. Participants rated targets who rejected causing harm as relatively warm, suggesting they inferred that affect drove this characteristically deontological decision. Conversely, participants rated targets who accepted causing harm (to maximize outcomes) as relatively competent, suggesting that participants inferred that cognition drove this characteristically utilitarian decision.

Study 2

Study 2 had two objectives: first, to examine whether the effects in Study 1 replicate, and to demonstrate one boundary condition. If, as we argue, perceivers draw inferences of affective and cognitive processing from target dilemma judgments, then modifying the particulars of the judgment ought to influence inferences. Classic dilemmas suggest a tension between affect and reasoning because the (emotionally upsetting) decision to cause harm results in the (rationally objective) best overall outcome. Hence, people may infer that those who accept causing harm are

competent, if not warm. Yet, consider findings that people high in psychopathy or with damage

to social-emotion-processing brain regions tend to accept causing harm on classic dilemmas

(e.g., Bartels & Pizarro, 2011; Koenigs et al., 2007). This finding is likely driven by reduced

affective reactions to harm, rather than increased concern with maximizing outcomes. Do lay

people distinguish between bloodthirsty and genuinely utilitarian reasons for accepting causing

harm?

One way to assess this possibility is by comparing inferences drawn from classic

dilemma decisions to decisions where causing harm fails to maximize outcomes (though satisfies

non-utilitarian motives, such as selfishness or vengeance). For example, if killing the baby no

longer prevents the death of the other townsfolk, but instead prevents them from performing

forced labor, killing the baby is no longer logically justified. In such cases, harm-accepting

targets should no longer appear higher in competence than harm-rejecting targets. Moreover,

they should appear especially low in warmth as such a decision reflects a pure lack of sympathy

for the victim. In other words, if perceptions of competence reflect perceptions of outcome-

focused logical reasoning, then only targets who accept causing outcome-maximizing harm

should be rated as more competent than targets who reject causing harm or accept causing harm

that fails to maximize outcomes. We examined these predictions in Study 2.

Method

Participants and design. We obtained 200 American participants (123 males, 77

females, $M_{age} = 31.98$, $SD = 11.68$) via Mechanical Turk, who received $0.25. Participants were

randomly assigned to one of four conditions in a 2 (target decision: harm inappropriate vs.

appropriate) $\times$ 2 (dilemma type: congruent vs. incongruent) between-subjects design, with

warmth and competence ratings treated as within-subjects. Note this design subsumes a direct

replication of Study 1 within the incongruent condition.

     Procedure and materials. The procedure was identical to Study 1, except that

participants read Brad's responses to either *incongruent* or *congruent* versions of the three moral

dilemmas. Incongruent dilemmas correspond to classic, high-conflict dilemmas (Koenigs et al.,

2007) where causing harm maximizes outcomes, and were identical to Study 1. Congruent

dilemmas are worded identically to incongruent dilemmas, except that the positively

consequences of harm are reduced, such that causing harm no longer maximizes outcomes. For

example, in the congruent version of the Drug Lord dilemma, killing the drug lord will reduce

mere car theft instead of gang violence. (i.e., participants viewed the exact same dilemma,

replacing the words *drug dealers* with *car thieves*, *violence* with *car theft*, and *lost their lives*

with *lost their cars*). Similarly, in the congruent Vaccine Dilemma, the deadly vaccine will cure

only the common cold rather than a disease deadlier than the vaccine, and in the congruent

version of the crying baby dilemma, killing the baby will merely prevent the soldiers from

forcing the townsfolk to work instead of preventing the soldiers from killing them (for exact

wording see Appendix A in Conway & Gawronski, 2013). After reading Brad's response to each

dilemma, participants rated his warmth ($\alpha = .90$), competence ($\alpha = .85$), and morality via the same

measures as in Study 1.

Results

     Target warmth and competence. We submitted ratings to a 2 (target decision: harm

inappropriate vs. appropriate) $\times$ 2 (dilemma type: congruent vs. incongruent) $\times$ 2 (personality

measure: warmth competence) repeated-measures ANOVA with the first two factors between-

subjects and the last factor within-subjects (see Figure 2). There was a main effect of decision,

$F(1, 196) = 10.67$, $p < .001$, $\eta_p^2 = .05$, 95% CI [0.01, 0.12], no main effect of dilemma type,

$F(1, 196) = 1.93$, $p = .167$, and a main effect of measure, $F(1, 196) = 11.50$, $p = .001$, $\eta_p^2 = .06$,

95% CI [0.01, 0.13]. These main effects were qualified by two-way interactions between target

decision and personality measure, $F(1, 196) = 138.04$, $p < .001$, $\eta_p^2 = .42$, 95% CI [0.31, 0.50]

and between dilemma type and personality measure, $F(1, 196) = 3.93$, $p = .049$, $\eta_p^2 = .02$, 95%

CI [.01, .08], and between dilemma type and decision, $F(1, 196) = 26.98$, $p < .001$, $\eta_p^2 = .12$,

95% CI [0.05, 0.20]. Moreover, the three-way interaction approached conventional levels of

significance, $F(1, 196) = 3.53$, $p = .062$, $\eta_p^2 = .02$, 95% CI [0.00, 0.07]—close enough to

cautiously consider tests of simple effects.

Post-hoc tests indicated that the pattern for incongruent dilemmas replicated Study 1:

participants rated Brad as marginally warmer when he rejected ($M = 5.04$, $SD = 1.39$), rather

than accepted ($M = 4.57$, $SD = 1.21$), causing harm, $F(1, 196) = 3.38$, $p = .068$, $\eta_p^2 = .02$, 95% CI

[0.00, 0.06], whereas they rated him as less competent when he rejected ($M = 4.38$, $SD = 1.15$)

versus accepted causing harm ($M = 5.44$, $SD = 1.11$), $F(1, 196) = 19.76$, $p < .001$, $\eta_p^2 = .10$, 95%

CI [0.03, 0.17]. For congruent dilemmas, the pattern differed somewhat. Participants rated Brad

as much warmer when he rejected ($M = 5.62$, $SD = .85$) versus accepted ($M = 3.26$, $SD = 1.49$)

causing harm, $F(1, 196) = 89.98$, $p < .001$, $\eta_p^2 = .32$, 95% CI [0.21, 0.41], whereas they rated him

as similarly competent whether he rejected ($M = 4.97$, $SD = 1.05$) or accepted causing harm ($M =$

4.72, $SD = 1.41$), $F(1, 196) = 1.14$, $p = .29$, $\eta_p^2 = .01$, 95% CI [0.00, 0.04].

More importantly, simple-effects tests indicated that participants distinguished between

Brad's reasons for causing harm: participants rated Brad as both warmer, $F(1, 196) = 5.98$, $p =$

.015, $\eta_p^2 = .03$, 95% CI [0.00, 0.09], and more competent, $F(1, 196) = 7.17$, $p = .008$, $\eta_p^2 = .04$,

95% CI [0.00, 0.10], when he rejected causing harm on congruent, compared to incongruent,

dilemmas. Conversely, participants rated Brad as both less warm, $F(1, 196) = 24.45$, $p < .001$,

$\eta_p^2 = .11$, 95% CI [0.04, 0.20], and less competent, $F(1, 196) = 8.23$, $p = .005$, $\eta_p^2 = .04$, 95% CI [0.00, 0.11], when he accepted causing harm on congruent versus incongruent dilemmas.

Target morality. Finally, we also submitted target morality ratings to a 2 (target decision: harm inappropriate vs. appropriate) × 2 (dilemma type: congruent vs. incongruent) between-subjects ANOVA. Morality followed a pattern similar to warmth judgments. There was again no main effect of dilemma type, $F(1, 196) = 2.55$, $p < .112$, and a main effect of decision, $F(1, 196) = 56.55$, $p < .001$, $\eta_p^2 = .22$, 95% CI [0.13, 0.32], but this was qualified by a significant interaction, $F(1, 196) = 24.04$, $p < .001$, $\eta_p^2 = .11$, 95% CI [0.04, 0.19]. Post hoc tests for incongruent dilemmas replicated Study 1: participants rated Brad marginally higher in morality when he rejected ($M = 5.44$, $SD = 1.64$) versus accepted causing harm ($M = 4.87$, $SD = 1.70$), $F(1, 196) = 3.35$, $p = .069$, $\eta_p^2 = .02$, 95% CI [0.00, 0.07]. For congruent dilemmas, this pattern was amplified: Brad was rated much higher in morality when he rejected ($M = 6.16$, $SD = 1.10$) rather than accepted causing harm ($M = 3.45$, $SD = 1.71$), $F(1, 196) = 78.92$, $p < .001$, $\eta_p^2 = .28$, 95% CI [0.19, 0.38]. Again, warmth, competence and morality were positively correlated (see Table 1).

Discussion

Study 2 replicated the pattern from Study 1 for incongruent dilemmas: participants rated Brad as warmer and more moral but less competent when he rejected, rather than accepted, causing outcome-maximizing harm (although some contrasts were marginal). The pattern for congruent dilemmas was different: participants still rated Brad as (substantially) warmer and more moral when he rejected rather than accepted causing harm, but they no longer afforded him higher competence ratings for accepting causing harm. More importantly, participants drew different personality inferences depending on Brad's reason for causing harm: when Brad caused

harm that failed to maximize outcomes (suggesting bloodthirstiness), they rated Brad as both less

warm and less competent than when he caused outcome-maximizing harm.

This pattern suggests that participants were sensitive to *reasons* targets had for endorsing

otherwise identical actions—targets who endorsed causing harm to maximize outcomes were

viewed as more competent than those who endorsed causing the exact same harm for other

reasons (e.g., selfishness, sadism). Moreover, the latter were also viewed as particularly low on

warmth, suggesting that perceivers inferred that their harm-acceptance reflected a lack of regard

for others' wellbeing similar to psychopathy (Hare, 1980). These findings suggest lay people

distinguish between bloodthirsty and genuinely utilitarian reasons for causing harm, and

competence perceptions track the latter.

Study 3a

In Studies 1 and 2, participants rated targets as warmer but less competent when those

targets rejected, rather than accepted harm. These findings suggest that participants inferred the

role of affect underpinning harm rejection, and the role of cognition underpinning (outcome-

maximizing) harm acceptance. However, the model's predictions are more precise than just

warmth and competence modulation: they suggest warmth ratings are driven by perceptions of

affective processing, whereas competence ratings are driven by perceptions of cognitive

processing. Hence, perceptions of target affective and cognitive processing should mediate the

effect of target dilemma judgment on warmth and competence ratings, respectively.

In Study 3a, we again presented participants with Brad, who ostensibly accepted or

rejected causing harm in the crying baby dilemma. We again measured participants' perceptions

of Brad's warmth and competence, but first we directly measured perceptions of Brad's affective

and cognitive processing. We expected to replicate Studies 1 and 2 regarding the impact of

Brad's dilemma judgments on warmth, competence and morality perceptions. More importantly,

we expected that perceptions of Brad's affective processing would mediate this effect on warmth

ratings, whereas perceptions of Brad's cognitive processing would mediate this effect on

competence ratings. Such a pattern would provide enhanced support for the claim that

participants infer the roles of cognition and affect underpinning moral dilemma judgments, and

that these inferences influence perceptions of the targets' warmth and competence. We were

agnostic regarding whether affective or cognitive processing would mediate the manipulation on

morality ratings.

Method

        Participants and design. We recruited 121 American participants (71 males, 50 females,

M_{age} = 36.12, SD = 11.88) via Mechanical Turk, who received $0.25. Participants were randomly

assigned to one of two conditions (target decision: harm inappropriate vs. appropriate).

        Procedure. The procedure was identical to Study 1, except we used only a single

dilemma: participants viewed a photo of Brad and learned that Brad either ostensibly accepted or

rejected harming the baby to save the townspeople in the crying baby dilemma. Next,

participants indicated their perception of how much Brad's decision was based on *feelings and*

emotions, as well as on *logical reasoning,* on scales from 1 (*not at all*) to 7 (*very much*). Finally,

participants rated Brad's warmth (α = .89), competence (α = .86) as in Studies 1 and 2.

Results

        Target ratings. We submitted ratings to a 2 (target decision: harm inappropriate vs.

appropriate) $\times$ 2 (personality measure: warmth competence) repeated-measures ANOVA with

the first factor between-subjects and the last factor within-subjects (see Figure 1). There was no

main effect of decision, $F(1, 119)$ = .15, p < .696, η_p^2 = .00, 95% CI [0.00, 0.04], and no main

effect of personality measure, $F(1, 119) = .48$, $p = .492$, $\eta_p^2 = .03$, 95% CI [0.00, 0.05]. However, the two-way interaction between target decision and personality measure was highly significant, $F(1, 119) = 80.45$, $p < .001$, $\eta_p^2 = .40$, 95% CI [0.27, 0.51]. Post-hoc tests replicated the finding that participants rated Brad as warmer when he rejected ($M = 5.38$, $SD = 1.12$) versus accepted causing harm ($M = 4.43$, $SD = 1.22$), $F(1, 119) = 18.06$, $p < .001$, $\eta_p^2 = .15$, 95% CI [0.05, 0.26]. We also replicated the finding that participants rated Brad as less competent when he rejected ($M = 4.43$, $SD = 1.23$) versus accepted causing harm ($M = 5.24$, $SD = .80$), $F(1, 119) = 18.23$, $p < .001$, $\eta_p^2 = .13$, 95% CI [0.08, 0.31]. Again, warmth, competence and morality were positively correlated (see Table 1).

Warmth mediation. To determine whether perceptions of affective or cognitive processing mediated the effect of Brad's dilemma decision on warmth ratings, we conducted a 10,000-iteration simultaneous mediation bootstrap analysis using the PROCESS macro according to the procedures recommended by Preacher and Hayes (2004, 2008). We then conducted identical analyses to determine whether perceptions of affective or cognitive processing mediated the effect of Brad's decision on both competence and morality. In the first step of each model, we regressed both affective and cognitive processing style on Brad's decision to accept or reject outcome-maximizing harm. As expected, Brad's decision to accept harm negatively predicted perceptions of affective processing, $B = -2.90$, $SE = .26$, $p < .001$, 95% CI [-3.42, -2.39], and positively predicted perceptions of cognitive processing, $B = 3.21$, $SE = .27$, $p < .001$, 95% CI [2.68, 3.75].

Next, we simultaneously regressed warmth ratings on Brad's decision and both mediators (see Figure 3a). As predicted, there was a significant indirect effect of decision on warmth through perceptions of affective processing, $B = -.88$, $SE = .24$, $p < .001$, 95% CI [-1.39, -0.45],

but not cognitive processing, $B = .40$, $SE = .28$, $p = .154$, 95% CI [-0.20, 0.89]. A pairwise

contrast of these effect sizes indicated that the indirect effect through affective processing was

significantly larger than the indirect effect through cognitive processing, as the 95% confidence

interval for the contrast excluded zero, $B = -1.28$, $SE = .41$, $p = .002$, 95% CI [-2.03, -0.39]. The

direct effect of Brad's decision on warmth perceptions was not significant when both mediators

were included in the model, $B = -.46$, $SE = .32$, $p = .151$, 95% CI [-1.09, 0.17]. These results

indicate that participants thought Brad was warmer when he rejected versus accepted causing

outcome-maximizing harm partly because they inferred he experienced stronger affect. Although

participants also inferred that Brad engaged in less cognition when he rejected versus accepted

harm, perceptions of Brad's cognition had a weaker impact on warmth ratings than perceptions

of affect. Rerunning this analysis controlling for competence or morality had little effect on

results.

  Competence mediation. We also simultaneously regressed competence on Brad's

decision to accept harm and both mediators (see Figure 3a). As expected, the indirect effect

through affective processing was not significant, $B = -.31$, $SE = .19$, $p = .103$, 95% CI [-0.69,

0.07], whereas the indirect effect through cognitive processing was, $B = .85$, $SE = .30$, $p = .005$,

95% CI [0.23, 1.43]. A pairwise contrast indicated that the indirect effect through affective

processing was significantly smaller than the indirect effect through cognitive processing, $B = -$

1.15, $SE = .40$, $p = .004$, 95% CI [-1.93, -0.29]. The direct effect of dilemma decision was not

significant when the mediators were included in the model, $B = .27$, $SE = .29$, $p = .358$, 95% CI

[-0.30, 0.85]. Thus, participants thought Brad was more competent when he accepted versus

rejected harming the baby because they inferred that he engaged in more cognitive processing.

Although participants also inferred that Brad engaged in less affective processing when he

accepted versus rejected harm, perceptions of Brad's affect had a weaker impact on competence

ratings than perceptions of his cognition. Rerunning this analysis controlling for warmth or

morality had little effect on results.

Morality mediation. Finally, we examined whether perceptions of affective or cognitive

processing mediated the effect of Brad's decision on perceptions of his morality. There was a

significant indirect effect through affective, $B = -.97$, $SE = .28$, $p < .001$, 95% CI [-1.56, -0.48],

but not cognitive processing, $B = .48$, $SE = .35$, $p = .171$, 95% CI [-0.23, 1.15], and the indirect

effect through affective processing was significantly larger than through cognitive processing, B

$= -1.45$, $SE = .47$, $p = .002$, 95% CI [-2.35, -0.51]. Meanwhile, the direct effect was not

significant, $B = -.72$, $SE = .41$, $p = .079$, 95% CI [-1.53, 0.09]. Taken at face value, this finding

appears to indicate that people viewed Brad as more moral when he rejected harm because he

appeared to engage more affective processing.

However, consider that warmth and morality were strongly correlated. Although

controlling for morality had little effect on the warmth mediation, controlling for warmth

reduced the indirect effect via affective processing to non-significance, $B = -.17$, $SE = .17$, $p =$

.322, 95% CI [-0.53, -0.13], while cognitive processing remained not significant, $B = .13$, $SE =$

.21, $p = .547$, 95% CI [-0.24, 0.58]. Controlling for competence had little effect. Therefore,

perceptions of affective processing do not appear to directly mediate the effect of dilemma

decision on morality. However, there remains the possibility that affective processing increases

perceptions of warmth, which in turn increases perceptions of morality in a two-step mediation

chain.[5]

Hence, we examined a mediation model where dilemma decision predicted affective

processing, then warmth, then morality, controlling for logical processing. The indirect effect

through this full pathway reached significance, $B = -.47$, $SE = .18$, $p = .009$, 95% CI [-.91, -.20],

whereas the indirect effect through affective processing alone did not, $B = -.12$, $SE = .12$, $p =$

.322, 95% CI [-.41, .08]; nor did the indirect effect through warmth alone, $B = -.41$, $SE = .32$, $p =$

.201, 95% CI [-1.04, .25]. Therefore, perceptions of affective processing indirectly mediated the

impact of dilemma decision on morality ratings through increased perceptions of warmth, but

neither perceptions of affective processing nor warmth directly mediated the impact of decision

on morality. This pattern suggests that inferences of morality from rejecting harm on dilemmas

are partly due to increased affective processing and therefore warmth, but warmth and morality

are not redundant perceptions as perceptions of affect directly impact warmth but only indirectly

impact morality.

Discussion

Overall, these findings enhance support for our argument. Not only did we replicate

Studies 1 and 2 by finding that Brad's dilemma decision impacted perceptions of warmth,

competence, and morality as expected—we also corroborated the precise hypothesis that

perceptions of affective processing mediated this effect on warmth ratings, and perceptions of

cognitive processing mediated this effect on competence ratings. This double-dissociation

mediation pattern is especially remarkable considering that warmth and competence again

correlated positively. Hence, these findings provide strong support for the argument that people

infer the role of affective and cognitive processing underpinning dilemma judgments and used

this information to inform personality perceptions.

Furthermore, we clarified the relation between warmth and morality. Again, these

constructs were highly correlated and responded similarly to the manipulation, consistent with

the possibility that they are interchangeable (Wojciszke, 1998). Yet, perceptions of affective

processing mediated the impact of target dilemma judgment on perceptions of warmth, but only

indirectly influenced perceptions of morality through perceptions of warmth. These findings

suggest that warmth and morality are partly dissociable, though related, constructs (Goodwin et

al., 2014). Next, we explored the robustness and generalizability of these findings by examining

whether such a specific mediation pattern would replicate in a different sample, using dilemmas

written in a different language, across both male and female targets.

Study 3b

Study 3b replicated Study 3a while enhancing generalizability in three ways. First, we

employed a very different sample. Thus far, we had only tested American, English-speaking

participants from Amazon's Mechanical Turk. Although initial evidence suggests that online

samples are comparable to those obtained in the laboratory (Buhrmester, Kwang, & Gosling,

2011), we nonetheless wished to examine our predictions in a very different sample—

specifically, German-speaking university students. Second, we employed all three dilemmas

from Study 1, rather than the single dilemma used in Study 3a. Each dilemma was translated into

German.

Third, we varied the gender of the target making moral decisions. Whereas previously

participants rated only male targets, this study examined perceptions of both males and females.

We introduced this manipulation because gender is a powerful predictor of moral dilemma

judgments: women are much more likely than men to prefer the harm-rejecting response, likely

due to stronger affective reactions to harm, whereas women and men are similar in their

preference for the harm-accepting response, likely due to similar levels of cognitive processing

(Friesdorf, Conway, & Gawronski, 2015). It is possible that participants' lay theories would

reflect this trend by ascribing more affectivity, and hence more warmth, to female than male

targets. However, we argue that warmth and competence perceptions should vary as a function of ascriptions of affective and cognitive processing. Gender differences emerge when averaging across many participants; when a particular man and woman make the same judgment for a particular dilemma, participants may reasonably infer that these targets experienced similar levels of affect and cognition. If so, then inferences regarding male and female moral processing should be similar. We compared these predictions in Study 3b.

We expected to replicate the mediation pattern from Study 3a: that perceptions of affective processing would mediate the impact of the target's dilemma judgments on warmth ratings, whereas perceptions of cognitive processing would mediate the impact of the target's dilemma judgments on competence ratings, and neither process would mediate the impact of judgment on morality ratings. We were agnostic as to whether this pattern would vary across gender. Replicating the mediation pattern from Study 3a in such a different sample, with different stimuli, and across target gender would increase confidence that the above-reported effects are robust to theoretically-irrelevant changes in stimulus materials or presentation context features.

Method

      Participants and design. We recruited 120 students from the student cafeteria of a major German university (35 males, 85 females, $M_{age} = 23.28$, $SD = 11.88$) who participated in exchange for candy. Participants were randomly assigned to one of four conditions in a 2 (target gender: male vs. female) × 2 (target decision: harm inappropriate vs. appropriate) between-subjects design.

      Procedure. The procedure was identical to Study 3, except that we presented participants with a picture of either 'Marc,' a male target, or 'Mara,' a female target (Emotionwisegroup,

2011). These targets displayed fairly neutral facial expressions and were rated as similar in

attractiveness. After viewing the photograph, participants learned that Marc or Mara either

consistently rejected or consistently accepted causing harm on the crying baby, drug lord, and

vaccine dilemmas from Study 1. As in Study 3, participants indicated how much Marc or Mara's

decision was based on both a) feelings and emotions, and b) logical reasoning, before rating

Marc or Mara's warmth (α =.72), competence (α = .87), and morality. All measures and

materials were presented in German.

Results

Target warmth and competence. In order to test the effect of target decision on warmth

and competence we submitted ratings to a 2 (target decision: harm inappropriate vs. appropriate)

× 2 (target gender: male vs. female) × 2 (personality measure: warmth vs. competence) repeated-

measures ANOVA with the first two factors between-subjects and the last factor within-

subjects.[6] There was a main effect of decision, $F(1, 114) = 17.40$, $p < .001$, $\eta_p^2 = .13$, 95% CI

[0.04, 0.25], but no main effect of gender, $F(1, 114) = 2.64$, $p = .107$, $\eta_p^2 = .02$, 95% CI [0.00,

0.10] or measure, $F(1, 114) = .26$, $p = .613$, 95% CI [0.00, 0.05]. Neither the two-way

interaction between gender and measure, $F(1, 114) = 2.43$, $p = .122$, $\eta_p^2 = .02$, 95% CI [0.00,

0.10], or decision and gender reached significance $F(1, 114) = .61$, $p = .437$, $\eta_p^2 = .00$, 95% CI

[.00,.00], but replicating Studies 1 and 2, the interaction between decision and measure was

significant, $F(1, 114) = 65.19$, $p < .001$, $\eta_p^2 = .37$, 95% CI [0.23, 0.48]. This was not qualified by

a three way interactions, $F(1, 114) = 0.00$, $p = .994$, $\eta_p^2 = .00$, 95% CI [0.00, 0.00].

This pattern suggested that across both genders, participants rated targets who rejected

($M = 4.40$, $SD = 1.09$), rather than accepted causing harm ($M = 2.75$, $SD = .99$) as warmer, $F(1,$

$114) = 77.22$, $p < .001$, $\eta_p^2 = .40$, 95% CI [0.27, 0.51]. Conversely, participants rated targets

who rejected ($M = 3.23$, $SD = 1.05$), rather than accepted causing harm ($M = 3.91$, $SD = .95$) as less competent, $F(1, 114) = 13.82$, $p < .001$, $\eta_p^2 = .11$, 95% CI [0.02, 0.22]. In this case, warmth and competence were not significantly correlated, and even trended in opposite directions (see Table 1).

Target morality. Finally, we submitted morality ratings to a 2 (decision: harm inappropriate vs. appropriate) × 2 (target gender: male vs. female) between-subjects ANOVA. We found the predicted main effect of decision: participants rated targets who rejected ($M = 5.24$, $SD = 1.12$), rather than accepted causing harm ($M = 3.07$, $SD = 1.52$), as more moral, $F(1, 114) = 77.91$, $p < .001$, $\eta_p^2 = .41$, 95% CI [0.27, 0.51]. There was no main effect of gender, $F(1, 114) = 2.25$, $p = .137$, $\eta_p^2 = .00$, 95% CI [0.00, 0.09], and the interaction was not significant, $F(1, 114) = .91$, $p = .341$, $\eta_p^2 = .00$, 95% CI [0.00, 0.09]. Warmth and morality again correlated positively, but morality did not significantly correlate with competence (see Table 1).

Warmth mediation. To determine whether perceptions of affective or cognitive processing mediated the effect of Brad's dilemma decision on warmth, competence, and morality ratings, we conducted analyses similar to those in Study 3a, with one key difference: As we also varied target gender in this study, we included this variable as a covariate (although doing so does not greatly affect results). In addition, five people were automatically dropped from this analysis due to minor amounts of missing data. Results are displayed in Figure 3b. In the first step of each model, we simultaneously regressed perceptions of the target's affective and cognitive processing on dilemma decision to accept or reject harm. As expected, the target's decision to accept harm negatively predicted perceptions of affective processing, $B = -1.87$, $SE = .31$, $p < .001$, 95% CI [-2.48, -1.26], and positively predicted perceptions of cognitive processing, $B = 2.14$, $SE = .30$, $p < .001$, 95% CI [-1.55, 2.74].

Next, we simultaneously regressed warmth on target decision and both mediators, controlling for target gender (see Figure 3b). We replicated the indirect effect through affective processing, $B = -.25$, $SE = .15$, $p = .095$, 95% CI [-0.61, 0.01], although the effect was reduced to a marginal finding. Unexpectedly, we also found evidence for a marginal indirect effect through cognitive processing, $B = -.30$, $SE = .18$, $p = .094$, 95% CI [-0.72, 0.01]. Although these indirect effects were in the same direction, they suggest slightly different interpretations: targets who rejected causing harm were perceived as warmer the more they appeared to engage in affective processing and the less they appeared to engage in cognitive processing. This time, these two effects were not significantly different from one another, $B = .06$, $SE = .29$, $p = .846$, 95% CI [-0.53, 0.64]. The direct effect of decision on warmth also remained significant when both mediators were included in the model, $B = -1.03$, $SE = .21$, $p < .001$, 95% CI [-1.45, -0.61]. Rerunning this analysis controlling for competence or morality had little effect on results.

Competence mediation. To examine the mediation of target decision on competence ratings, we again simultaneously regressed competence on Brad's decision to accept harm and both mediators, controlling for target gender and warmth (see Figure 3b). As predicted, and replicating Study 3a, the indirect effect through affective processing was not significant, $B = .14$, $SE = .15$, $p = .356$, 95% CI [-0.13, 0.46], but the indirect effect through cognitive processing was, $B = .53$, $SE = .19$, $p = .005$, 95% CI [0.21, 0.96]. However, the contrast between these effect sizes did not reach significance, $B = -.40$, $SE = .31$, $p = .198$, 95% CI [-1.04, 0.19]. The direct effect of dilemma decision was also not significant when both mediators were included in the model, $B = .06$, $SE = .20$, $p = .776$, 95% CI [-0.33, 0.45]. Rerunning this analysis controlling for warmth or morality had little effect on results.

Morality mediation. Finally, we examined the mediation of target decision on morality ratings, controlling for warmth, competence, and target gender. Replicating Study 3a, this analysis revealed no significant indirect effect through affective processing, *B* = -.21, *SE* = .28, *p* = .462, 95% CI [-0.76, 0.34], nor through cognitive processing, *B* = .24, *SE* = .32, *p* = .461, 95% CI [-0.40, 0.90], and these effects were not significantly different from one another, *B* = -.44, *SE* = .57, *p* = .449, 95% CI [-1.59, 0.67]. However, there remained a significant direct effect of Brad's decision on morality perceptions when both mediators were included in the model, *B* = -2.16, *SE* = .32, *p* < .001, 95% CI [-2.78, -1.53]. This time, controlling for warmth or competence had little effect on results.

Again we assessed a chain mediation model from dilemma decision through affective processing to warmth to morality, controlling for logical processing. Unlike Study 3a, the indirect effect through the entire model did not reach significance, *B* = -0.04, *SE* = .04, *p* = .322, 95% CI [-.16, 0.01]. However, the indirect effect on morality through only warmth was significant, *B* = -0.64, *SE* = .26, *p* = .877, 95% CI [-1.23, -0.23] and the indirect effect through affect alone was not, *B* = 0.01, *SE* = .06, *p* = .013, 95% CI [-0.11, 0.16]. Although this pattern differed somewhat from Study 3a, it suggests a similar conclusion: although some of the impact of dilemma decisions on morality is carried through increased warmth ratings, perceptions of affective processing do not appear to contribute to this effect. Therefore, warmth and morality, although related constructs, appear somewhat dissociable, with perceptions of affect mattering more for warmth than for morality ratings, and suggesting that other perceptions might influence morality ratings instead.

Discussion

These findings provide additional, albeit somewhat weaker, support for our argument. We replicated the pattern of target dilemma judgments on perceptions of target warmth, competence, and morality found in Studies 1, 2, and 3a. We obtained these effects in a very different sample—German-speaking university students in a cafeteria instead of English-speaking American online workers. Notably, findings held for both female and male targets. Gender did not impact results aside from higher overall ascriptions of warmth and competence to women than men. Unlike the previous studies, this time warmth and competence were not positively correlated. Perhaps this finding reflects cultural differences in notions of warmth and competence, the wording of translated materials, or simply statistical variation. Yet, despite this minor difference, we nonetheless replicated the effects of target dilemma decision on warmth, competence, and morality.

Moreover, we generally replicated the mediation pattern from Study 3a. As predicted, perceptions of affective processing (marginally) mediated the effect of decision on warmth ratings—however, this time perceptions of cognitive processing also (marginally) mediated the effect of decision on warmth ratings. This finding suggests that people rated targets who rejected causing harm warmer because such targets appeared to engage in both more affective and less cognitive processing. The competence mediation pattern from Study 3a replicated more clearly: people rated targets who accepted causing outcome-maximizing harm as more competent because these targets appeared to engage in more cognitive (but not affective) processing. However, this finding should be treated with caution as the contrast between these effect sizes did not reach significance. Finally, neither perceptions of affective nor cognitive processing mediated the effect of target decision on morality ratings, similar to the findings of Study 3a when controlling for warmth. Although in a chain mediation model warmth mediated some of

the effect of decision on morality, perceptions of affective processing did not impact morality

ratings the way they did warmth ratings, consistent with the possibility that somewhat different

psychological processes underpin perceptions of warmth and morality (Goodwin et al., 2014).

We return to this point in the general discussion.

Study 4

In Study 4 we tested whether participants infer that particularly affective targets should

be more likely to reject causing harm, whereas particularly cognitive targets should be more

likely to accept causing outcome-maximizing harm. To test this hypothesis, we again presented

participants with Brad, but this time we gave participants only information about his decision-

making style. When we described Brad as an affective decision-maker, we predicted that

participants would expect him to choose *harm is not appropriate* more often. Conversely, when

we described Brad as a cognitive decision-maker, we predicted that participants would expect

Brad to choose *harm is appropriate* more often (as causing harm maximizes outcomes). In

addition, we broadened the stimulus set beyond the dilemmas used previously by randomly

presenting dilemmas from a standardized battery (Conway & Gawronski, 2013).

Method

Participants and design. We obtained 100 American participants (58 males, 42 females,

$M_{age} = 30.87$, $SD = 10.66$) via Amazon's Mechanical Turk, who received \$0.25. Participants

were randomly assigned to one of two conditions in a 2 (target decision-making style: affective

vs. cognitive) × 2 (target decision likelihood: harm inappropriate vs. appropriate) repeated

measures design, with the first factor between-subjects and the second factor within-subjects.

Additional power afforded by the within-subjects component of the design enabled us to employ

a lower per-condition sample size here than in the other studies.

Procedure. The procedure was a modification of Study 1. Participants viewed a photo of Brad, and a moral dilemma selected at random. Next, participants learned that Brad is either a rational or affective decision-maker. Specifically, they read: *Brad is a very rational [sensitive]*[7] *person who focuses on logic [his feelings] when making a decision. How likely is it that Brad selected each of the following decisions?* Participants then separately rated a) the likelihood that Brad decided causing outcome-maximizing harm is appropriate, and b) the likelihood that Brad decided causing such harm is inappropriate, on a 7-point scales anchored at 1 (*not at all likely*) and 7 (*very likely*). We used separate ratings to allow for the possibility that participants think a given decision-making style could increase motivation to *both* reject and accept causing harm. However, these measures were negatively correlated $r = -.87$, suggesting that participants generally viewed these decisions as opposites.

Instead of responding to the few dilemmas used previously, this time participants randomly viewed three of the ten incongruent (high-conflict) moral dilemmas from Conway and Gawronski (2013). Each dilemma entailed deciding whether to cause harm in order to maximize overall outcomes. The crying baby and vaccine dilemmas from Study 1 are examples of incongruent dilemmas from this set. Other examples include the *torture dilemma* (is it appropriate to torture a man in order to stop a bomb that will kill people?), and the *car accident dilemma* (is it appropriate to run over a grandmother in order to avoid running over a mother and child?). We averaged participants' ratings across the three dilemmas they viewed.

Results and Discussion

We submitted likelihood ratings to a 2 (target decision-making style: affective vs. cognitive) $\times$ 2 (target decision: harm inappropriate vs. appropriate) repeated measures analysis with the first factor between-subjects and the second factor within-subjects (see Figure 4). There

was no main effect of target decision-making style, $F(1, 98) = .49$, $p = .485$, $\eta_p^2 = .00$, 95% CI

[0.00, 0.06], and no main effect of decision, $F(1, 98) = .40$, $p = .529$, $\eta_p^2 = .00$, 95% CI [0.05,

0.26]. However, there was a significant interaction, $F(1, 98) = 15.15$, $p < .001$, $\eta_p^2 = .13$, 95% CI

[0.03, 0.26]. As predicted, post hoc tests indicated that participants in the affective decision-

making condition thought it was more likely that Brad rejected ($M = 4.59$, $SD = 2.15$) than

accepted causing harm ($M = 3.29$, $SD = 2.14$), $F(1, 98) = 5.43$, $p = .022$, $\eta_p^2 = .05$, 95% CI [0.00,

0.16]. Conversely, participants in the cognitive decision-making condition thought it was less

likely that Brad rejected ($M = 3.12$, $SD = 1.99$) than accepted causing harm ($M = 4.92$, $SD =$

1.97), $F(1, 98) = 10.04$, $p = .002$, $\eta_p^2 = .09$, 95% CI [0.01, 0.21].

The results of Study 4 provided yet more support for our argument. As predicted,

participants rated targets who engaged in affective processing as more likely to reject than accept

causing harm, whereas they rated targets who engaged in cognitive processing as less likely to

reject than accept causing harm. These findings suggest that people hold coherent lay theories

regarding the connection between affective processing and harm rejection, and between

cognitive processing and outcome-maximization. Moreover, we obtained this pattern across a set

of 10 moral dilemmas rather than one or three. However, the question remains whether people's

lay theories in this domain extend to more general decision-making. We examined this question

in Study 5.

Study 5

Having demonstrated that people infer processing and personality traits based on others'

moral dilemma judgments, we now examined whether these inferences impact behavior. Based

on previous findings (Rudman & Glick, 1999; Cuddy & Fiske, 2002; Cuddy, Fiske, & Glick,

2004), we predicted that people would match targets to roles: they would select (warm) harm-

rejecting targets for stereotypically warm social roles, and select (competent) harm-accepting

targets for stereotypically competent social roles. To test this possibility, we introduced

participants to Michael, a motorcyclist taking part in a motor cross race, who must decide

whether to fatally shove a falling racer into a tree to prevent a deadly chain collision involving

five other motorcyclists. Shoving entails killing the racer to save the lives of five other racers;

not shoving entails avoiding killing the one racer (who will survive), but allowing the five other

racers to die. In one condition Michael decided that it was appropriate to shove the racer; in the

other condition Michael decided doing so was inappropriate.

Participants then rated Michael's suitability for the positions of pediatrician (where

warmth is prioritized) and hospital manager (where competence is prioritized). If participants

prefer Michael who rejects causing harm for the warmth-priority position and Michael who

accepts causing outcome-maximizing harm for the competence-priority position, this would

suggest that people use personality inferences based on moral dilemma judgments to inform

social decision-making. Of course, one could argue that competence is important for both

positions. Although this may be true, we think that people value warmth *more* than competence

for a pediatrician. That is, warmth should carry more weight than competence due to its primacy

(Fiske et al., 2007). Hence, in order to ensure that people indeed prioritize warmth for doctors

and competence for managers, we conducted a pretest.

Pretest

We recruited 120 American participants (68 males, 52 females, $M_{age} = 33.87$, $SD =$

11.78) from Amazon's Mechanical Turk to test whether participants prioritized warmth more for

doctors than hospital directors, and competence more for hospital managers than doctors. We

randomly assigned participants to imagine that either they were sick and seeking a doctor, or

they were head of human resources and seeking a new hospital manager. We then asked

participants: *Which traits should the doctor (future hospital manager) most importantly*

possess? Finally, participants rated the importance of the warmth (α = .80) and competence (α =

.51) items from Study 1 on scales from 1 (*not at all important*) to 7 (*very important*). Participants

did not rate morality in this study.

    We submitted these ratings to a 2 (role: pediatrician vs. hospital manager) × 2 (trait:

warmth vs. competence) repeated measures analysis with the first factor between-subjects and

the second factor within-subjects. There was no main effect of either social role, $F(1, 118) = .61$,

$p = .438$, or trait, $F(1, 118) = .31$, $p = .574$, $\eta_p^2 = .00$, 95% CI [0.00, 0.00]. However, we found a

significant interaction, $F(1, 118) = 28.20$, $p < .001$, $\eta_p^2 = .19$, 95% CI [0.08, 0.31]. As predicted,

participants rated warmth as more important for a doctor ($M = 5.14$, $SD = .75$) than hospital

manager ($M = 4.67$, $SD = .81$), $F(1, 118) = 10.61$, $p = .001$, $\eta_p^2 = .08$, 95% CI [0.01, 0.19],

whereas they rated competence as less important for a doctor ($M = 4.80$, $SD = .57$) than hospital

manager ($M = 5.10$, $SD = .56$), $F(1, 118) = 8.94$, $p = .003$, $\eta_p^2 = .07$, 95% CI [0.0, 0.17].

Moreover, participants seeking a doctor rated warmth ($M = 5.14$, $SD = .75$) as more important

than competence ($M = 4.80$, $SD = .57$), $F(1,118) = 16.65$, $p < .001$, $\eta_p^2 = .12$, 95% CI [0.03,

0.24], whereas for participants seeking a hospital manager rated competence ($M = 5.10$, $SD =$

.56) as more important than warmth ($M = 4.67$, $SD = .81$), $F(1,118) = 12.83$, $p = .001$, $\eta_p^2 = .10$,

95% CI [0.02, 0.21]. Note that warmth and competence again correlated positively (see Table 1),

and all means were above the midpoints of the scales, suggesting that people value both warmth

and competence for each position. Nonetheless, these findings indicate that people *prioritize*

warmth for doctors and competence for hospital managers. Thus, if people use others' dilemma

judgments to infer warmth and competence and thereby match people to social roles, then

participants should select harm-rejecting Michael for the role of pediatrician, but harm-accepting

Michael for the role of hospital manager.

Method

Participants and design. We obtained 107 German participants (15 males, 92 females,

$M_{age} = 23.21$, $SD = 5.78$) from of a major German university, who received €2 or course credit.

Participants were randomly assigned to one of two conditions in a 2 (target decision: harm

acceptance vs. harm rejection) × 2 (social role: pediatrician vs. hospital manager) repeated

measures design with the first factor between-subjects and the second factor within-subjects.

Procedure. Participants read the motorcyclist dilemma and learned about Michael's

decision. Then, participants evaluated Michael's suitability (*How likely is it that Michael will be*

suitable for this position?) for the pediatrician and hospital manager roles on separate scales

from 1 (*not at all likely*) to 7 (*very likely*).

Results and Discussion

We submitted likelihood ratings to a 2 (target decision: harm inappropriate vs.

appropriate) × 2 (role: pediatrician vs. hospital manager) repeated measures analysis with the

first factor between-subjects and the second factor within-subjects (see Figure 5). There was no

main effect of decision, $F(1, 105) = 1.87$, $p = .175$, $\eta_p^2 = .02$, [0.00, 0.09], but there was a

theoretically uninteresting main effect of social role, $F(1, 105) = 16.25$, $p < .001$, $\eta_p^2 = .13$, 95%

CI [0.04, 0.26]. More importantly, we found the predicted interaction, $F(1, 105) = 55.68$, $p <$

.001, $\eta_p^2 = .35$, 95% CI [0.20, 0.47]. Post-hoc tests indicated that participants in the harm-

rejecting condition thought that Michael was more suitable for the pediatrician (*M* = 5.89, *SD* =

1.15) than hospital manager position (*M* = 3.61.50, *SD* = 1.86), $F(1, 105) = 65.44$, $p < .001$, $\eta_p^2 =$

.38, 95% CI [0.24, 0.50]. Conversely, participants in the harm-accepting condition thought that

Michael was less suitable for the pediatrician ($M = 2.66$, $SD = 1.47$) than hospital manager

position ($M = 4.57$, $SD = 1.69$), $F(1, 105) = 5.94$, $p < .016$, $\eta_p^2 = .05$, 95% CI [0.00, 0.15].

These findings corroborate our argument that inferences of moral processing inform

social decision-making. When people infer the roles of affective and cognitive processing

underpinning others' moral dilemma judgments, they make predictions regarding social role fit.

Specifically, people preferred to select a target who rejected causing harm (thereby suggesting

they are a warm person) for a social role where warmth is prioritized. Conversely, people

preferred to select a target who accepted causing harm (thereby suggesting they are a competent

person) for a social role where competence is prioritized. Hence, participants appeared to match

targets to social roles that fit their (inferred) personality traits, in line with previous work (e.g.,

Rudman & Glick, 1999). Note that in addition to the predicted interaction, there was also an

overall main effect in favor of selecting the target that rejected causing harm. It may be that

people generally prefer someone who makes a (warm) judgment, in line with research showing

that warmth more important than competence (Fiske et al., 2006), or they generally trusted him

more (Everett et al., 2016).

P-Curve Analysis

Finally, we conducted a p-curve analysis (Simonsohn, Nelson, & Simmons, 2014) using

online p-curve software (www.p-curve.com/app3). This analysis assesses whether the statistical

analyses in a body of work suggest the presence of a genuine phenomenon. The key prediction

across Studies 1-3b and the Study 5 Pretest was that the impact of target dilemma decision on

warmth is fully reversed on competence (for traditional, incongruent dilemmas); therefore, we

included both of these simple effects for each study (Simonsohn et al., 2014). Similarly, for

Studies 4 & 5 we again predicted full reversal as opposed to attenuation for the main dependent

measure, so we again included these simple effects (see Table 2). This analysis indicated that across six studies, mean observed power was very high (95%). Analysis of right-hand skew (indicating many low p-values) indicates that the current studies contain evidential value, $Z = -10.16$, $p < .001$. Conversely, both the analysis of inadequate evidential value (indicating a lack of systematic findings), $Z = 7.01$, $p > .999$, and left-hand skew (indicating p-hacking), $Z = 10.16$, $p > .999$, failed to reach significance. Together these statistics indicate that the current studies were sufficiently well-powered.

General Discussion

Across six studies, we garnered evidence that people infer the affective and cognitive processing underpinning other' dilemma judgments. Participants rated targets who rejected causing outcome-maximizing harm on moral dilemmas as warmer but less competent than targets who accepted causing such harm (Studies 1-3). However, when targets accepted harm that failed to maximize outcomes, participants viewed them as colder and more immoral, but not more competent, than targets who rejected causing such harm (Study 2). Moreover, perceptions of affective processing mediated the effect of harm rejection on warmth, whereas perceptions of cognitive processing mediated the effect of harm acceptance on competence (Study 3a)—an effect that largely replicated in a different culture and across ratings of both male and female decision-makers (Study 3b). Moreover, people made the reverse inference: they expected targets who prefer affective processing to reject harm, whereas targets who prefer cognitive processing to accept harm to maximize outcomes (Study 4). Finally, people viewed harm-rejecting targets as more suitable for a social role prioritizing warmth, and harm-accepting targets as more suitable for a social role prioritizing competence (Study 5).

Implications

These findings add to a nascent but growing literature on perceptions of dilemma judgments by clarifying that perceivers not only infer qualities such as morality, pragmatism, and trustworthiness from others' moral dilemma judgments (Everett, et al., 2016; Kreps & Monin, 2015; Uhlmann et al., 2013)—but that perceivers essentially intuit the dual process model of moral judgments. People seem to be aware of the role that affective reactions to harm play in motivating harm rejection, and logical consideration of outcomes plays in harm-acceptance judgments (that maximize outcomes), and draw appropriate personality inferences. These findings may seem intuitive, but given historical associations between deontology and logic, and utilitarianism and emotion (Kagan, 1998), it was entirely plausible that lay people draw inferences along these lines instead. We also ruled out the possibility that people view all dilemma decision-makers as low on both competence and morality, given all of them produce sub-optimal outcomes.

The current findings may have far-reaching ramifications. Warmth and competence perceptions powerfully influence how people treat others—for example, warm others often induce pity, whereas competent others often induce respect (Fiske, 2002). Moral dilemma responses may lead to similar treatment: most people might prefer close interaction partners who reject harm, as they surmise these people are warm and good-natured. Indeed, Everett and colleagues (2016) demonstrated that most people—even many who themselves make the characteristically utilitarian judgments—prefer as social interaction partners people who selected characteristically deontological judgments. They speculated that deontological judgments serve as a signal of strong concern for others, hence trustworthiness, thereby attracting social partners (although whether characteristically deontological judgments serve as an *honest* signal of trustworthiness has yet to be determined). The current findings regarding perceptions of warmth

and affective processing support that conclusion.

Yet, the current findings also add a caveat to Everett and colleagues' conclusions: people preferred others who made characteristically utilitarian judgments for the role of hospital manager, where raters prioritize competence over warmth. Hence, there may be social benefits to making both dilemma decisions, depending on what kind of social partner others are seeking. In most moral dilemma research, the characteristically utilitarian decision requires personally intervening (Gawronski et al., 2015), thereby personally shouldering the risk that one's intervention might be disastrous, whereas the 'characteristically deontological' decision entails stepping back and allowing fate to run its course (Gold, Colman, & Pulord, 2014). Hence, the characteristically utilitarian decision may provide evidence of leadership qualities (Lucas & Galinsky, 2015). Indeed, logical reasoning, complex problem solving skills, and emotional stability are important qualities for leaders (Friedman, Fleishman & Fletcher, 1992; Mumford, 2000), and the current work suggests people can demonstrate those qualities by accepting outcome-maximizing harm. Therefore, people may prefer targets who accept outcome-maximizing harm for leadership roles. Conversely, people may be averse to making the utilitarian choice when particularly worried about possible social sanctions (e.g., religious contexts, Szekely, Opre, & Miu, 2015), or when they need to build trust, such as online economic games (Everett et al., 2016). If so, this may explain why people make more characteristically 'utilitarian' judgments in the presence of ingroup members (Lucas & Livingston, 2014), as ingroup members may already trust decision-makers, freeing them to showcase other qualities.

Moreover, if people intuit the role of affect and cognition in others' dilemma judgments, this raises the question of whether people are *aware* that others may judge them accordingly—

and if so, whether they strategically shift dilemma judgments in order to create a desired impression. Indeed, some work suggests a role for motivated processing in moral judgments (Uhlmann, Pizarro, Tannenbaum, & Ditto, 2009; Liu & Ditto, 2014), and that dilemma judgments are sensitive to social influence (Kundu & Cummins, 2012). Such findings suggest that higher-order social cognitive processes may prospectively contribute to dilemma judgments beyond lower-order affective and cognitive processing. Future research should investigate this possibility.

We hasten to add that various factors may alter the demonstrated links between harm-rejection and affect, and harm-acceptance and logic, if they alter inferences of the reasons why people act. We documented one such moderator in Study 2, where reducing the positive outcomes of harm reduced inferences of competence for targets who nonetheless still endorsed harm (as they appeared motivated by bloodthirsty rather than noble goals). Other manipulations that impact meaning of the dilemmas ought to have a similar effect on inferences. For example, greatly increasing the save-to-kill ratio reduces the need for cognitive processing to arrive at harm-acceptance decisions (Trémolière & Bonnefon, 2014); accordingly, we anticipate that participants would discount the competence of targets who accepting killing one person to save a million lives. Likewise, we expect that people would discount warmth inferences of people who refused such a trade-off, as their concern for saving one individual at the cost of millions suggests rigidity rather than genuine concern for well-being. Many other factors could potentially moderate the link between dilemma judgments and warmth/competence judgments if they implied different motivations for decision-makers. For example, the sex-ratio of the target and victims might invite ascriptions of romantic rivalry rather than moral processing (Trémolière, Kaminski, & Bonnefon, 2015), and the age (Kawai, Kubo, & Kubo‑Kawai, 2014)

or ethnicity (Uhlmann, Pizarro, Tannenbaum, & Ditto, 2009) of potential victims might invite

ascriptions of prejudice rather than moral processing. Future work might profitably investigate

some of these boundary conditions.

Moral Judgments and Judgments of Morality

The current findings are largely consistent with other recent findings regarding

perceptions of dilemma decision-makers. However, one mystery emerged. Several studies have

indicated that people view targets who reject causing harm as more moral than those who accept

outcome-maximizing harm. Kreps and Monin (2014) found that people judged speakers who

made purely deontic statements ("this is right") as more moral than speakers who bolstered such

statements with consequentialist justifications ("this is right *because*…"). Everett and colleagues

(2016) demonstrated that people trust targets who reject harm more than those who accept harm.

Ulhmann and colleagues (2013) found that people viewed targets who rejected harm as more

moral than targets who accepted harm—an effect mediated through perceptions of empathic

concern. One might anticipate that these findings obtain because such targets who reject harm

appear to engage in more affective processing focused on the needs and well-being of others.

In the current work, we replicated the finding that people rated harm-rejecting targets as

more moral than harm-accepting targets. However, perceptions of affective processing failed to

directly mediate the impact of dilemma decision on mortality ratings. In chain mediation,

perceptions of affective processing did not directly influence perceptions of morality—the only

did so indirectly through perceptions of warmth in Study 3a. This suggests that although warmth

may partially explain increased moral ratings of harm-rejections—consistent with Ulhmann and

colleagues' (2013) mediation through empathic concern—nonetheless, morality ratings do not

appear directly affected by perceptions of affect. Perhaps other inferred processes would better

explain perceptions of morality. We suggest one possible candidate is perceptions of *moral rule adherence*. Nichols and Mallon (2006) argued that affective reactions to moral dilemmas depend upon appraisals that a moral rule has been violated. If lay perceptions accord with this model, then people should view targets who reject harm as both experiencing strong affect and desiring to uphold moral rules. Perhaps the former primarily affects warmth, whereas the latter primarily affects morality, which would explain why the correlate highly yet nonetheless do not align perfectly. Future work should clarify these relations.

Limitations

In the current work, we relied upon traditional measures of warmth and competence (Fiske et al., 2006) which developed warmth and competence items via a 'top down,' theory-based fashion. This measurement model conceptualizes warmth as closely related to benevolence. Recent work assessing warmth and competence via 'bottom-up' data-driven approaches suggest that warmth might be more related to extraversion or sociability than benevolence, which better aligns with perceptions of morality (Goodwin et al., 2014). It could be that the warmth-as-benevolence items currently employed inflate the correlation between warmth and morality. It remains to be seen whether measures of sociability or extraversion evince the same patterns as warmth. However, re-analyses of all current data using only the terms 'warm' 'competent' and 'moral' provide a pattern of results similar to results using the full warmth and competence scales (see Supplementary Material). Future work should clarify the exact nature of warmth perceptions in moral judgment.

Like all moral dilemma research, the current work employed hypothetical moral dilemmas. Although such dilemmas appear to be useful tools to clarify the role of various psychological processes (Cushman & Greene, 2012), of course it remains unclear how well

dilemma responses correspond to real-world decision-making. Nonetheless, the current work examines perceptions of others' dilemma responses, which may be similar for hypothetical and real dilemmas. Future work might clarify this by investigating perceptions of real-world decision-makers, such as the German judiciary that ruled on shooting down hijacked planes or Truman following his decision to use atomic weapons to end the Second World War.

Finally, the current studies contain two conflations common to the dilemma literature. First, participants in these studies appear to treat dilemma responses as reflecting pure processes (e.g., harm rejection judgments reflect strong affect and harm acceptance strong cognition), whereas, in fact the relation between responses and the processing underlying those responses is far more nuanced (Conway & Gawronski, 2013). However, as we are interested in lay perceptions of processes, rather than the processes themselves, this is a much weaker concern for the present work than for studies investigating these processes directly. The second conflation is that, like most of the literature, most dilemmas employed here conflate the characteristically utilitarian decision with taking action and the characteristically deontological decision with refusing to act (Gawronski et al., 2015). It is possible to consider scenarios where the reverse is true (e.g., intervening to save a person's life even though doing so places a larger number of others at risk). It seems plausible that people may draw a different pattern of inferences from decisions on such dilemmas.

Conclusion

The present work demonstrates that people infer the role of affect and cognition underlying others' moral dilemma judgments. Recall the hijacked airplane dilemma from the introduction. The current findings suggest that the person who rejected shooting down the airplane seems warmer but less competent than the person who accepted shooting down the

airplane, because they both experienced stronger tender emotions and engaged in less cost-benefit reasoning. These findings open the door to the possibility that judgments in moral dilemma studies are driven not only by affective and cognitive processing, but also by strategic self-presentation. If so, then moral decision-making may be even more complicated than existing models suggest.

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Notes

[1]Note that we are not endorsing the strong version of dual process theory, which proposes that affective reactions occur quickly by default, and cognitive evaluations occasionally over-ride default them; it seems incorrect (e.g., Baron, Gürçay, Moore, & Starcke, 2012). We are endorsing the softer version of the dual-process model which suggests that affective reactions to harm and cognitive evaluations of outcomes independently predict dilemma judgments, regardless of temporal order (Conway & Gawronski, 2013).

[2] The term 'characteristically' must be used because the terms *deontology* and *utilitarianism* refer to a variety of related philosophical perspectives that may not always align with this classification. Nonetheless, most theorists agree that deontological positions typically entail avoiding causing harm and utilitarian positions typically entail accepting causing harm on dilemmas where causing harm maximizes outcomes (Foot, 1967, Greene et al., 2001), so we retain this terminology.

[3] If the dual-process model is correct, responses to classic moral dilemmas do not perfectly reflect the degree to which decision-makers experience affective reactions or engage in cognition in an absolute sense. If classic moral dilemmas place affect and cognition in conflict, and ultimately judges may only choose one option, then judgments reflect the *relative* strength of each process. For example, accepting harm that maximizes outcomes may occur either due to strong cognition coupled with strong but slightly weaker affect, or weak cognition coupled with weaker affect. Hence, a judgment to accept causing harm does not reveal whether the judge experienced strong or weak affect—only that cognition outweighed whatever degree of affect they experienced. Nor does such a judgment guarantee that the judge engaged in strong cognition—only that whatever cognition they engaged in outweighed their affective experience. Some people may experience both extensive affect and extensive cognitive processing, whereas

others engage in little of either. In order to estimate each processes independently, it is necessary

to use a technique such as process dissociation (see Conway & Gawronski, 2013). However, in

the current work we are not interested in the actual processes underlying dilemma judgments so

much as lay perceptions of these processes. To that end, lay people, like many researchers,

equate harm avoidance judgments with strong affect and harm acceptance judgments with strong

cognition. This inference is effective as a rough heuristic, so long as researchers recognize that it

does not perfectly describe moral dilemma processing.

[4] Unless the person was fated to die and begged for mercy, or both targets appear equally

destined for harm.

[5] We thank an anonymous reviewer for this suggestion.

[6] Participants' gender did not interact with this finding, $F(2, 109) = .82$, $p = .367$, $\eta_p^2 =$

.01.

[7] Note that instead of *emotional* we used the term *sensitive*, as not all emotions may lead

to perceptions of warmth. For example, envisioning the target acting out of *anger* should

probably not lead to a prediction of harm rejection.

Table 1: Correlations between perceptions of warmth, competence, and morality, and

perceptions of affective and cognitive processing in all studies.

Trait	Warmth	Competence	Morality	Affective Processing
Study 1				
Competence	.48***			
Morality	.75***	.40***		
Study 2				
Competence	.48***			
Morality	.85***	.50***		
Study 3a				
Competence	.31**			
Morality	.77***	.32***		
Affective Processing	.48***	-.25***	.46***	
Cognitive Processing	-.27**	.47**	-.27**	-.70***
Study 3b				
Competence	-.16			
Morality	.66***	-.23		
Affective Processing	.55***	-.49***	.36***	
Cognitive Processing	-.59***	.57***	-.35***	-.76***
Study 5 Pretest				
Competence	.23*			

Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table 2: P-curve Analysis: Key Simple Effects Tests in Studies 1-5.

Trait/Condition	Simple Test
Study 1	
Warmth	$t(98) = 4.09$
Competence	$t(98) = -3.14$
Study 2	
Warmth	$F(1, 196) = 3.38$
Competence	$F(1, 196) = -19.76$
Study 3a	
Warmth	$t(119) = 4.52$
Competence	$t(119) = -4.27$
Study 3b	
Warmth	$F(1, 114) = 77.22$
Competence	$F(1, 115) = -13.82$
Study 4	
Affective Condition	$F(1, 98) = 5.43$
Cognitive Condition	$F(1, 98) = -10.04$
Study 5 Pretest	
Warmth	$F(1, 118) = 10.61$
Competence	$F(1, 118) = -8.94$
Study 5	
Harm Rejection Condition	$F(1, 105) = 65.44$
Harm Acceptance Condition	$F(1, 105) = -5.94$
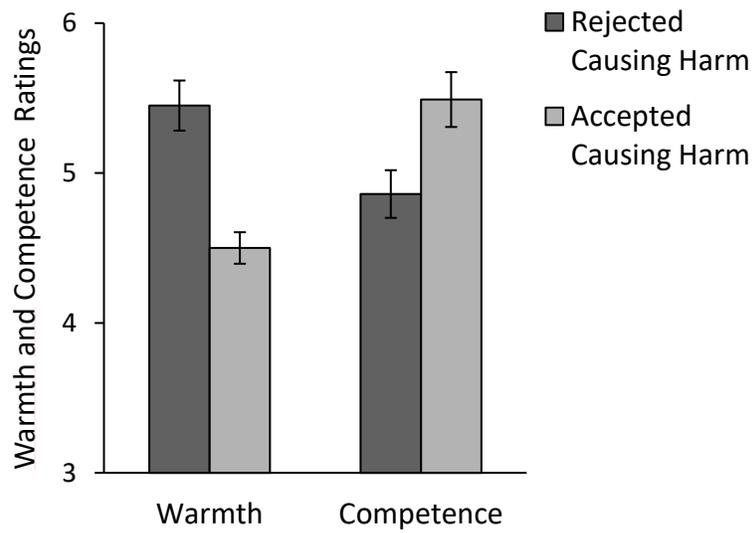
Figure 1. Target warmth and competence ratings when targets rejected or accepted causing harm

to maximize outcomes, Study 1. Error bars reflect standard errors.
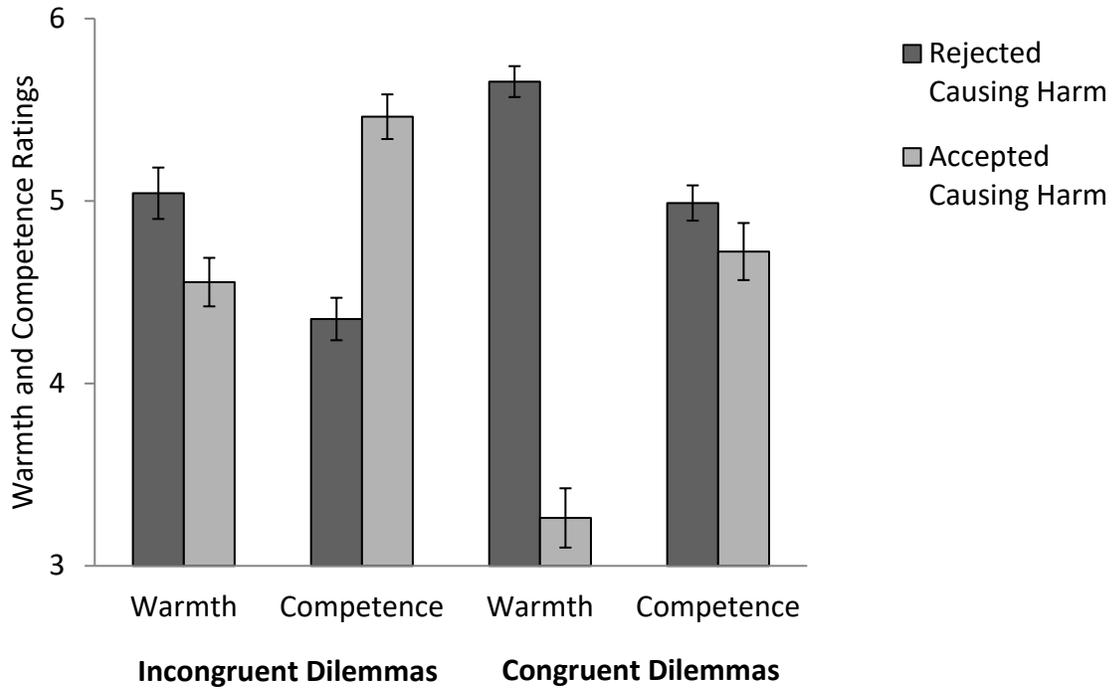
Figure 2. Target warmth and competence ratings when targets rejected or accepted causing harm

when harm either maximized outcomes (incongruent dilemmas) or failed to maximize outcomes

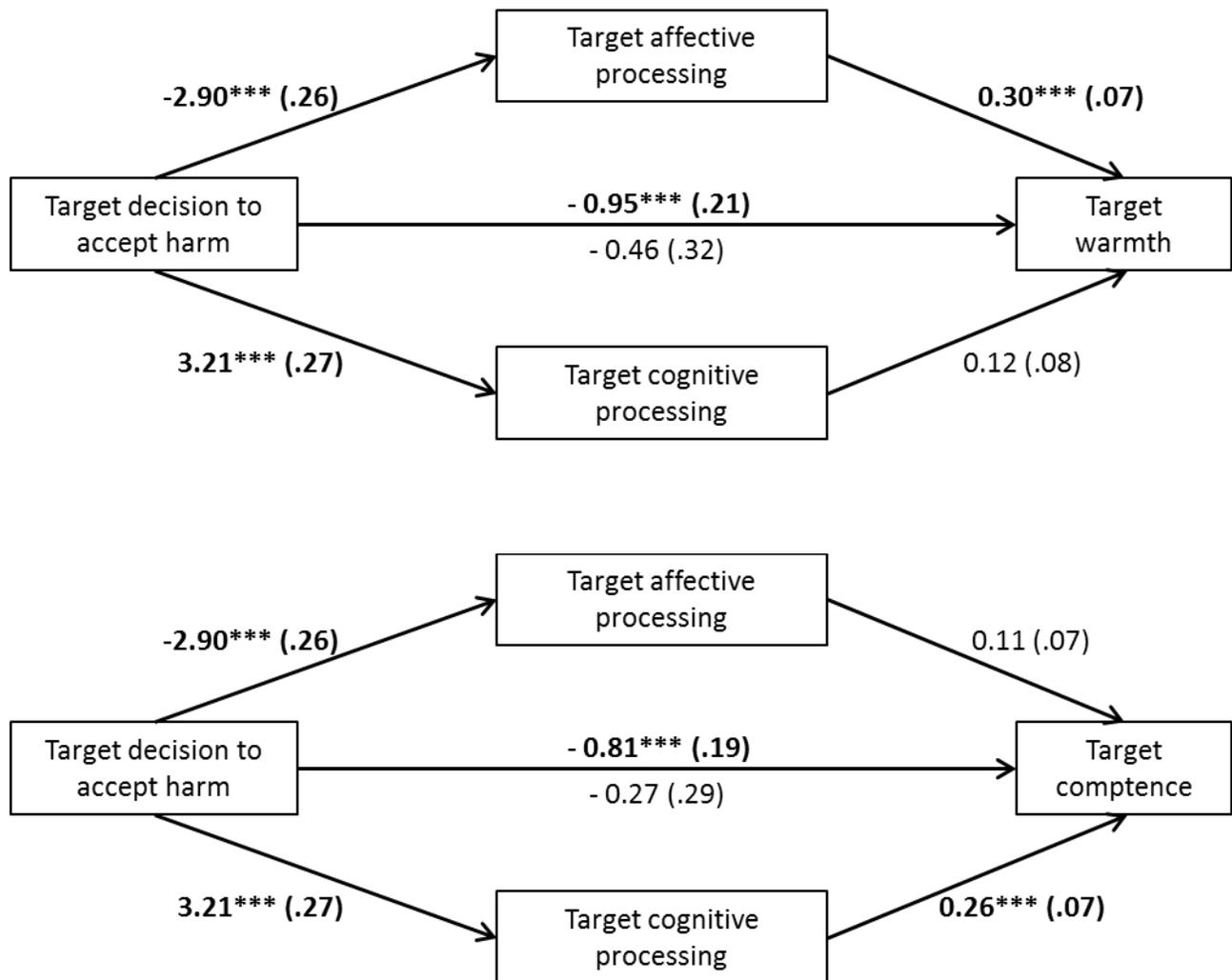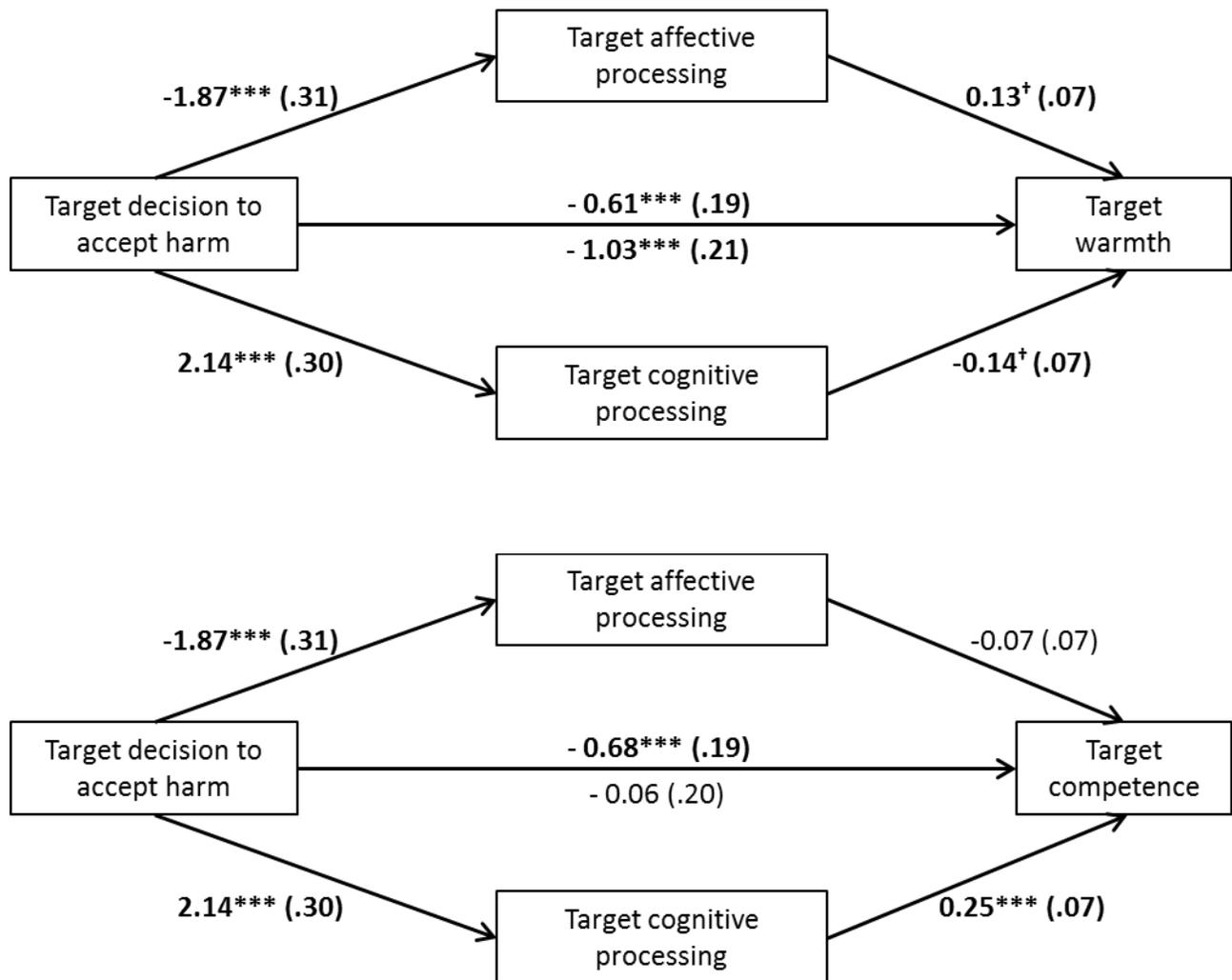(congruent dilemmas), Study 2. Error bars reflect standard errors.

Figure 3a. Perceptions of the target's affective, but not cognitive, processing mediated the impact of that target's decision to reject causing harm on target warmth ratings, Study 3a. Perceptions of the target's cognitive, but not affective, processing mediated the impact of that target's decision to accept causing harm on target competence ratings, Study 3a. Unbracketed values reflect unstandardized coefficients; bracketed values reflect standard errors. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 3b. Perceptions of both the target's affective and cognitive processing mediated the impact of that target's decision to reject causing harm on target warmth ratings, Study 3b. Perceptions of the target's cognitive, but not affective, processing fully mediated the impact of that target's decision to accept causing harm on target competence ratings, Study 3b. These findings remain similar while controlling for target gender. Unbracketed values reflect unstandardized coefficients; bracketed values reflect standard errors. $^\dagger p = .06$, $* p < .05$, $** p < .01$, $*** p < .001$.
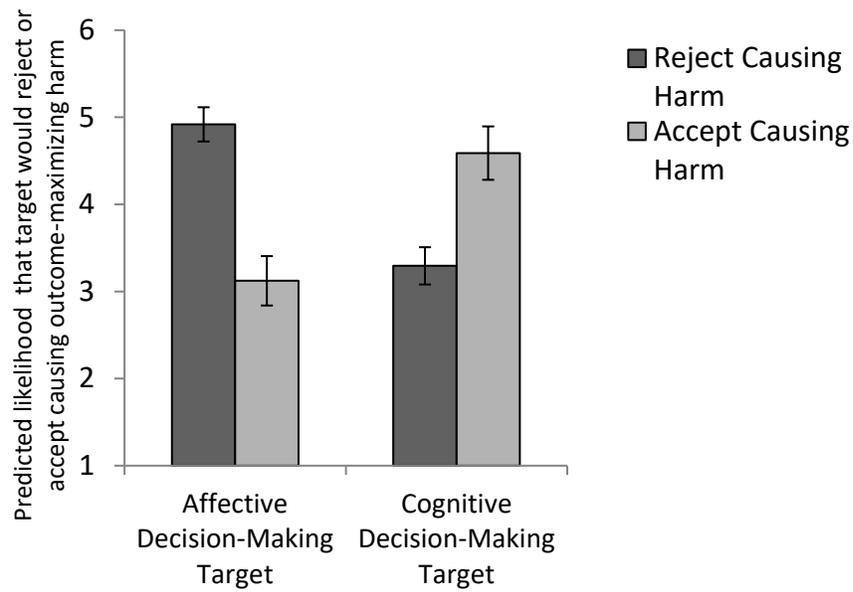
Figure 4. Participants' predicted likelihood that targets who prefer affective versus cognitive decision-making would accept or reject causing outcome-maximizing harm in various dilemmas, Study 4. Error bars reflect standard errors.
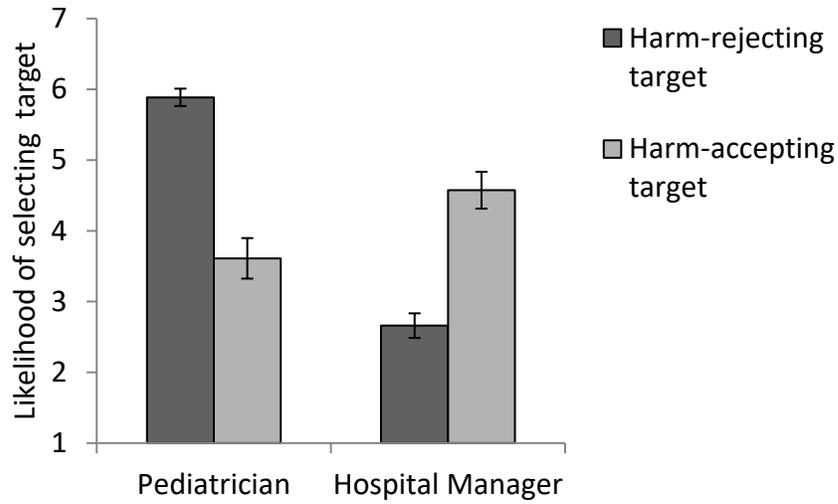
Figure 5. Perceived suitability of each target for the role of pediatrician or hospital manager when targets either rejected or accepted causing outcome-maximizing harm, Study 5. Error bars reflect standard errors.