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# Intellectually Rigorous but Morally Tolerant: Exploring Moral Leniency as a Mediator Between Cognitive Style and “Utilitarian” Judgment



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## Abstract

Past research on people's moral judgments about moral dilemmas has revealed a connection between utilitarian judgment and reflective cognitive style. This has traditionally been interpreted as reflection is conducive to utilitarianism. However, recent research shows that the connection between reflective cognitive style and utilitarian judgments holds only when participants are asked whether the utilitarian option is permissible, and disappears when they are asked whether it is recommended. To explain this phenomenon, we propose that reflective cognitive style is associated with a greater moral leniency—that is, a greater tendency to be tolerant of moral violations, and that moral leniency predicts utilitarian judgment when utilitarian judgment is measured through permissibility. In Study 1 ( $N = 192$ ), we design a set of vignettes to assess moral leniency. In Studies 2 and 3 ( $N = 455, 428$ ), we show that reflective cognitive style is indeed associated with greater moral leniency, and that moral leniency mediates the connection between cognitive style and utilitarian judgment. We discuss the implication of our results for the interpretation of the relationship between utilitarianism and reflective cognitive style.

**Keywords:** Moral judgment; Cognitive style; Moral dilemmas; Moral psychology; Utilitarianism; Moral reasoning; Morality; Reflection

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## 1. Introduction

In the past 20 years, the psychological study of moral judgment has devoted lots of resources to investigating the contrast between deontological and utilitarian moral judgments, particularly in the context of moral dilemmas such as the trolley problem (see Everett & Kahane, 2020 for reviews). In philosophy, utilitarianism is a family of moral theories according to which the moral status of a given action depends only on this action's (actual or expected) consequences on general well-being: an action is morally better when it leads to a higher general level of well-being compared to other available courses of action (Sinnott-Armstrong, 2019). By contrast, deontology is a family of moral theories for which the end does not always justify the means as the moral value of an action, which entails that certain actions can be categorically prohibited even though they would bring about the best consequences (Alexander & Moore, 2020). In line with these definitions, psychologists have been calling "utilitarian" the responses of participants who find it acceptable to sacrifice one person to save many, and "deontological" the responses of participants who find it unacceptable (Greene, 2014).

For the past two decades, the psychology of deontological and utilitarian moral judgments has been dominated by Joshua Greene's dual-process model of moral judgment (Greene, 2008, 2014). This model can be summarized by two distinct claims: first, that deontological judgments are generally driven by automatic processes and emotional responses, and second that utilitarian judgments are generally driven by controlled, conscious reasoning. In this paper, we focus on the second claim: that utilitarian judgments are mainly the product of controlled, conscious reasoning.

Evidence in favor of this second claim comes in two forms: either experimental or correlational. *Experimental* evidence comes from studies that either hinder or promote controlled, conscious reasoning and observe the effect of this manipulation on participants' utilitarian judgment. For example, studies have shown that cognitive load increases the time required for participants to reach a utilitarian conclusion (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008) or that asking participants to answer moral dilemmas under time pressure reduces the rate of utilitarian answers (Suter & Hertwig, 2011). Conversely, priming a more reflective mindset had been shown to increase the rate of utilitarian answers (Paxton, Ungar, & Greene, 2012). However, both types of effects have proven to be difficult to replicate (Byrd, 2024; Cova et al., 2021; McPhetres, Conway, Hughes, & Zuckerman, 2018; Paxton, Bruni, & Greene, 2014; Pereira, 2024). One reason might be that the methods used in these studies actually fail to induce or reduce reflection (Byrd, 2024; see also Study 4 in Jaquet & Cova, 2021).

The second type of evidence, *correlational* evidence, has proven to be more robust. Numerous studies have documented correlations between participants' cognitive style and their response to moral dilemmas: participants with a more reflective or analytic cognitive style generally tend to give more utilitarian answers. Thus, it has been found that the tendency to give more utilitarian answers correlated positively with scores at the Cognitive Reflection Test (CRT; see Paxton et al., 2012), scores at the Belief Bias task (BB; Byrd & Conway, 2019), Need for Cognition (NFC; Bartels, 2008), and Actively Open-minded Thinking (AOT; Baron,

Scott, Fincher, & Emlen Metz, 2015) scales, and performance on a variety of reasoning tasks (Patil et al., 2021). Conversely, participants scoring higher on measures of Faith in Intuition (FI) were less likely to provide utilitarian answers (Bartels, 2008).

In this paper, we focus on the second type of evidence and on the claim that correlations between participants' cognitive style and their dispositions to provide utilitarian answers to moral dilemmas show that utilitarian answers are the product of controlled, reflective utilitarian reasoning. We think that an alternative account of these results is plausible. We will first describe a psychological puzzle to the idea that a more reflective cognitive style is conducive to utilitarian reasoning. Then, based on this puzzle, we will propose an alternate account of these correlations.

### 1.1. *The Puzzle: Cognitive Style and Utilitarian Judgment Beyond Mere Permissibility*

As we pointed out, many studies observe positive correlations between a more reflective cognitive style and the disposition to provide utilitarian answers to moral dilemmas. However, most of these studies suffer from a common shortcoming: they mainly investigate utilitarian judgment by asking whether it would be morally acceptable or wrong to take the utilitarian decision (e.g., causing one death to save five lives). To put it otherwise: they consider as utilitarian the judgment that it would be permissible or not wrong to sacrifice one for the good of many. However, utilitarianism is not the mere idea that it is permissible to do what brings the best outcome: rather, it is the idea that it is at least the recommended course of action, or even mandatory (see Jaquet, Gouiran, & Cova, 2022).

This distinction is important because it seems that, if cognitive style predicts the (pseudo-utilitarian) judgment according to which it is permissible to sacrifice one for the good of many, it does not predict the (fully utilitarian) judgment according to which it is better and even mandatory to perform such a sacrifice. Indeed, in the first study on this topic, Royzman and collaborators (2015) put forward the *reflective minimalist hypothesis*: participants who score high on the CRT are more likely to find utilitarian actions *permissible* but *optional*. They call this attitude *moral minimalism*, in contrast with the *strict utilitarian* response pattern, which consists of finding the utilitarian action not only permissible, but also *required*. Through two studies, they observed that high CRT scores predicted moral minimalism ( $r = .17, .29$ ), but not the strict utilitarian response pattern ( $r = -.03, -.13$ ). Moreover, they observed that CRT scores did not predict participants' willingness to perform the utilitarian action ( $r = .04$ ).

Similarly, Piazza and Sousa (2014) used a measure of utilitarianism in which participants were presented with several actions (e.g., lying, torture) and, for each of them, asked to choose whether it was "never morally permissible to act this way," "morally permissible to act this way when doing so will produce greater good than bad," and "morally obligatory to act this way when doing so will produce greater good than bad." A reanalysis of their data showed that participants who were more likely to give intuitive false answers to CRT questions were also more likely to answer that such actions were always wrong ( $r = .20$ ) and less likely to answer that such actions were morally permissible ( $r = -.21$ ). However, there was no significant correlation between CRT scores and the number of "morally obligatory" answers ( $r = -.005$ ).

This suggests that a more reflective cognitive style leads participants to *tolerate* utilitarian behavior (i.e., to find it acceptable), but not to *recommend* it (i.e., to consider it the best option). Such a dissociation cannot be explained, even less predicted from the standpoint of the dual-process model of moral cognition. How are we to explain this difference?

### 1.2. Two Possible Accounts: Reflective Cognitive Style as a Predictor of Moral Nuance and as a Predictor of Moral Leniency

To explain their own findings, Royzman and collaborators (2015) propose that “with their penchant for representing problem spaces in a complex and open-minded manner, giving consideration to multiple facets of the situation (...), high-reflection individuals will, *ceteris paribus*, manifest themselves as moral minimalists, acknowledging that both options are “on the table” (p. 327). In a later paper, Landy and Royzman (2018) develop this explanation further under the form of what they call the “moral myopia model.” According to this model, “deliberate thinking is associated with more complex representations of moral problem spaces and attention to multiple normative considerations, whereas a lack of deliberate thinking is associated with attending to only a single, salient concern. In the context of moral conflict, this means dogmatically adhering to a singular normative factor (such as respect for individual rights or maximization of utilitarian gains) rather than weighing multiple considerations” (p. 70). To put it another way: more reflective participants are more likely to perceive the various considerations that weigh against and in favor of the utilitarian solution in moral dilemmas, and as such less apt to condemn the utilitarian solution without necessarily endorsing it as the one and only solution. Let us call this the *moral nuance* account, according to which reflective cognitive style is tied with a more nuanced view of moral problems, which leads to more “utilitarian” judgments when the “utilitarian” judgment consists of withholding outright condemnation.

In their paper, Landy and Royzman make a powerful case for their account. Moreover, the *moral nuance* account seems able to explain phenomena besides the one Landy and Royzman are directly interested in. For example, the reflective cognitive style has been associated with participants with a greater reluctance to accept absolute moral rules that do not allow room for exceptions or complex cases. Indeed, Viciano and collaborators (2021) found an inverse correlation between AOT scores and preference for categorical prohibitions (“it should never be allowed”) of morally debated actions ( $r = -.16, -.08$ ). Additionally, a recent survey on professional philosophers (Byrd, 2023) suggests a possible link between scores on the CRT and endorsement of moral antirealism, which is the view that there is no objectively correct answer to (at least certain) moral questions. These results are directly in line with what the *moral nuance* account would lead us to expect.

Moreover, sacrificial dilemmas are not the only case in which reflective cognitive style is associated with a greater tendency to judge potential moral violations acceptable. For example, Royzman and colleagues (2014) found that participants who scored higher on the CRT were less likely to condemn harmless violations. Patil and Trémolière (2021) used different measures of cognitive styles (FI, NFC, BB, CRT, and AOT) and found that more reflective individuals tended to judge unintentional harmful actions less harshly (and this was also true

for neutral actions, except for NFC). Finally, Jaquet and Cova (2021) studied people's intuitions about cases in which agents have the possibility to sacrifice their own resources and well-being to help other people (e.g., giving most of their fortune to charities) but decline. They found that people who scored higher on the CRT and BB were less likely to condemn these agents for their self-serving decisions (see Studies 3–5 in Cova & Jaquet, 2021).

Still, even though these results are compatible with the *moral nuance* hypothesis, there is a surprising trend that the hypothesis does not predict by itself: that a more reflective cognitive style is always associated with a greater tendency to judge these violations *morally permissible*. Indeed, in case in which the common intuitive answer tends toward condemnation (as for personal sacrificial dilemmas or particularly strange harmless violations), it makes sense to expect a more nuanced view to lead to more permissive judgments. However, in case in which the common intuitive answers tend toward permissibility (as when we ask participants whether it is wrong not to give one's fortune to save strangers), we could expect a more nuanced view to lower permissibility. But this is not what the literature suggests: rather, it seems that a reflective cognitive style favors more permissive moral judgments.

This is why we think that the *moral nuance* hypothesis (according to which cognitive reflection leads participants to take more factors into account) needs to be supplemented with the hypothesis that people with a more reflective cognitive style also tend to favor more permissive moral judgments, particularly in context when the moral problem under examination calls for nuance. We call this hypothesis the *moral leniency* hypothesis.

The existence of a link between reflective cognitive style and moral leniency is not a completely novel suggestion. Indeed, previous research has documented the fact that priming reflection over intuition decreases participants' tendency to cooperate and abide by cooperation norms (Pennycook, Fugelsang, & Koehler, 2015; Rand, 2016). At the level of traits, studies suggest that higher scores on the CRT are linked to a lower likelihood to engage in very costly altruistic behavior (Corgnet, Espín, & Hernán-González, 2015) and to lower levels of moral concerns (Jack, Friedman, Boyatzis, & Taylor, 2016). Thus, there is already evidence that a more reflective cognitive style is associated with participants being more morally lenient *in the way they behave*. What we suggest here is that it could also be associated with participants being more morally lenient *in the way they judge others' behavior*.

Moreover, the hypothesis that more reflective individuals might be more lenient (i.e., have a lower sensitivity to moral violations in general) might explain certain intriguing results in the psychological literature. For example, Ward and King (2018a) found across several studies that people with lower FI and higher CRT scores tended to find harmless moral violations (such as having sex with a dead chicken and then eating it) more acceptable. Again, this is compatible with the *moral nuance* hypothesis. However, this relationship held even when participants were asked to answer under a time constraint, suggesting that it is not due to these participants taking more time to deliberate. More importantly, in their first study, Ward and King also found that people lower in FI judged unambiguously harmful violations (such as insulting an overweight colleague) more leniently, (even though this correlation did not turn out significant in their subsequent studies). Thus, it seems that a more reflective cognitive style can still be associated with more leniency in unambiguous context that do not leave room for nuance.

Thus, in addition to reflective cognitive style leading participants to take a more nuanced view, the link between reflective cognitive style and utilitarian judgment might also be explained by moral leniency. Specifically, (i) a more general connection between reflective cognitive style and moral leniency, and (ii) a connection between moral leniency and utilitarian moral judgment, due to the fact that utilitarian moral judgment is generally assessed by asking participants whether they find the utilitarian option *permissible* or *acceptable*, that is: simply *not morally wrong*. However, so far, there is no direct empirical evidence for the existence of a connection between cognitive style and moral leniency.

### 1.3. Goal of the Present Studies

Hence, in this paper, our goal was to investigate the three following hypotheses: (i) that reflective cognitive style is connected to greater moral leniency, (ii) that a greater moral leniency is connected to higher rates of seemingly utilitarian responses, and thus (iii) that moral leniency mediates the link between reflective cognitive style and utilitarian responses. To put these hypotheses to test, we first created a measure of moral leniency, using only clear cases of minor moral violations, in which there are no multiple considerations to take into account, and thus no room for complexity. This allowed us to show that the link between reflective cognitive style and moral leniency is not entirely reducible to the link between reflective cognitive style and moral nuance identified by the Moral Myopia Model. Then, in Studies 2 and 3, we used this measure to assess whether it mediated the link between reflective cognitive style and utilitarian moral judgment.

Materials and data for all studies are available on OSF. Studies 2 and 3 were preregistered on OSF.

## 2. Study 1: Designing a Measure of Moral Leniency

In this first study, our goal was to design a way to assess participants' moral leniency, defined as a tendency to condemn moral violations less harshly. As it was not clear that participants would be able to reliably assess their own moral leniency (as this requires comparing their moral judgments to the judgments of other participants), we did not opt for a self-report scale. Rather, we decided to create a set of vignettes featuring slight moral violations, which would allow participants to display their sensitivity to moral violations.<sup>1</sup>

### 2.1. Participants

Two hundred and seven U.S. residents were recruited through Amazon Mechanical Turk. We requested participants to have participated in at least 50 tasks and to have an approval rate of at least 95%. Participants received \$1.5 for their participation. After excluding participants who did not give informed consent, or failed one or both attention checks, we were left with 192 participants (111 men, 80 women, 1 "other";  $M_{\text{age}} = 38.0$ ,  $SD_{\text{age}} = 12.0$ ).

## 2.2. Materials and Procedure

Participants were redirected to an online survey (LimeSurvey). After providing information about their age, gender, religious affiliation, and frequency of religious activities, participants were presented with 20 vignettes.

### 2.2.1. Vignettes

In each vignette, participants read about a protagonist acting in a certain way and were asked to rate to which extent the protagonist's action was morally wrong (on a 5-point scale from 1 = "Not wrong at all" to 5 = "Extremely wrong"). The first two vignettes were anchors describing an extremely morally wrong action (a premeditated murder) and a completely morally acceptable action (putting brown instead of white sugar in a cake). The 18 other vignettes, presented in random order, described actions that we wanted people to consider morally wrong, but not *extremely* wrong, thus leaving room for variations across individuals. Here is an example:

*Jennifer is walking her dog Peanut in a park. It's cold and Jennifer wants to go home, but suddenly Peanut poops in the grass. Jennifer sees a sign "it's the law, clean up after your dog" with a pictogram of a person picking up their dog's poop. Jennifer does not have a bag with her and does not want to walk back to the dispenser to get one.*

*Jennifer leaves the park without picking up after her dog.*

*How morally wrong was it for Jennifer to leave the poop?*

Most scenarios were invented but three were taken from Greene et al. (2008). Our idea was that lower condemnation of these actions would indicate a greater moral leniency, without necessarily indicating moral indifference, as these vignettes do not present paradigmatic cases of immoral actions, such as murder.

### 2.2.2. Other Measures

To assess the external validity of our measure of moral leniency, we also included several other measures:

- The *Self-Importance of Moral Identity* scale (Aquino & Reed, 2002). Participants were presented with 13 adjectives such as "caring, compassionate, fair" and asked 10 questions designed to assess how important their moral identity is to them. We assumed that participants for whom moral identity is important should be more attentive to moral violations and thus be less lenient. We thus hypothesized that higher scores on this scale should be correlated with lower scores on our measure of moral leniency.
- The *Treatment of Criminal Offenders* scale (Gerber & Jackson, 2013), which measures the desire to inflict harsh punishments and deny procedural fairness to criminal offenders. Because this measure captures a very harsh attitude toward wrongdoers, we

hypothesized that participants' scores on this scale would correlate negatively with their scores on our measure of moral leniency.

- The *Moral Relativism scale* (Collier-Spruel, Hawkins, Jayawickreme, Fleeson, & Furr, 2019), which assesses the extent to which participants think that the morality of an action is dependent on a person or a society. Because moral relativism has been linked to greater tolerance toward diverging moral opinions (Ziljstra, 2019), it might be that our measure of moral leniency captures relativist commitments under the label of "moral leniency." We wanted to know to which extent our measure was redundant with measures of moral relativism.
- The *Beck Depression Inventory* (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), which measures "behavioral manifestations of depression" (p. 561). We only used one item, Lack of Satisfaction, which offers five choices from "I am not particularly dissatisfied" to "I am dissatisfied with everything." Because participants were asked in our vignettes to rate the moral wrongness of the protagonist's action, we wanted to make sure we were assessing moral leniency specifically, rather than a more general lack of care for everything. Since depression is linked with a lack of care (Ratcliffe, 2012), we chose this item as a measure of general lack of care.
- The *Self-reported Intrinsic Religiosity scale* (Shariff, Cohen, & Norenzayan, 2008), which measures explicit deistic religiosity. Deistic religiosity is historically and psychologically linked to moralization. Because of this, we hypothesized that higher religiosity would predict lower moral leniency.

### 2.3. Results: Selection of the Moral Leniency Vignettes

We reverse-coded participants' answers to vignettes so that higher scores would indicate higher moral leniency. Then, we selected vignettes that best suited our goal (assessing moral leniency). We favored vignettes that combined the lowest mean (to make sure the action was wrong but not *too* wrong to create a ceiling effect) and the highest standard deviation (to increase our measure's discriminatory power). Details are available in Supplementary Materials. We aimed for a total of 10 items. Two items were equal based on these characteristics, so we chose the one which allowed for the best Cronbach's alpha for the whole measure. The final 10-item measure had scores ranging from 1.20 to 4.40 out of 5, with a mean of 3.09 and standard deviation of 0.71 ( $\alpha = .84$ ). As shown in Fig. 1, the distribution was relatively normal, without any ceiling or flooring effect, and participants' scores were distributed nearly across the whole scale.

### 2.4. Results: Construct Validity of the Moral Leniency Measure

Table 1 displays the Pearson correlations between our measure of moral leniency and the scales we used to assess convergent and divergent validity.

As predicted, participants' Moral Leniency scores correlated negatively with their scores on the Moral Identity scale and with their scores on the Treatment of Criminal Offenders scale. It also correlated negatively with their scores on the Lack Of Satisfaction item from the Beck Depression Inventory, suggesting that moral leniency (as we measure it) is not a sign of



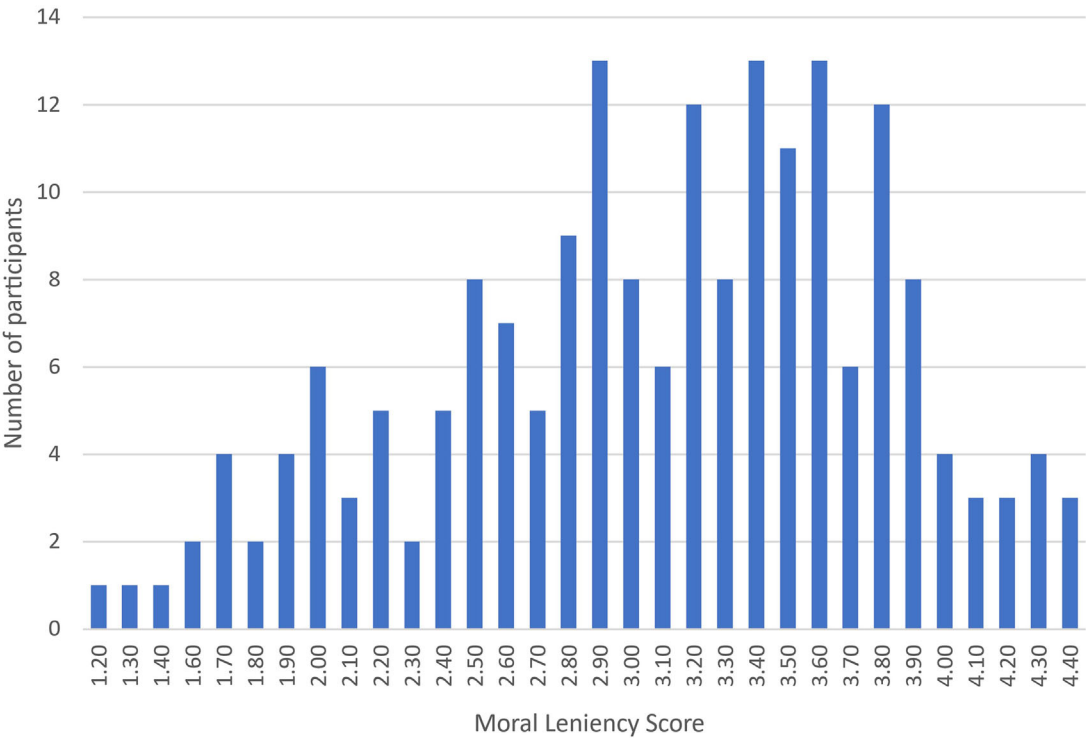


Fig. 1. Distribution of Moral Leniency scores across participants (Study 1).

Table 1  
Cronbach’s alphas and Pearson’s correlations between Moral Leniency Scores and the other scales used to assess convergent and divergent validity in Study 1

	MLS	MRS	TCO	MII	IR	BDILOS
MLS	Alpha .84	−.04	−.33***	−.27***	−.40***	−.22**
MRS		Alpha .83	.11	−.01	−.14	.09
TCO			Alpha .85	.15**	.39***	.25***
MII				Alpha .75	.38***	−.19**
IR					Alpha .97	.11

Notes. Abbreviations: BDILOS, Lack of Satisfaction item from the Beck Depression Inventory; IR, Self-reported Intrinsic Religiosity; MII, Self-Importance of Moral Identity; MLS, Moral Leniency Score; MRS, Moral Relativism Scale; TCO, Treatment of Criminal Offenders. Text in bold highlights significant correlations.

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

a more general lack of concern. As predicted, moral leniency was also negatively correlated to self-reported deistic religiosity. Surprisingly, there was no significant correlation between our measure of moral leniency and participants' scores on the Moral Relativism scale, suggesting that the tendency to be more lenient our measure captures has nothing to do with meta-ethical commitments about the universality of moral rules.

### 3. Study 2: Moral Leniency, Cognitive Style, and Utilitarian Moral Judgment Across Several Domains

In Study 2, we set out to test our two main hypotheses: (i) that a more analytic cognitive style is linked to higher moral leniency, and (ii) that moral leniency mediates the relationship between analytic cognitive style and “utilitarian” moral judgments in cases where moral judgment implies judging an action as “acceptable” or “permissible”.

#### 3.1. Participants

Since the link between CRT and “utilitarian” judgments is not always found, its effect size must be small. Based on Fritz and MacKinnon (2007)'s guidelines for sample sizes in mediation analyses, we estimated that we needed around 500 participants to reach .80 power. Five hundred U.S. residents were recruited through Prolific Academic and paid £2.25 for their participation completed our survey. After excluding participants who did not give informed consent, or failed at least one of two attention checks, we were left with 455 participants (49.89% men, 49.45% women, 0.66% “other”;  $M_{\text{age}} = 35.77$ ,  $SD_{\text{age}} = 13.29$ ).

#### 3.2. Materials and Procedure

Participants were redirected to an online survey (Limesurvey).

*Moral Leniency vignettes* ( $\alpha = .81$ ). Participants were presented with the 10 Moral Leniency vignettes and asked, for each one, to indicate to which extent the protagonist's action was morally wrong. The 10 vignettes were preceded by the same two anchors vignettes as in Study 1.

*Demographic questions.* Participants were asked to report their age, gender, religious affiliation, and frequency of religious activities.

*Moral vignettes.* Then, participants were presented with 12 moral vignettes, three of each different type:

- *Classic dilemmas* ( $\alpha = .75$ ): Three vignettes presented participants with classic sacrificial dilemmas, in which the protagonist sacrifices a certain number of persons to save an even greater number of persons. Participants were asked to rate to which extent it was wrong for the protagonist to kill  $x$  persons to save  $y$  persons (where  $x < y$ ). All vignettes were drawn from the work of Greene and colleagues (2008). In this case, the utilitarian option was to consider that it was not wrong to sacrifice the person.
- *Modified dilemmas* ( $\alpha = .75$ ): Three vignettes presented participants with modified versions of the classic sacrificial dilemmas, in which we added the presence of personal

relationship between the protagonist and the person they sacrifice. For example, the victim could be the protagonist's child, friend, or significant other. In this case, the utilitarian option was to consider that it was not wrong to sacrifice the person. We considered that such vignettes would provide a more stringent test of utilitarianism (which requires impartiality) than classic dilemmas.

- *Harmless violations* ( $\alpha = .83$ ): Three vignettes presented participants with cases in which the protagonist commits an action that might seem odd or offensive, but which turns out to be actually harmless (e.g., siblings having protected sexual intercourse, a man masturbating with a dead chicken). Participants were asked to rate to which extent it was wrong for the protagonist to perform the target action. The three vignettes were drawn at random from a total pool of eight vignettes, based on the vignettes used by Jaquet and Cova (see Studies 3–5 in Jaquet & Cova, 2021). In this case, the utilitarian option was to consider that it was not wrong to perform the action, as it ultimately does not harm anyone.
- *Demanding ethics* ( $\alpha = .88$ ): Three vignettes presented participants with cases in which the protagonist has the opportunity to save lives or help others at a great cost for themselves, but chooses not to (e.g., the protagonist buys a house instead of giving the money to charity, or decides not to enter a building in fire to save the people inside). Participants were asked to which extent it was wrong for the protagonist to act the way they did. The three vignettes were drawn at random from a total pool of eight vignettes, based on the vignettes used by Jaquet and Cova (2021). In this case, contrary to the other three types of vignettes, the utilitarian option was to answer that it was wrong for the protagonist to act the way they did.

For each type of vignette, participants had to indicate their answer on a 5-point scale (from 1 = “Not wrong at all” to 5 = “Extremely wrong”).

*Cognitive style.* Participants were also asked to answer several measures of cognitive style:

- The Cognitive Reflection Test (CRT, Frederick, 2005) is supposed to assess participants' ability to inhibit wrong intuitive answers by presenting them with reasoning problems that have an intuitive but incorrect answer. The version we used contains three reasoning problems. At the end of the task, participants were asked to indicate how many problems they had already encountered in the past. Doing so allowed us to also run the analyses on the subgroup of participants who knew only one item at the most, to make sure that the results were not biased by prior knowledge of the items artificially increasing their score.
- The Belief Bias (BB, items are taken from Baron et al., 2015 and based on the ones developed by De Neys & Franssens, 2009) has been developed to extend the CRT with verbal items and less well-known ones. This test also measures participants' ability to ignore the intuitive answer in order to give the correct one. Participants are presented with syllogisms, some of which are valid but have a false conclusion, while others are invalid but have a true conclusion. Participants need to ignore the veracity of the

conclusion to assess the validity of the argument. The version we used contained four syllogisms.

- The Rational-Experiential Inventory (Epstein, Pacini, Denes-Raj, & Heier, 1996) is designed to assess interindividual differences in the treatment of information. This inventory is composed of two scales, the Need For Cognition (NFC) and Faith in Intuition (FI) scales. The NFC scale was first introduced by Cacioppo and Petty (1982) and contains statements such as “I prefer my life to be filled with puzzles that I must solve.” It measures the tendency to reflect and to like doing so. The FI scale, on the other hand, consists of 12 sentences assessing participants’ trust in their feelings and intuitions while making decisions, such as “I can usually feel when a person is right or wrong even if I can’t explain how I know.” For both the NFC and FI scales, participants are asked to rate their agreement with each proposition on a 5-point scale (from 1 = “extremely uncharacteristic of me” to 5 = “extremely characteristic of me”).

### 3.2.1. *Experimental Manipulation*

Participants were randomly assigned to one of two groups. Participants in the first group were presented with the CRT and BB at the very beginning of the study (before being presented with the Moral Leniency vignettes), while participants in the second group were presented with the CRT and BB at the end of the study (just before the Rational-Experiential Inventory). We included this manipulation because previous studies have suggested that having people reflect on CRT problems might put them in a more analytic mindset and thus lead them to give more utilitarian answers to moral dilemmas (Paxton et al., 2012). However, later studies failed to replicate this effect (Cova et al., 2021; Jaquet & Cova, 2021). We wanted to know whether the effect would replicate in our case. It did not (see Supplementary Materials), so our analysis will collapse both conditions together.

### 3.2.2. *Response Time*

The time participants spent on the different moral vignettes was registered.

## 3.3. *Hypotheses*

First, we predicted that a more analytic cognitive style (as assessed by the CRT, BB, NFC, and FI scales) would be positively correlated to greater moral leniency in participants.

Second, in line with results obtained in past studies, we predicted that a more analytic cognitive style would predict more “utilitarian” answers to classic and modified moral dilemmas and harmless violations cases, but less “utilitarian” answers to demanding ethics cases.

Third, we predicted that participants’ scores to the Moral Leniency vignettes will be positively correlated to their tendency to provide “utilitarian” answers in classic and modified moral dilemmas, as well as in harmless violations vignettes, as “utilitarian” answers coincide with “permissive” attitudes in this case. However, we predicted that higher moral leniency would predict less “utilitarian” answers for the demanding ethics case, as the “utilitarian” answers in this case require making harsher moral judgments.

Table 2

Pearson's and Bootstrapped correlation (95% BCa interval) for each measure of cognitive style and each type of moral measure (MLS and moral vignettes) for Study 2

	Cognitive style				
	CRT (all)	CRT (1 or less)	BB	NFC	FI
MLS	<b>.10*</b> [.01, .19]	<b>.21**</b> [.08, 0.33]	<b>.15**</b> [.06, 0.24]	−.00 [−.10, .09]	<b>−.16***</b> [−.26, −.06]
Classic dilemmas	−.02 [−.10, .07]	−.01 [−.16, .13]	.01 [−.08, .10]	.01 [−.09, .10]	.03 [−.07, .13]
Modified dilemmas	−.01 [−.10, 0.08]	−.02 [−.17, .13]	.01 [−.08, .10]	.04 [−.05, .13]	.02 [−.08, 0.12]
Harmless violations	<b>.22***</b> [.13, 0.30]	<b>.20*</b> [.07, 0.34]	<b>.29***</b> [.20, .37]	.05 [−.04, .14]	<b>−.27***</b> [−.35, −.18]
Demanding ethics	<b>−.14**</b> [−.23, −.05]	−.09 [−0.22, .06]	<b>−.16***</b> [−.24, −.07]	−.07 [−.16, .03]	.09° [−.01, .18]

Note. Text in bold highlights significant correlations (\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ).  $N = 196$  for correlations including only participants familiar with one CRT item or less.

Fourth, we predicted that participants' moral leniency would mediate the relationship between participants' cognitive style and their tendency to make "utilitarian" judgments in moral vignettes.

### 3.4. Results

#### 3.4.1. Utilitarian Judgment and Cognitive Style

To assess the link between participants' utilitarian judgment and cognitive style, we performed Pearson's and Bootstrapped correlations between each measure of utilitarian judgment and each measure of cognitive style (Table 2). Unfortunately, we failed to find a significant relationship between participants' cognitive style and their answers to the classic and modified dilemmas. In line with previous literature, we found a significant relationship between participants' answers to harmless violations and CRT, BB, and FI scores (but not NFC scores): participants with a more analytic cognitive style were more likely to consider harmless violations morally permissible. We also found a significant relationship between participants' answers to demanding ethics cases and CRT and BB scores: participants with a more analytic cognitive style were less likely to condemn nonutilitarian actions.

#### 3.4.2. Moral Leniency and Cognitive Style

To assess the link between participants' moral leniency and cognitive style, we performed Pearson's and Bootstrapped correlations between Moral Leniency scores and scores for each measure of cognitive style (see Table 2). Because an important proportion of participants already knew the CRT items, we performed analyses for the CRT twice: a first time taking all participants into account, and a second time keeping only participants who knew at most one CRT item (this analysis was not preregistered). Moral leniency was significantly associated

Table 3  
Pearson’s and Bootstrapped correlation (95% BCa interval) for each measure of utilitarian judgment and moral leniency in Study 2

	Utilitarian judgment			
	Classic dilemmas	Modified dilemmas	Harmless violations	Demanding ethics
MLS	<b>.20***</b> [.11, .0.30]	<b>.19***</b> [.10, .28]	<b>.38***</b> [.29, .46]	<b>–.21***</b> [–.32, –.11]

Note. Text in bold highlights significant correlations (\*p < .05; \*\*p < .01; \*\*\*p < .001).

Table 4  
Pearson correlations between the different measures of cognitive style (Studies 2 and 3)

	CRT	BB	FI	NFC (Study 2)
CRT	–	<b>.38***</b>	<b>–.21***</b>	.08
BB	<b>.15**</b>	–	<b>–.22***</b>	<b>.11*</b>
FI	–.07	<b>–.25***</b>	–	<b>.11*</b>
AOT (Study 3)	–.02	<b>.43***</b>	<b>–.29***</b>	–

Note. Results for Study 2 are presented in the upper right corner, results for Study 3 are presented in the bottom left corner. Text in bold highlights significant correlations (\*p < .05; \*\*p < .01; \*\*\*p < .001).

with all measures of cognitive style except NFC. Overall, our results suggest that participants who have a more analytic cognitive style also tend to be more morally lenient.

3.4.3. Moral Leniency and Utilitarian Judgment

To assess the link between participants’ moral leniency and cognitive style, we performed Pearson’s and Bootstrapped correlations between Moral Leniency scores and scores for each measure of utilitarian judgment (Table 3). As predicted, moral leniency was positively correlated with utilitarian judgment for classic dilemmas, modifier dilemmas, and harmless violations, but was negatively correlated with utilitarian judgment for demanding ethics.

3.4.4. Mediation Analyses

Since there was a significant relationship between cognitive style and moral leniency, and between moral leniency and utilitarian judgment, we investigated whether the relationship between utilitarian judgment and cognitive style (in harmless violations and demanding ethics cases) could be mediated by moral leniency. Using the R {lavaan} package (Rosseel, 2012), we conducted two Structural Equation analyses (one for harmless violations, one for demanding ethics case) with utilitarian scores as the dependent variable, cognitive style as the predictor, and moral leniency as the mediator. Cognitive style was treated as a latent variable computed on the basis of CRT, BB, and FI scores. NFC was left out because it did not predict utilitarian judgment (Table 2), did not correlate with moral leniency (Table 2), and had the weakest correlations with other measures of cognitive style (Table 4).

Regression analysis found a significant effect of cognitive style on utilitarian tendencies in harmless violations ( $\beta = 0.466$ ,  $p < .001$ ,  $BCa = [0.776, 1.720]$ ). Thus, we performed a bootstrapping mediational analysis testing the indirect link through Moral Leniency, this is schematized in Fig. 2. As hypothesized, the effect of cognitive style on utilitarian tendencies was mediated by moral leniency. The indirect effect of cognitive style on utilitarian tendencies in harmless violations scenarios via moral leniency ( $b1*b2$ ) was significant ( $\beta = 0.070$ ,  $p = .001$ ,  $BCa = [0.093, 0.296]$ ). This pathway did not fully account for the overall effect of cognitive style on utilitarian tendencies because the direct effect ( $a'$ ) remained significant ( $\beta = 0.397$ ,  $p < .001$ ,  $BCa = [0.640, 1.534]$ ).

Next, for the demanding ethics scenarios, there was a significant effect of cognitive style on utilitarian tendencies ( $\beta = -0.243$ ,  $p = .001$ ,  $BCa [-0.797, -0.223]$ ). Thus, we performed a bootstrapping mediational analysis of the effect of cognitive style on utilitarian judgment in demanding ethics cases through moral leniency. Fig. 3 shows the schematic representation of the mediational analysis.

As hypothesized, the effect of cognitive style on utilitarian tendencies was mediated by moral leniency. The indirect effect of cognitive style on utilitarian tendencies in demanding ethics scenarios via moral leniency ( $b1*b2$ ) was significant ( $\beta = -0.039$ ,  $p = .039$ ,  $BCa = [-0.189, -0.026]$ ). This pathway did not fully account for the overall effect of cognitive style on utilitarian tendencies because the direct effect ( $a'$ ) remained significant ( $\beta = -0.204$ ,  $p = .004$ ,  $BCa = [-0.738, -0.161]$ ).

In this study, we failed to observe a link between cognitive style and utilitarian judgments in sacrificial dilemmas, though we still found one in the case of harmless violations and demanding ethics scenarios. As predicted by our hypothesis, higher scores of moral leniency were associated both with a more reflective cognitive style and a greater tendency to provide utilitarian responses in sacrificial dilemmas and harmless violations cases, and with a lower rate of utilitarian responses in the demanding ethics cases (in which the utilitarian response requires to condemn the action rather than approve it). For harmless violations and demanding ethics, the relationship between cognitive style and utilitarian judgment was significantly mediated by moral leniency.

#### **4. Study 3: Moral Leniency, Cognitive Style, and Different Measures of Utilitarian Moral Judgment**

In Study 2, we investigated the relationship between moral leniency, cognitive style, and utilitarian judgments across several domains. However, because we failed to observe a significant relationship between cognitive style and utilitarian judgments about sacrificial dilemmas, we were not able to investigate the role played by moral leniency in this relationship. In Study 3, we focused on utilitarian judgments about sacrificial dilemmas.

One difference between Study 2 and Study 3 is that Study 2 measured utilitarian judgment merely by asking participants about the wrongness of a given action. In Study 3, we used several measures of utilitarian judgments, one of them using the “process dissociation” put forward by Conway and Gawronski (2013).

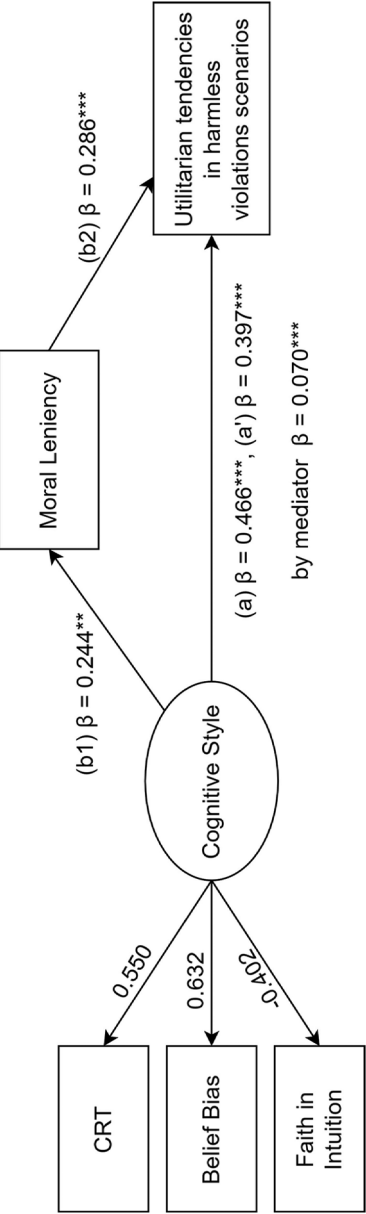


Fig. 2. Mediation analysis and representation of the direct and indirect paths of the effect of cognitive style and moral leniency on the utilitarian tendencies to the harmless violation scenarios.  
*Note.* All coefficients are standardized.



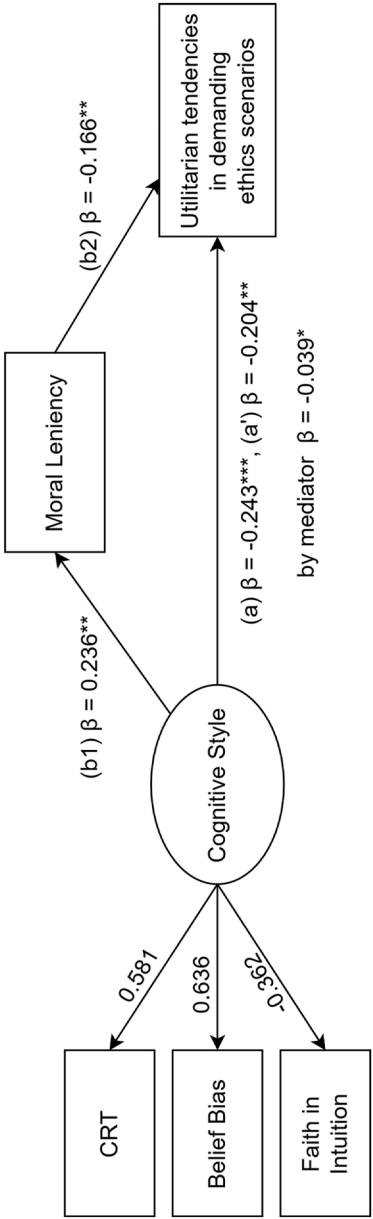


Fig. 3. Mediation analysis and representation of the direct and indirect paths of the effect of cognitive style on the “utilitarian” tendencies to demanding ethics dilemmas through moral leniency (Study 2).  
*Note.* All coefficients are standardized.

#### 4.1. Participants

Since we had the same mediational hypothesis as in Study 2, we also aimed to recruit around a total of 500 participants. Five hundred and fifty-seven U.S. residents recruited through Prolific Academic completed our questionnaire. After excluding two participants who did not consent for their data to be used and 127 who failed at least one of two attention checks, we were left with 428 participants (41.82% men, 55.84% women, 2.33% “other”;  $M_{\text{age}} = 29.59$ ,  $SD_{\text{age}} = 9.53$ ). Midway through data collection, we decided to add another question. 44.86% of our participants answered this question.

#### 4.2. Materials and Procedure

The study followed the same structure as Study 2: participants were presented with (i) measures of cognitive style, (ii) the Moral Leniency vignettes, and (iii) moral vignettes. As in Study 2, to assess the effect of priming reflection on utilitarian thinking, half of the participants saw the measures of cognitive style at the beginning of the study, while the other half saw the measures of cognitive style at the end of the study. The (lack of) effect of this manipulation is analyzed in Supplementary Materials. However, there were some changes in our measures, as well as additional measures.

##### 4.2.1. Moral Leniency Vignettes

We modified three items (Red light, Bar, and Jaywalking) to add some minor negative consequences to the actions described. This was done to make sure that the correlation we found in Study 2 between moral leniency and utilitarian judgment was not due to the fact that, in these items, utilitarian cost–benefit analysis would lead to higher scores of moral leniency (since the action brought benefits to the agent without negative consequences for others).

##### 4.2.2. Cognitive Style

Given that the NFC part of the Rational-Experiential Inventory did not show significant correlations with utilitarian judgments in any domain, and only showed weak correlations with other measures of cognitive style, it was replaced by a 8-items Actively Open-minded Thinking measure (AOT, Baron et al., 2015). The 12-items FI measure was replaced by a 4-items version (Garrett & Weeks, 2017).

##### 4.2.3. Moral Vignettes

Participants were presented with 20 moral dilemmas, taken from Byrd and Conway (2019). Dilemmas worked in pairs, for a total of 10 pairs. Within each pair, one dilemma is *congruent*, while the other is *incongruent*. In *incongruent* dilemmas, the correct course of action according to utilitarian standards differed from the correct course of action according to deontological standards, so that utilitarianism and deontology should lead to different judgments. In *congruent* dilemmas, the correct course of action was the same according to both utilitarian and deontological standards, so that utilitarianism and deontology should lead to the same judgment (see Table 5 for an example). After each dilemma, participants were asked: “Is it appropriate to [target action]?” (YES/NO).

Table 5  
Example of pair of dilemmas used in Study 3

Congruent dilemma	Incongruent dilemma
Incongruent Car Accident—You are driving through a busy city street when all of a sudden a young mother carrying a child trips and falls into the path of your vehicle. You are going too fast to brake in time; your only hope is to swerve out of the way. <b>Unfortunately, the only place you can swerve is currently occupied by a group of children on their way to elementary school. If you swerve to avoid the young mother and baby, you will seriously injure or kill several of them.</b> (Appropriate) Is it appropriate to swerve and hit the schoolchildren in order to avoid the young mother and child?	Incongruent Car Accident—You are driving through a busy city street when all of a sudden a young mother carrying a child trips and falls into the path of your vehicle. You are going too fast to brake in time; your only hope is to swerve out of the way. <b>Unfortunately, the only place you can swerve is currently occupied by a little old lady. If you swerve to avoid the young mother and baby, you will seriously injure or kill the old lady.</b> (Appropriate) Is it appropriate to swerve and hit the old lady in order to avoid the young mother and child?

According to Conway and Gawronski (2013), using such pairs of vignettes allows experimenters to distinguish between participants who find it appropriate to harm others based on a utilitarian cost–benefit analysis from those who are simply indifferent to others being harmed: while the first would find harming others appropriate in *incongruent* but not in *congruent* scenarios, the second would find harming others appropriate in both cases. Thus, Conway and Gawronski advise to use a “process-dissociation” approach and compute for each participant a Utilitarian Parameter (UP) using the following formula:

$$UP = \% \text{ of “inappropriate” answers}^2 \text{ in congruent dilemmas} - \% \text{ of “inappropriate” answers in incongruent dilemmas}$$

Similarly, a Deontological Parameter (DP) can be computed using the following formula:

$$DP = \% \text{ of “inappropriate” answers in incongruent dilemmas} / (1 - UP)$$

In addition to the appropriateness question, participants were asked two additional questions for each vignette:

- (Best) Do you think this is the best option available? (YES/NO)
- (Duty) Do you think you have the moral duty to act that way? (YES/NO)

As planned in our preregistration, we looked at data halfway through recruitment to determine whether it was worth continuing to recruit participants. We used this as an opportunity to add a fourth question:

- (Permissible) Do you think this is morally permissible? (YES/NO)

Our goal here was to measure different degrees of utilitarianism. The (Permissible) question measures the lowest degree of utilitarianism: whether people consider we have the right to engage in utilitarian actions. This is what is typically measured in psychological studies about utilitarian judgment. The (Best) question measures an intermediate degree of utilitarianism (sometimes called by philosophers “Scalar Utilitarianism”; see Tobia, 2017), according to which the utilitarian action is preferable, but not mandatory. The (Duty) question measures the strongest degree of utilitarianism, according to which the utilitarian option is mandatory (which is precisely the claim of standard forms of Utilitarianism). We were not exactly sure how participants would interpret the (Appropriate) question, but we used it because this is the one typically used in studies using the process dissociation approach.

#### 4.2.4. *Additional Measures*

We added one question where participants had to rate their agreement to the sentence “I don’t like telling other people what they should or shouldn’t do.” from 1 “strongly disagree” to 7 “strongly agree.” Because we took advantage of this study to investigate the link between speciesism and utilitarian judgment, we also added three measures of attitudes toward animals (Bègue & Laine, 2017; Caviola, Everett, & Faber, 2019; Jaquet, 2021). The results for these measures are presented in a separate paper (Jaquet et al., 2022).

### 4.3. *Results*

#### 4.3.1. *Utilitarian Judgment and Cognitive Style*

To assess the link between participants’ utilitarian judgment and cognitive style, we performed Pearson’s and Bootstrapped correlations between each direct measure of utilitarian judgment and each measure of cognitive style (Table 6). The correlations between measures of cognitive style and parameters obtained through process dissociation are presented in Table 7. As can be seen, results for direct measures did not yield any coherent outcome: some measures (CRT) correlated positively with utilitarian answers, while others (BB and AOT) correlated negatively, despite the fact that all three are supposed to measure how reflective one’s cognitive style is. This suggests that not all measures of cognitive styles will yield the same results.

Results for parameters obtained through process dissociation gave a more coherent picture, more in line with previous results found in the literature. BB and AOT predicted higher scores on the Utilitarian Parameter, while FI predicted lower scores. Only CRT scores did not predict scores on the Utilitarian Parameter. Because a more reflective cognitive style also (negatively) predicted the number of “yes” answers to congruent dilemmas,<sup>3</sup> we were worried that our correlation might be only due to the higher cognitive style being linked to less “morally aberrant” responses. We thus computed correlations anew after excluding participants who gave more than three “yes” answers to congruent dilemmas.<sup>4</sup> The correlations between cognitive style and scores on the Utilitarian Parameter were still significant for BB and AOT (though all correlations between cognitive style and scores on the Deontological Parameter became nonsignificant, suggesting that these correlations might be driven by participants lower in cognitive style being more likely to give morally problematic answers).

Table 6

Pearson's correlation and Bootstrapped correlation (95% BCa interval) of each measure of cognitive style and each direct measure of moral judgment in Study 3

Cognitive style	Standard Utilitarianism	Scalar Utilitarianism	Strong Utilitarianism	Permissible Utilitarianism
CRT (all)	<b>.14**</b> [.04, .23]	<b>.12*</b> [.03, .21]	.08 [−.02, .16]	<b>.16*</b> [.03, .29]
CRT (1 or less) <sup>a</sup>	<b>.17**</b> [.06, .26]	<b>.16**</b> [.06, .26]	<b>.15**</b> [.05, .25]	<b>.23**</b> [−.08, .37]
Belief Bias (all)	−.05 [−.14, .05]	−.14** [−.23, −.05]	−.15** [−.23, −.05]	.01 [−.12, .14]
Belief Bias (1 or less)	−.03 [−.13, −.06]	−.14** [−.24, −.04]	−.13** [−.22, −.03]	.04 [−.09, .17]
Faith in Intuition for Facts	<b>.12*</b> [.02, .21]	<b>.13**</b> [.03, .21]	<b>.14***</b> [.04, .24]	.11 [−.03, .24]
Actively Open-minded Thinking	−.11* [−.20, −.02]	−.13** [−.23, −.03]	−.16*** [−.25, −.06]	−.05 [−.18, .09]

Note. Text in bold highlights significant correlations (\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ).

<sup>a</sup>As in Study 2, we asked participants how many items of the CRT they already knew and added this question for the BB measure. We thus were able to also conduct the analyses on the subgroup of participants who knew no more than one item of these measures.

For mediation analyses, we thus focus on the correlations between participants' scores on the Utilitarian Parameter and their cognitive style as measured by BB, FI, and AOT.

#### 4.3.2. Moral Leniency and Cognitive Style

To assess the link between participants' moral leniency and cognitive style, we performed Pearson's and Bootstrapped correlations between Moral Leniency Scores and scores for each measure of cognitive style (see Table 8). Scores on the moral leniency vignettes were significantly correlated with all measures of cognitive styles (BB, FI, and AOT), except CRT, suggesting that a more reflective cognitive style is linked to greater moral leniency.

#### 4.3.3. Moral Leniency and Utilitarian Judgment

To assess the link between participants' moral leniency and cognitive style, we performed Pearson's and Bootstrapped correlations between Moral Leniency scores and scores for each measure of utilitarian judgment (see Table 9). There was no significant correlation between Moral Leniency scores and direct measures of utilitarian judgment, but ML scores were significantly correlated with the Utilitarian Parameter, even after participants who provided more than three "yes" answers to congruent dilemmas were excluded. Interestingly, ML scores were negatively correlated to the number of "yes" answers to congruent dilemmas, showing that moral leniency is not to be confused with complete moral indifference.

Table 7  
Pearson’s correlation and Bootstrapped correlation (95% BCa interval) of each measure of cognitive style and each parameter obtained through process dissociation in Study 3

Cognitive style	Utilitarian Parameter (all)	Utilitarian Parameter (Congr ≤ 3)	Deontological Parameter (all)	Deontological Parameter (Congr ≤ 3)	“yes” to congruent
CRT (all)	.00 [−.09, .10]	.12° [.00, .23]	−.12* [−.21, −.02]	−.04 [−.16, .08]	.12* [.03, .21]
CRT (1 or less)	−.06 [−.16, .05]	.11 [−.04, .24]	−.18*** [−.28, −.08]	−.01 [−.14, .13]	.19*** [.09, .29]
Belief Bias (all)	.35*** [.27, .43]	.24*** [.13, .34]	.25*** [.16, .33]	.01 [−.11, .12]	−.34*** [−.41, −.27]
Belief Bias (1 or less)	.36*** [.27, .44]	.25*** [.13, .36]	.23*** [.15, .32]	−.01 [−.13, .11]	−.34*** [−.41, −.26]
Faith in Intuition for Facts	−.10* [−.20, −.01]	−.02 [−.16, .10]	−.19*** [−.28, −.10]	−.01 [−.14, .12]	.20*** [.11, .28]
Actively Open-minded Thinking	.30*** [.21, .38]	.17** [.05, .28]	.26*** [.16, .35]	−.07 [−.18, .04]	−.36*** [−.45, −.27]

Note. “Congr. ≤ 3” indicates analyses performed after excluding participants who gave more than three “yes” answers to congruent dilemmas. Text in bold highlights significant correlations (\*p < .05; \*\*p < .01; \*\*\*p < .001).

Table 8  
Pearson’s correlation and Bootstrapped correlation (95% BCa interval) of each measure of cognitive style and moral leniency in Study 3

Cognitive style	Moral Leniency Score
CRT (all)	.01 [−.08, .11]
CRT (1 or less)	−.04 [−.14, .07]
Belief Bias (all)	.23*** [.15, .32]
Belief Bias (1 or less)	.23*** [.14, .33]
Faith in Intuition for Facts	−.13* [−.23, −.02]
Actively Open-minded Thinking	.17*** [.08, .26]

Note. Text in bold highlights significant correlations (\*p < .05; \*\*\*p < .001).

4.3.4. Mediation Analyses

Since there was a significant relationship between cognitive style and moral leniency, and between moral leniency and participants’ scores on the Utilitarian and Deontological Parameters, we investigated whether the relationship between UP scores and cognitive style could be mediated by moral leniency. Using the R {lavaan} package (Rosseel, 2012), we conducted two Structural Equation analyses (one for each parameter) with parameters as the dependent variables, cognitive style as the predictor, and moral leniency as the mediator.<sup>5</sup> Cognitive style was treated as a latent variable computed on the basis of BB, FI, and AOT scores. CRT was left out because it did not predict UP scores (Table 7), did not correlate with moral leniency (Table 8), and had the weakest correlations with other measures of cognitive style (Table 4). As shown in Fig. 4, the effect of cognitive style on UP scores was mediated by moral leniency. The indirect effect of cognitive style on UP scores via moral leniency (b1\*b2) was

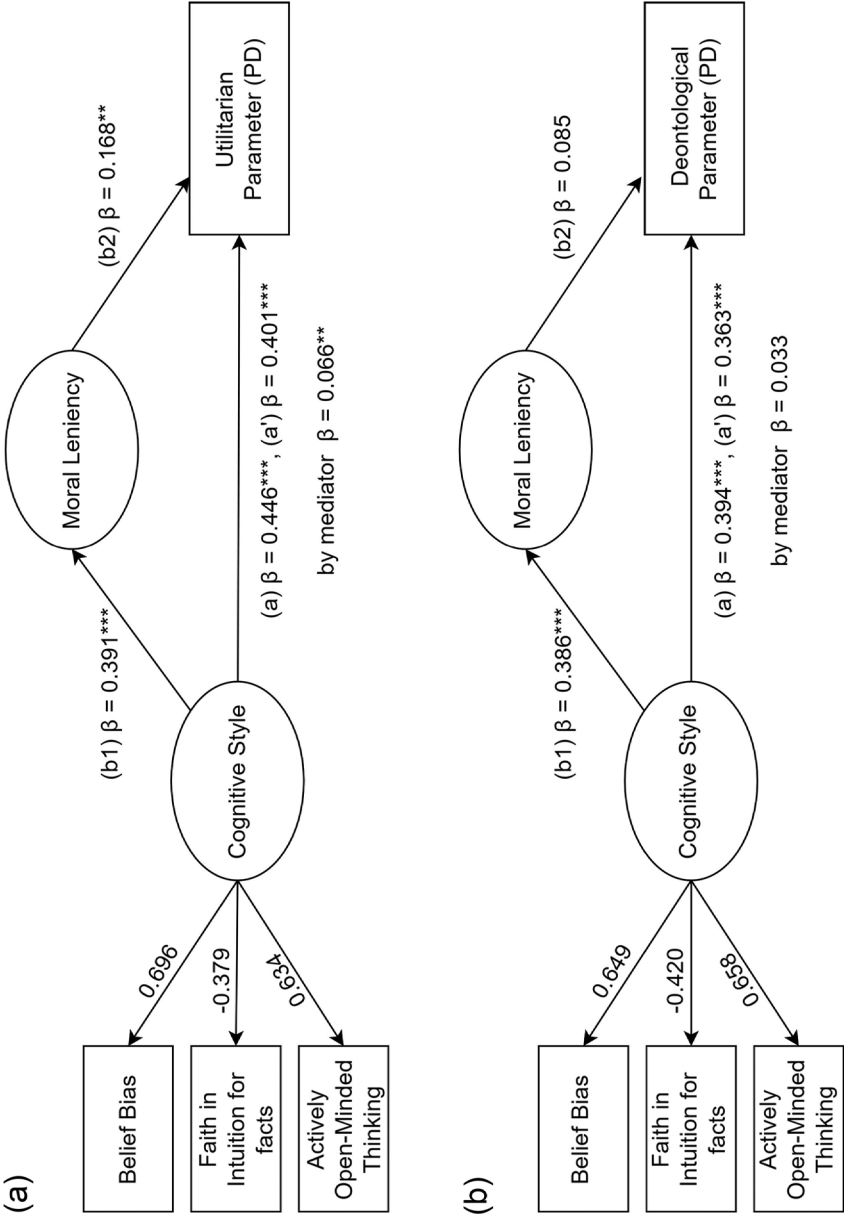


Fig. 4. Mediation analysis and representation of the direct and indirect paths of the effect of cognitive style on (A) participants' scores to the Utilitarian Parameter, and (B) participants' scores to the Deontological Parameter through moral leniency (Study 3). (a') is the direct path in the model with mediation. Note. All coefficients are standardized.

Table 9  
Pearson’s correlation and Bootstrapped correlation (95% BCa interval) of the MLS and each measure of moral judgment in Study 3

Moral judgment	Moral Leniency Score
Standard Utilitarianism	.04 [−.14, .07]
Scalar Utilitarianism	−.09° [−.19, .01]
Strong Utilitarianism	−.05 [−.15, .04]
Permissible Utilitarianism	.08 [−.07, .23]
Utilitarian Parameter (all)	<b>.26*** [.17, .34]</b>
Utilitarian Parameter (Congr. ≤ 3)	<b>.15* [.03, .27]</b>
Deontological Parameter (all)	<b>.18*** [.07, .28]</b>
Deontological Parameter (Congr. ≤ 3)	−.06 [−.18, .06]
“yes” to congruent	<b>−.25*** [−.35, −.15]</b>

Note. Text in bold highlights significant correlations (° $p < .1$ ; \* $p < .05$ ; \*\*\* $p < .001$ ).

significant ( $\beta = 0.066, p = .008, BCa = [0.005, 0.024]$ ). This pathway did not fully account for the overall effect of cognitive style on UP scores because the direct effect (a’) remained significant ( $\beta = 0.401, p < .001, BCa = [0.054, 0.107]$ ). On the contrary, the indirect effect of cognitive style on DP scores via moral leniency was not significant ( $\beta = 0.033, p = .235, BCa = [−0.004, 0.023]$ ).

5. General Discussion

In this paper, our goal was to investigate the possibility that the relationship between reflective cognitive style and utilitarian judgment might be due (at least in part) to the combination of the fact that utilitarian judgment is typically measured by asking participants how permissible it is to engage in the utilitarian action, and of the fact that people with more reflective cognitive style are more morally permissive—or, as we put it, more *morally lenient* in general.

To this end, our first step was to establish the existence of a relationship between reflective cognitive style and moral leniency. In Study 1, we designed and validated a measure of moral leniency. Using this measure, we found in Studies 2 and 3 that participants with a more reflective cognitive style were indeed more morally lenient.

The second step was to replicate the correlations between reflective cognitive style and utilitarian judgment. We were a bit less fortunate on this point, as whether we observed this correlation depended on how utilitarian judgment was measured and, most importantly, fluctuated depending on how cognitive style was assessed. This is in line with previous research emphasizing the instability of this relationship (Baron et al., 2015), and the fact that not all measures of cognitive style predict moral judgment in the same way (Byrd & Conway, 2019).

Still, we found that a more reflective cognitive style predicted more utilitarian judgments to harmless moral violations in Study 2, and higher scores on the Utilitarian Parameter in Study 3. Moreover, mediation analyses found that moral leniency significantly mediated this relationship. This fits our hypothesis that part of the relationship between cognitive style and



utilitarian judgment might be due in part to cognitive style being linked to moral leniency. In line with this hypothesis, we also found in Study 2 that a more reflective cognitive style was associated with *less* utilitarian moral judgments in contexts where making utilitarian judgments required to pass negative judgment rather than being permissive (the demanding ethics scenario). In Study 3, we found that reflective cognitive style, as measured through BB, FI, and AOT was associated with *less* utilitarian answers when we asked participants whether the utilitarian action was recommended or mandatory, rather than simply appropriate or permissible. However, this pattern did not hold when assessing cognitive style through CRT.

This suggests that part of the answers described as “utilitarian” in the literature might not be the product of utilitarian considerations or reasoning, but rather the product of a more general moral leniency. As shown in Study 3, this might still be true when utilitarianism is assessed through process dissociation, as moral leniency is not the same thing as the moral callousness required to consider as “appropriate” the fact of choosing to cause more evil. This conclusion is in line with previous research on the nature of seemingly utilitarian answers (Kahane, Everett, Earp, Farias, & Savulescu, 2015).

However, our data do not allow us to answer one important question: why exactly is reflective cognitive style positively associated with moral leniency? We have seen that Landy and Royzman’s moral myopia model suggests that people with a more reflective cognitive style are more likely to perceive the complexity of moral conundrums and thus to consider all options open (and permissible) and we called this the *moral nuance* hypothesis. However, we do not think that the relationship we observed between reflective cognitive style and moral leniency can be fully explained by this hypothesis, as the scenarios we used in our measure of moral leniency do not provide such complexity. Thus, it seems that, in addition to greater moral nuance, reflective cognitive style is also associated with a greater *moral leniency* in general, that is: to a lesser sensitivity to moral violations. Now, we can ask ourselves, what could the nature of this association be?

A first possibility might be that there is no direct connection between reflective cognitive style and moral leniency but that they are both related to a third factor. For example, in Study 1, we found that moral leniency was negatively correlated with religiosity. Past research also suggests that a more reflective cognitive style is associated with less religiosity (Byrd, Stich, & Sytsma, forthcoming). Thus, a common link to religiosity might explain the connection between reflective cognitive style and moral leniency. Another common factor could be political orientation, as liberals have been shown to be on average more reflective than conservatives (Deppe et al., 2015; Talhelm et al., 2015), while conservatives tend to be more moralistic than liberals (Everett et al., 2021).

However, there could be more direct, causal connections between the two. We can consider the possibility that cognitive reflection might lead participants to be more nuanced not only in their ethical views, but also in their *meta-ethical* views. More precisely, it could be that cognitive reflection leads participants to be more doubtful about the existence of objective, absolute moral truths, which would in turn make them more wary of passing harsh moral judgments. As such, moral leniency would be an effect of the moral nuance brought by cognitive reflection. One problem with this view is that, in Study 1, we did not find a significant correlation between moral leniency and moral relativism. However, we should distinguish between moral

*relativism* and moral *antirealism*. *Moral relativism*, which is what we measured in Study 1, is the idea that there are indeed moral truths (i.e., correct moral answers) but that these truths are not the same depending on the culture or even the individual. *Moral antirealism* is the idea that there are no moral truths (meaning no correct moral answers). Thus, even if moral leniency was not related to moral relativism, it could still be related to moral antirealism. In the past 15 years, experimental philosophers have developed several, competing methods to assess people's endorsement of moral antirealism and it might be interesting to study to which extent cognitive reflection and moral leniency are associated with this meta-ethical position (Cova, 2024; Ziljstra, 2019).

Another possibility has to do with the role played by emotions in moral condemnation (Reynolds & Conway, 2018). For example, Ward and King (2018b) asked participants to imagine themselves committing a certain number of behaviors and to rate the morality of these behaviors. They observed that men were more lenient than women and that this could be accounted by how they anticipated the action would make them feel: men anticipated less negative feelings than women. However, the difference between men and women disappeared when the experimenters asked them to adopt an "unemotional perspective." In the same way, people with a more reflective cognitive style are supposed to rely less on intuitive processes while making decisions. But emotions are intuitive processes. As such, we would expect people with a more reflective cognitive style to rely less on emotions when making decisions. For example, Li and colleagues (2024) found that participants who scored higher on the CRT were less likely to let their anxiety influence them when making decisions. Similarly, it might be that people with a more reflective cognitive style are less likely to be swayed by their negative emotions when making moral judgments, leading them to be less harsh when condemning other's behavior. One way to test this hypothesis might be to present the same moral violations in different versions that include either neutral or emotional descriptions of the same events and see whether people with more reflective cognitive style are less sensitive to this kind of emotional manipulation.

In the absence of further research and results, we cannot yet determine why exactly cognitive reflection is associated with moral leniency. However, we think that understanding this connection might shed further light into the role cognitive reflection plays in moral judgment and decision-making.

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## Open Research Badges



This article has earned Open Data, Open Materials, and Preregistered Research Design badges. Data, materials, and the preregistered design and analysis plan are available at <https://osf.io/9wg8b/>, <https://osf.io/txj9m>, and <https://osf.io/96wja>.

## Notes

- 1 As we wanted our vignettes to capture moral leniency in general (i.e., in a wide array of situations), we did not use approaches such as exploratory factor analysis, which would be suitable in the case of a self-report scale, but less so in the context of vignettes. Indeed, in the case of vignettes, such approaches would have favored a focus on a very similar and restrictive set of cases and would have captured commonalities in the theme of the vignettes (e.g., the type of moral violation), but not in anything directly relevant to the assessment of participants' moral leniency.
- 2 “inappropriate” answers = the participant selected “no” when asked whether the action described was appropriate.
- 3 That is, saying that it is morally acceptable to harm someone in cases where it does not result in greater good overall.
- 4 We excluded those who gave more than three “yes” answers in congruent dilemmas because the mean number of “yes” answers was 3.3 and the median was 3. This left us 269 participants.
- 5 This time, moral leniency was treated as a latent variable created from the items in the measure.

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### Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Supplementary Materials