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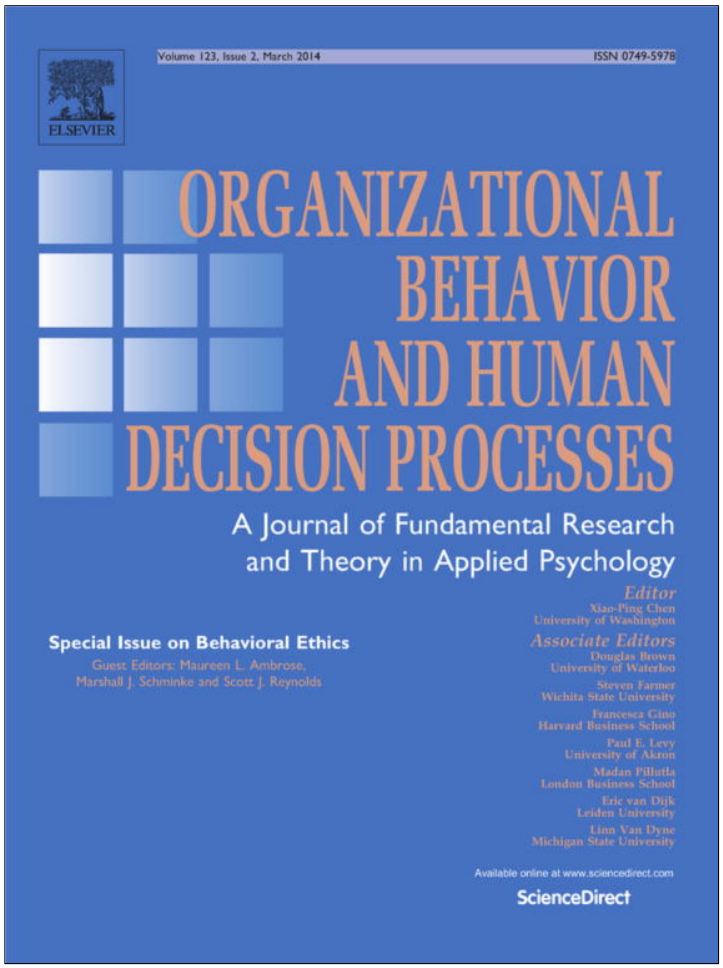

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"Just think about it"? Cognitive complexity and moral choice

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ABSTRACT

In this paper, we question the simplicity of the common prescription that more thinking leads to better moral choices. In three studies, we discover that the relationship between how complexly one reasons before making a decision with moral consequences is related to the outcome of that decision in a curvilinear way. Using two different moral decisions and both measuring and manipulating the level of cognitive complexity employed by the decision maker, we find that decisions made after reasoning with low and high levels of cognitive complexity are less moral than those made after reasoning at moderate levels of complexity. These results suggest that the best moral decisions are those that have been reasoned through "just enough". Further, and at least as important, they illustrate the need to expand our study of ethical behavior beyond simple effects, and to gain a deeper understanding of the thought processes of individuals faced with moral choices.

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Introduction

A pivotal debate in moral psychology centers on the role of reasoning in making ethical decisions. Moral development theory, derived from Kantian philosophical traditions, is based on the idea that optimal moral action becomes self-evident through rational thought and careful deliberation (e.g., Kant, 1785/1993; Kohlberg, 1975; Rest, 1986). However, a little over a decade ago, Haidt's moral intuitionist perspective (2001) challenged the importance of reasoning in moral choice. Haidt's central claim is that moral decisions are made intuitively, and moral reasoning is only employed as a means to justify, post hoc, decisions already made. His perspective resonates with work on motivated moral reasoning, which argues that individuals can marshal complex reasoning in order to justify morally suspect choices (Ditto, Pizarro, & Tannenbaum, 2009). On the surface, these two research traditions present incommensurate predictions about the role of reasoning in moral choice, with the former advancing that sophisticated moral reasoning will improve moral choices, and the latter proposing that complex reasoning is more likely evidence of the desire to rationalize immoral ones.

How might these two views be reconciled? This paper picks up the conversation about the relationship between reasoning and moral choice, and suggests that while some level of reasoning sophistication likely improves moral choices (as moral development theory suggests), reasoning too complexly may detrimentally affect them (as theories of motivated moral reasoning claim). Our aim is to add nuance to the conversation about how our moral decision-making processes can be improved through better understanding the role played by the complexity of the reasoning we employ when making these choices. In order to develop our hypotheses, we attend carefully to both of these contradictory traditions within moral psychology, as well as on research on the role of reasoning per se in decision making more broadly. Understanding how our reasoning processes affect moral choices has the potential to help us move beyond simple comparisons that pit reasoning against other types of decision making processes in predicting moral choices (Gunia, Wang, Huang, Wang, & Murnighan, 2012; Ham & van den Bos, 2010; Zhong, 2011), as well as inform how we educate new generations of professionals on how to behave more ethically (Eynon, Hills, & Stevens, 1997; Fraedrich, Thorne, & Ferrell, 1994; Kohlberg, 1975; Treviño, 1992).

In the pages that follow, we develop these competing predictions based on the research traditions from which they emerged, and then offer our alternative view that can integrate both sets of ideas—namely, that the relationship between reasoning and moral choice is curvilinear rather than linear. Competing hypotheses are relatively rare in the organizational sciences (Armstrong, Brodie, & Parsons, 2001), but can be a compelling tool with which to extend theory and reconcile different perspectives. Our ultimate hypothesis not only accommodates both perspectives but also underscores the importance of moving away from simplistic ways of thinking about how the complexity of our reasoning processes affects our moral choices.

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More reasoning improves moral choices

Many traditional moral philosophies, including, most obviously, deontology (Kant, 1785/1993), but also utilitarianism (Mill, 1863), assert that reasoning improves moral decisions, and that the highest levels of moral decision making require highly sophisticated reasoning skills. Kohlberg's seminal theory of moral development (1969, 1975, 1984; Kohlberg, Hewer, & Levine, 1983) marries Kantian philosophical frameworks with Piaget's ideas about human development (1965), and outlines a set of developmental stages through which individuals pass as they become ever more advanced moral deliberators. Kohlberg, as well as Rest (1986), who followed in Kohlberg's footsteps, are the primary proponents of the idea that more advanced moral reasoning will improve moral choices.

Kohlberg's theory focuses on the structure and sophistication of an individual's reasoning process rather than on its content or behavioral prescriptions (Campbell & Christopher, 1996). Low (preconventional) stages are characterized by primal, egoistic reactions to outcomes, and moral choices are made on the basis of simplistic calculi. Moderate (conventional) levels of moral reasoning involve the application of internalized moral norms to the decision at hand and interpreting the consequences of one's actions in terms of one's duties to relevant others, rules and laws. Finally, advanced (postconventional) levels of moral reasoning require individuals to independently apply formal and universal principles to a decision at hand (Kohlberg, 1969, 1975, 1984; Rest, Narvaez, Bebeau, & Thoma, 1999; Treviño, 1992). These stages are hierarchical, both cognitively and prescriptively: more advanced stages require more sophisticated reasoning abilities, and lead to more optimal moral choices. Kohlberg's central claim—that more advanced levels of moral reasoning are linearly and positively related to more ethical choices—has found some empirical support (Colby, Kohlberg, & Speicher, 1987).

Work that elaborates the difference between System 1 (affective and intuitive) and System 2 (deliberative and rational) thinking (Stanovich & West, 2000a, 2000b) suggests that developing and engaging System 2 will help us overcome conflicts of interest (Moore & Loewenstein, 2004) and minimize sub-optimal moral decisions (Bazerman & Tenbrunsel, 2011), even if our natural inclination is for System 1 processing. For example, Alter and colleagues found that reading information in a difficult font or while furrowing one's brow triggered deliberative (as opposed to automatic) processing, reducing the effect of heuristics and default responses on judgments and improving decisions (Alter, Oppenheimer, Epley, & Eyre, 2007).

Complex reasoning ability is considered a key capacity individuals need to develop in order to optimize their decision-making ability more generally as well (Lohman & Lakin, 2011; Nickerson, 2004). For example, strategies such as creating checklists of necessary steps for complicated procedures like surgery improve outcomes and reduce errors in judgment by increasing the extent to which individual think through their decisions and behavior in advance (Gawande, 2010; Weiser et al., 2010). Similarly, people make better decisions when they weigh options jointly rather than separately (Hsee, Loewenstein, Blount, & Bazerman, 1999), a strategy that requires more sophisticated reasoning capacities.

Additional research approaches the relationship between reasoning complexity and decisions from the flip side, and shows that the absence of reasoning or deliberation undermines decision quality. For example, mindlessness—inattention to the elements or consequences of a prospective behavior or decision (Langer, 1989; Langer & Moldoveanu, 2000)—has been studied at the trait level as a predictor of unethical behavior (Ruedy & Schweitzer, 2010). Similarly, organizational scripts—schema-based knowledge of behavior and behavioral sequences—facilitate cognitively simplistic behavioral responses in given situations (Gioia & Poole, 1984). In the 1970s, safety concerns about the Ford Pinto car ought to have triggered a recall. It was not, and Dennis Gioia, a recall coordinator at the time, blames scripted behavior with the morally problematic outcome of leaving a dangerous car on the road. The organizational script he was following caused him to make an automatic choice, without reasoning through to its potential consequences, leading him to ignore the warning signs about the car's safety records, with fatal moral consequences (Gioia, 1992).

In another recent paper, Gunia et al. (2012) find that participants who have been asked to contemplate their decisions in advance lie less in a deception game than those who are asked to make immediate decisions, without the time to engage reasoning processes. Along similar lines, again following an argument that time provides the opportunity to deliberate, Shalvi, Eldar, and Bereby-Meyer (2012) manipulated the length of time participants had before an opportunity to lie (for money) about the outcome of a die roll. Consistent with Gunia's findings, participants with more time lied less about the die roll outcome (Shalvi et al., 2012).

While the understanding and manipulations of reasoning in these studies differ, they all view increasing the extent of deliberation or the degree of reasoning sophistication in advance of making a decision as a positive influence on decision outcomes. Together, this literature implies a positive and linear relationship between increasing levels of reasoning and moral choice.

H1. There is a positive and linear relationship between reasoning and moral choice.

More reasoning impairs moral choices

The research documenting a linear and positive relationship between moral reasoning and moral choice has not been as empirically robust as researchers fully embedded in the rationalist tradition expected (Rest et al., 1999). This suggests that the relationship between reasoning and moral choice may not as simple as this tradition supposed. From a social intuitionist perspective, reasoning processes are triggered after intuitive decisions have already been reached (Haidt, 2001). This post hoc reasoning may include sophisticated logic marshaled in order to support the intuitively formed behavioral preference. If one's reasoning capacity is only engaged to justify an intuitively formed behavioral preference, one is motivated to use reasoning to rationalize this preferred course of action rather than use it to deliberate through to the most optimal course of action.

Though the social intuitionist model rejects the possibility that moral reasoning during the decision making process will affect the ethicality of one's choices, the idea that the role of reasoning in moral choice is to justify commitments to a predetermined course of action dovetails nicely with work on motivated moral reasoning (Ditto et al., 2009) and moral rationalizations (Tsang, 2002). These bodies of work suggest that elaborate cognitive processes may be enlisted to help justify engaging in immoral actions without their attendant negative consequences. This tradition suggests that reasoning processes are used selectively and elegantly to bolster rationalizations for preferential courses of action prior to undertaking them (though perhaps after pre-committing to them).

This understanding of the role that reasoning plays in moral choices directly contradicts the assumption about how reasoning works in the Kohlbergian world. While moral development theory sees complex reasoning as an effort to objectively determine morally optimal action, theory on motivated moral reasoning sees complex reasoning as part of what one does in order to subjectively justify morally sub-optimal choices. Put simply, when one is conflicted about a potential course of action—when the choice

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one *wants* to make conflicts with the choice one knows one *ought* to make (Bazerman, Tenbrunsel, & Wade-Benzoni, 1998; Tsang, 2002)—reasoning may be employed to help arrive at a resolution that allows one to justify the "wanted" action over the "ought" action (Heider, 1958).

As an example, participants in one study used more complex thinking when asked to consider whether *they themselves* wanted to go on a vacation at a Caribbean resort that used questionable labor practices than when asked to consider the same holiday for others (Paharia, Vohs, & Deshpandé, 2013). In this case, contemplating the holiday for oneself created a tension between wanting to go on the holiday and knowing one ought not tolerate questionable labor practices, a tension that was not triggered when thinking about the same holiday for someone else. Put another way, complex reasoning helps to "shield the individual from the force of his own internalized values" (Sykes & Matza, 1957, p. 669) when engaging in immoral behavior.

Research on the pitfalls of cognitive complexity also supports the idea that one can enlist complex reasoning to help individuals reconcile want/should conflicts in favor of "wanted" outcomes. In a study that investigated the cognitive complexity of politicians' speeches and public statements about of slavery in pre-Civil War America, the researchers found that politicians who were trying to advocate for a course of action that provided a good deal of political currency but which was impossible to justify on moral grounds (weakly abolitionist statements) were the most cognitively complex (Tetlock, Armor, & Peterson, 1994). Finding reasons that allow us to engage in immoral behavior while thinking of it as acceptable is a bit like having your cake (meeting moral constraints by advocating against slavery) and eating it too (being politically palatable to both sides by tolerating slavery in some respects): a logical impossibility that may only be achieved with some fancy cognitive footwork.

Work on motivated reasoning confirms that when individuals desire a specific outcome, they will search for, and even conjure up, reasons why their desire is justified. For example, individuals motivated to make a discriminatory hiring decision will construct criteria for the job that a desired candidate meets and weigh the characteristics that desired candidate happens to have more heavily in their hiring decisions (Uhlmann & Cohen, 2005). In other words, one's preferred course of action provides a directional motivation (Kunda, 1990) to search for, attend to, and weight more heavily any evidence that supports the preference (Ditto et al., 2009).

A final body of work warns against the perils associated with specific types of deliberation per se. In a series of experiments that examined a simple and relatively inconsequential decision (which strawberry jam to choose), Wilson and Schooler found that thinking too much (i.e., in conditions where they were asked to analyze their preferences, or to evaluate all the attributes of the good) reduced the quality of participants' decisions (1991). In somewhat more consequential decisions, Small and her colleagues found that triggering people to think analytically about reasons for charitable donations reduced the amount individuals gave (Small, Loewenstein, & Slovic, 2007), and Zhong (2011) found that participants in "deliberative" conditions (after answering math questions, or reading instructions with *decision* words) lied more than participants in "intuitive" conditions (after answering questions about one's feelings or reading instructions with *intuition* words).

Taken together, studies suggest that there may be something about reasoning itself—particularly highly complex reasoning—that facilitates less moral choices. Reasoning may pose an ethical danger as it may be selectively recruited to bolster the reasons for engaging in a course of action that is not morally justified. It also suggests that the process of deliberating leads individuals to focus on non-moral factors, such as monetary payoffs, that might be used as a basis for making choices that benefit oneself to the detriment of others. Together, this literature suggests a negative linear relationship between reasoning and moral choice.

H2. There is a negative and linear relationship between cognitive complexity and moral choice.

Cognitive complexity is related to moral choice in a non-linear fashion

When considered side by side, these two perspectives imply a third possibility. Perhaps one can both think too much and too little (Ariely & Norton, 2011). To reconcile these different perspectives, we might find that both high (thinking too much) and low (thinking too little) levels of reasoning complexity undermine moral choice. We propose that exploring the level of complexity of one's reasoning processes as a continuous variable—specifically, thinking of reasoning as an element of decision making that can be more or less complex—can help us encompass both perspectives that thinking too little or too much is dangerous for moral choice.

While the relationship between cognitive complexity and moral choice has not been investigated per se, there are indications that the relationship may be neither simple nor linear (Tetlock et al., 1994). To elucidate our thinking through the use of an example, imagine an executive who wants to hire someone to clean her corporate offices. One option is to hire a cleaning person under the table who does not have legal employment rights. While this will save a substantial amount of money on taxes and insurance, it contravenes local employment regulations as well as moral proscriptions against hiring people without appropriate legal protections. The example of whether or not to hire this worker represents a classic and common type of moral choice: one between meeting one's immediate and selfish preferences (cheap labor) and meeting the needs of one's larger community (protecting the worker legally and the community by paying her related taxes) or social norms (refraining from exploitative labor practices).

In making this decision, simplistic calculi about the cost savings of hiring the cleaner illegally do not require very complex reasoning. A mindless and unreasoned decision might be to go forward with the immediately attractive option of hiring the cleaning person without paying all of her associated costs. Making the choice to save the money may simply be a "dominant response" (Zajonc & Sales, 1966), something one does when one has failed to think through the consequences of the decision beyond cost savings.

However, thinking about this issue might trigger one to consider the inherent unfairness of employing someone without any legal rights, the tenuous position the cleaner will find herself if illegally employed, or the responsibility one has to the jurisdictions in which one is operating. These factors may cause one to pause before creating an under the table arrangement and resolve the dilemma in the favor of legal employment, to the detriment of one's immediate cost savings. On the other hand, reasoning too complexly about the issue may provide individuals with the moral rationalizations they need in order to hire the cleaner without feeling any attendant distress about the true moral implications of this choice. Individuals who think about all the possible reasons why or why not a course of action might be justified are likely to weigh that information in a way that favors the self or an intuitively desired preference (Dunning, Leuenberger, & Sherman, 1995; Uhlmann & Cohen, 2005). Reasoning extensively about this dilemma may add consideration of the endemic nature of illegal employees, how common it is that other companies avoid paying complete labor costs by hiring illegal workers, or even that the cleaning person herself may be personally better off if employed illegally.

Thus, even with an awareness that refusing to pay a cleaning person's associated costs of employment leads to social costs (in unpaid taxes and the potential for exploitive labor practices),

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engaging in this more extensive and complex deliberation may well lead to the decision to save the money and hire the cleaner illegally, with rationalizations to justify that problematic course of action. This outcome is similar to the study that found that political figures engaged in the most cognitively complex reasoning when they wanted to accommodate slavery, within an awareness that it was morally problematic and viscerally opposed by many (Tetlock et al., 1994). It is also consistent with the study where individuals recruited motivated reasoning to justify questionable labor practices at the Caribbean resort, but only when contemplating the vacation for themselves (Paharia et al., 2013).

Integrating these two lines of thinking suggests that some complexity in one's reasoning may improve ethical behavior, but that thinking too complexly may allow individuals to slip into the dangers associated with moral rationalization. When one is in a situation in which one's immediate self-interest conflicts with a social good, self-interest is likely to win out if one thinks about the issue simplistically, successfully ignoring the moral consequences of the action. Yet in the same situation, enlisting our complex reasoning processes may also allow us to dismiss the arguments against the self-interested behavior. However, thinking through the decision at a moderate level of complexity would require the recognition of the legal and moral prescriptions against the mindless and easy choice to save the money, but without the slide into moral rationalization, and thus be more likely to lead to the acknowledgment that this option is not fair as a citizen or as an employer.

This example illustrates the ethical tension between self-interest—hiring cheap labor—and the greater good—paying taxes and refraining from exploitive labor practices. Certainly, self-interested actions are not universally unethical, and indeed, some theorists would argue that ultimately, moral choices are always in one's self-interest (cf., Bowie, 1991; Frank, 1988). However, a substantial proportion of moral decisions involve a tension between the immediate self-interest of the actor and a greater good: whether to overclaim credit for one's work in a group project (Bradley, 1978), how to allocate bonus payments when one controls the "pot" (Diekmann, Samuels, Ross, & Bazerman, 1997), or whether to assign oneself preferential tasks (Batson, Kobrynowicz, Dinnerstein, Kampf, & Wilson, 1997), as examples. In these cases, moderate levels of reasoning complexity may help one move from a dominant response of selfishness to an understanding of the other stakeholders involved, but reasoning too complexly may allow one to justify acting in one's own self-interest to the detriment of others.

We propose that, particularly when making moral choices that pit one's self interest against a greater good, reasoning will be related to moral choice non-linearly. Low levels of cognitive complexity will allow dominant responses in favor of self-interest to the detriment of community interests to prevail and high levels of cognitive complexity will pave the way for moral rationalization. Specifically, complex reasoning may improve our moral decision making up to a point, at which point it may facilitate rationalizations that ease the dissonance triggered by unethical behavior and lead to a deterioration in moral decision making.

H3. The relationship between cognitive complexity and moral choice is non-linear, such that the least ethical choices are associated with the lowest and the highest levels of cognitive complexity.

Study 1

Study 1 served two purposes. The central purpose of Study 1 was to examine the relationship between the degree of cognitive complexity individuals employ in the decision making process and their moral decisions. As our moral choice, we use a dilemma that pits an individual's immediate self-interest (immediately maximizing one's job performance) against a greater social good (immediately saving lives). We use the construct of integrative complexity to investigate the impact of cognitive complexity on an individual's behavior. Originating with Kelly's personal construct model (1955), integrative complexity is a psychological construct that describes both the breadth of factors individuals use to assess a situation, and how well these factors are incorporated in a final decision (Driver & Streufert, 1969; Schroder, Driver, & Streufert, 1967). Consistent with work on cognitive complexity more generally (Bieri, 1955; Driver & Streufert, 1969; Schroder et al., 1967), integrative complexity has been highlighted as an important factor in decision making, and used to predict Supreme Court decisions (Gruenfeld, 1995; Gruenfeld & Preston, 2000), political opinions about slavery and abolition (Tetlock et al., 1994), and decisions to go to war (Guttieri, Wallace, & Suedfeld, 1995; Suedfeld, Tetlock, & Ramirez, 1977; Wallace & Suedfeld, 1988).

This construct is particularly useful in our context as it represents a morally neutral measure of reasoning complexity. This is important given that our interest is to understand how the complexity of reasoning per se, distinct from the complexity of one's *moral* reasoning, affects moral decisions. Assessing the role of integrative complexity on participants' moral decisions allows us to determine whether the level of an individual's reasoning complexity positively or negatively affects their moral decisions without confounding the results by using a measure of the complexity of one's moral reasoning (e.g., Rest, 1990).

A secondary purpose of Study 1 was to investigate whether asking someone to reason in advance of making a decision led to different decisions than asking someone to make an immediate decision. If the social intuitionist model is correct, and all moral reasoning is post hoc, then asking someone to reason about a decision in advance of making it should have no effect on it. However, if reasoning in advance of making (or, at least, reporting) a decision makes a difference, then we can examine the role of cognitive complexity in those moral choices with some certainty that the reasoning process itself has an effect on the ultimate decision.

Method

Participants

Four hundred and fifty-eight MBA students in the UK (73% male; $M_{age} = 29$, $SD = 3.14$) participated in the study as part of a course requirement. Sixty-two nationalities were represented in the class, and they had on average 5.3 years of work experience ($SD = 1.8$, range 2–13).

Task and procedure

Participants completed an on-line survey in advance of starting the course. Participants read a dilemma that was based on an actual dilemma described by a student the prior year, as part of an assignment requesting students to write about an ethical dilemma which they had personally faced at work.

> *You work for a major television network and you and your team are one of the few on the ground in the early hours of a serious natural disaster—a large coastal area has been completely flooded by a hurricane and its aftermath, and a low lying city now lies under 3–4 metres (12–14 feet) of water. Rescue efforts are struggling to save the many inhabitants still stranded by the storm. You have a boat with a capacity of six for your four person crew:*
>
> - *you as the producer,*
> - *a camera operator,*

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- *a sound tech, and*
- *an on-air correspondent.*

You have to make a decision about who to send in the boat—in other words: how many places on the boat should be taken up by your crew, and how many places should be offered to the rescue effort.

The dilemma pits self-interest against the value of saving human lives. As such, the greater the number of seats allotted to crew, the less ethical the decision was considered.

We included an ordering manipulation in the study design. In order to address the possibility that reasoning may work differently when it occurs before versus after making a moral choice, participants were randomly assigned to two conditions. In the *prospective reasoning condition*, participants' explicit reasoning was requested in advance of reporting their decision: "Please describe your thinking as you make your decision about who from your crew should go on the boat, and how many places on the boat you should reserve for the rescue efforts." They were provided with an open-ended opportunity to respond. Then they were asked, "How many from your crew would you send on the boat?" and given the option of choosing between zero and four. In the *retrospective reasoning condition*, participants' explicit reasoning about the decision was solicited after reporting their decision.

Of course, it is impossible to ensure that participants in the prospective condition truly waited until after reasoning through the decision before making it. However, if reasoning about moral choices is all post hoc, then we would not expect a difference in the decision contingent on the ordering of when we asked participants to reason about it. Finding a difference in the decisions made contingent on when participants were asked to reason about them provides some evidence that reasoning in advance of making a decision matters, and strengthens our ability to make claims that the reasoning itself influences the decision. Thus, we use the ordering manipulation to establish the importance of reasoning in advance of making the decision to the ultimate moral choice, and then explore the relationship between complexity and moral choice among those who engaged in the reasoning in advance of the decision.

Measuring complexity

Responses to the open-ended question provided by participants were evaluated for integrative complexity by a trained integrative complexity coder who was blind to the study hypotheses and conditions (Baker-Brown et al., 1992). Integrative complexity consists of two components: differentiation (the breadth of factors or perspectives considered in the decision) and integration (the degree to which the differentiated perspectives are assimilated in the decision). In this coding, consistent with the methodology used to measure integrative complexity, responses are scored on a scale from 1 through 7. A score of 1 represents reasoning that "relies on unidimensional, value laden, and evaluatively consistent rules for processing information" and "indicate[s] no evidence of either differentiation or integration" (p. 401). Scores of 3 "indicate moderate or even high differentiation but no integration", and scores of 5 "indicate moderate to high differentiation and moderate integration" (p. 401). A score of 7 requires evidence of both high differentiation and high integration. We provide some examples of the reasoning used in this study, with their respective scores, below.

In order to ensure the reliability of the coding, a second trained coder coded a subset of 40% of the sample passages. The integrative complexity coding manual suggests that qualified coders should reach an inter-rater reliability of .80 on a subsample of at least 15% of any given data set (Baker-Brown et al., 1992, p. 405). The two coders ratings had an inter-rater correlation of .90 (per Tetlock & Boettger, 1994), a correlation of .83 (per Tetlock et al., 1994), and an ICC of .82, suggesting the coding was reliable.

Controls

We include participant sex (a dummy variable, male = 1) and age as controls, two demographic variables that meta-analyses confirm are predictive of moral choices (Kish-Gephart, Harrison, & Treviño, 2010). We also include four controls that might reasonably be related to cognitive complexity, and may present an alternative explanation for our effects. Thus, we control for whether the participant's first language is English (dummy variable, English as a first language = 1), as this might influence the level of cognitive complexity employed when writing about a decision. We control for the participant's GMAT score, as an alternative explanation for a relationship between cognitive complexity and moral choice may be intelligence. We control for the number of words the participant wrote, to ensure that a relationship between cognitive complexity and moral choice cannot be attributed to the length of the passage individuals wrote about the decision. Finally, we control for the time individuals spent writing the passage and making their decision. This helps control for the alternative explanation that the time spent contemplating the decision explains our results (Gunia et al., 2012; Shalvi et al., 2012).

Results

We found a difference between the prospective and retrospective conditions in terms of how many of their crew members they reported they would send on the boat ($M_{\text{prospective}} = 1.39$, $SD = 1.14$, $M_{\text{retrospective}} = 1.61$, $SD = 1.19$, $t(457) = 2.07$, $p = .039$). This provides some evidence that reasoning in advance of the decision affects what moral choice is made, and that not all reasoning about the decision is post hoc. This finding supports our position that reasoning in advance of the decision matters, and allows us to explore our central interest, which was to test the direct relationship between the integrative complexity of the decision response and the choice of how many crew to send on the boat. We therefore focused our analyses on the participants who wrote about the decision in advance (the prospective condition), as those who wrote about their decision retrospectively would be engaged in post hoc reasoning (Haidt, 2001).[1]

Table 1 presents the results of a two-step regression model in which we regressed moral choice (the number of their own crew the participant would take on the boat) onto sex, age, English as a first language, GMAT score, word count, and time spent reasoning about the decision. As is evident in Model 1, none of these controls were significantly related to the moral choice. In Model 2, we add the term for cognitive complexity, as well as the squared term for cognitive complexity (centering the variable at its mean value before squaring it, per the recommendations of Aiken & West, 1991). Results indicated a significant curvilinear relationship between complexity and moral choice, such that individuals with the highest as well as the lowest levels of complexity made the least moral decisions. Adding the squared term increased the R^2 of the model by 5.7%, indicating that the quadratic term explained a significant proportion of the variance in the moral choice, [change in F after

[1] We note that the results of the regression analyses do not change if we analyze the data from our whole sample. However, we believe that it is more appropriate to analyze the data from the participants who wrote in advance of making the decision separately, as they represent the population whose decision processes we are trying to explore theoretically. Including the data from the whole sample adds individuals whom we have asked to reason about the decision post hoc, and thus we cannot claim these data speak to our research question directly.

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Table 1
Summary of simple regression analyses for predicting the number of crew participants would take, Study 1.

Variable	Model 1: Controls			Model 2: Complexity		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Constant	2.07	2.12		2.32	2.10	
Male	−.065	.20	−.026	−.063	.20	−.025
English first language	.091	.18	.039	.098	.17	.041
Age	.006	.04	.013	−.001	.04	−.003
GMAT	.000	.00	.009	.000	.00	.000
Word count	.000	.00	.004	.001	.00	−.051
Time spent reasoning	.000	.00	−.047	.000	.00	−.045
Cognitive complexity				−.008	.05	−.013
Cognitive complexity^2				.076	.02	.249**
R^2			.01			.06
ΔF			.15			5.39**

$N = 187$.
* $p < .05$.
** $p < .01$.

adding the quadratic term: $F(2,179) = 5.39$, $p = .005$].

We plotted this curvilinear effect, holding constant the values of all the control variables at their mean values (see Fig. 1). At the mean value of cognitive complexity (0 at the mean centered value), individuals reported they would take 1.25 members of their own crew on the boat. This number rose to 1.55 crew members at values of cognitive complexity 1 standard deviation below the mean and rising to 1.76 crew members at the lowest values of cognitive complexity, and 1.52 crew members at 1 standard deviation above the mean and rising to 2.16 at the highest values of cognitive complexity. These curves suggest that more cognitively complex reasoning increases the ethicality of decisions *up to a point*, after which increasing complexity becomes associated with less ethical decisions. This finding is consistent with Hypothesis 3, and highlights a potential reconciliation of the inconsistent predictions of Hypotheses 1 and 2.

The role of cognitive complexity in less ethical actions at the low and high ends of the cognitive complexity spectrum is evident when reading the responses provided by participants. For example, a low complexity participant (scoring a "2"), wrote:

> *"I would take my whole crew and leave two places for rescue efforts. Television is there to transmit news and not to help on rescue efforts. If I have a boat, why doesn't the rescue efforts have a boat as well?"*

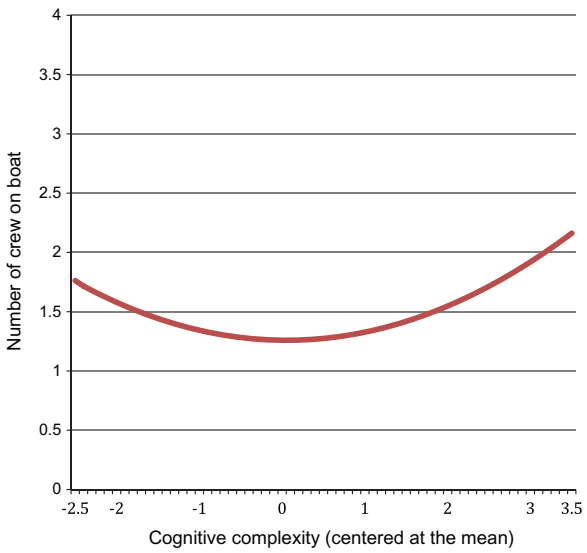

Fig. 1. Mean number of crew by level of cognitive complexity, Study 1.

This response indicates taking into account only one perspective, and while the respondent does acknowledge that the rescue efforts have a different priority in the situation (hence scoring a "2" rather than a "1"), the respondent makes no effort to accommodate, nor even validate the perspective of the rescue effort in his or her decision. This respondent took all four of their crew on the boat.

Alternatively, a high complexity perspective (scoring a "7") stated:

> *"As a reporter it is my responsibility to get the news of this disaster out. I believe I can benefit these stranded people more and raise more money for post disaster recovery if I can get a compelling story out. Even if I manage to use the boat without my crew on board I can only get 6 people in there as opposed to raising the issue nationally and getting more people involved. However, I would try to and create the story with as small a crew as possible. If I can compromise on quality would do it but at the same time try and get a good story out. The viewers at home realize that it is a difficult time and one can in such circumstances compromise on quality. If the sound engineer can work from the shore and we don't need to submit a story live then that his space can be used. When we are not submitting a report the boat can be used for rescue purposes."*

Evident in this response is an awareness of multiple points of view, and an effort to integrate across them. However, this integration is used to make the argument that taking all of the crew is actually in the service of the rescue effort, arguably an effort of moral rationalization. Even though this respondent hinted that they might leave the sound engineer on shore, when asked to report how many of his crew he would take on the boat, he reported he would take all of them.

Alternatively, the following is a perspective from a respondent who gave the boat over entirely to the rescue effort. Scoring a "3":

> *I can appreciate that as one of the first crews on the ground capturing footage of the natural disaster would be valuable, however, the value of the footage is irrelevant when compared to human life. If the rescue efforts were struggling and the boat could be used to assist in the rescue effort then I think the obvious choice is to forego the opportunity to capture the footage and attempt to rescue as many people as possible.*

This account provides evidence of differentiation (saving lives vs. capturing valuable footage), but these dimensions are not integrated to the extent that the response coded a "7" did, which found a way to describe reserving the places on the boat for his crew as both optimal for the crew and for the rescue efforts.

These results help provide evidence that the relationship between cognitive complexity and moral choice is not simple or linear, and that both very simplistic reasoning and very complex reasoning can lead to morally sub-optimal decisions.

Study 2

Though Study 1 demonstrates that the relationship between cognitive complexity and moral choice is not simple, the cross-sectional nature of the data means that the causal direction of the relationship is unclear. To address this limitation, Study 2 manipulates the complexity of individuals' reasoning about the same moral choice as in Study 1.

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Method

Participants

Eighty-one participants recruited from a UK-based subject pool (36% male; M_{age} = 29, *SD* = 8.9) were offered a 10% chance to win a £15 Amazon voucher for completing a survey on-line. About half the sample was currently a student (47% full time and 7% part time) and the remaining (46%) were members of the local community.

Task and procedure

Participants read the same dilemma as in Study 1. However, before making their choice about how many crew to put on the boat, they were randomly assigned to one of three (low/moderate/high cognitive complexity) conditions. To our knowledge, cognitive complexity has not been experimentally manipulated per se (though some work, such as Tetlock & Boettger, 1994, has manipulated other independent variables of interest–such as accountability – and shown they affect levels of complexity). In order to explicitly manipulate the level of cognitive complexity individuals brought to bear in their decisions, we created instructions based on the conceptual/integrative complexity scoring manual's instructions for scores of "1", "4" and "7"—the low, mid-point, and high anchors of the measure (Baker-Brown et al., 1992). We used those instructions to create manipulations that would tap the key elements of cognitive complexity (differentiation and integration) differently across the conditions.

The manual notes that scores of "1" are given when "the author relies, without qualification, on a simple, one-dimensional rule" (p. 407). Thus, participants in the *low complexity condition* were asked, "We would like you to identify ONE dimension of the decision at hand that you think is important, and explain why it is important." They were then provided with an open-ended text box in which to write their answer. For scores of "4", authors "must indicate that multiple perspectives or dimensions exits, and also that they could interact" (Baker-Brown et al., 1992, p. 413). Participants in the *moderate complexity condition* were asked, "We would like you to identify TWO dimensions of the decision at hand that you think are important, and explain why they are important." They were provided with two open-ended text boxes in which to write their answers. They were also asked, with an additional text box, to "state how the TWO dimensions are CONNECTED, and how you will INTEGRATE these dimensions in the decision you are about to make". Scores of "7" evidence multiple alternatives and factors contributing to the decision, but also evidence of integrating across these multiple perspectives in some global way (p. 417). Wanting to keep the instructions as consistent as possible across the manipulations, we asked participants in the *high complexity condition* to identify FIVE important factors in the decision (with 5 separate text boxes in which to respond), and then to integrate across those five factors, with the same instructions as for the moderate condition.

This manipulation is confounded with time, which is an intentional part of the design for two reasons. If participants are required to spend the same amount of time contemplating a decision, it is unclear whether it would be possible to keep participants in low complexity conditions from using that time to deliberate, regardless of the instructions provided (Shalvi et al., 2012). Additionally, if we created conditions that forced participants to spend the same amount of time prior to the decision, but distracted the low deliberation participants, then we would have created an "unconscious thinking" condition (Dijksterhuis & Nordgren, 2006; Ham & van den Bos, 2010), which we wanted to avoid. We therefore report results with and without controlling for time, to show that our effect holds in both cases.

Results

We first wanted to confirm that our manipulation did influence the complexity with which individuals reasoned about the dilemma. We had a trained integrative complexity coder rate the passages for integrative complexity. This analysis also showed a linear trend, $F(1,69) = 16.69$, $p = .00$, $\eta^2 = .20$, with increasing cognitive complexity as participants moved from the low ($M = 2.14$, $SD = 1.09$), to the moderate ($M = 3.50$, $SD = 1.14$), and high conditions ($M = 3.63$, $SD = 1.53$). As a second manipulation check, we had a coder who was naïve to the study hypotheses rate each of the passages in terms of the cognitive complexity it demonstrated (on a 7-point scale), with complexity defined as "the extent to which the passage considered a breadth of factors or perspectives, and the degree to which the differentiated perspectives were assimilated within it". Results again indicated a strong linear trend, $F(1,71) = 69.56$, $p = .00$, $\eta^2 = .49$, with individuals in the low complexity condition ($M = 1.55$, $SD = .67$), demonstrating less complexity than individuals in the moderate complexity condition ($M = 3.79$, $SD = 1.74$), who demonstrated less complexity that those in the high complexity condition ($M = 5.24$, $SD = 2.07$).[2]

This study was designed to test the hypothesis that participants in the moderate complexity condition would decide to place fewer of their own crew on the boat, compared to participants in the low and high complexity conditions. Specifically, we hypothesized a U shaped quadratic effect, replicating the pattern of results from Study 1. As expected, the test of this quadratic effect was significant, $F(1,78) = 4.11$, $p = .046$, $\eta^2 = .05$, such that the number of crew participants reported they would put on the boat was significantly lower in the moderate complexity condition ($M = 1.48$, $SD = 1.26$), than in both the low ($M = 2.06$, $SD = 1.31$) and high ($M = 2.12$, $SD = 1.15$) complexity conditions (see Fig. 2).

As expected, participants in the low complexity condition took less time thinking about their decision ($M_{seconds} = 101$, $SD = 112$), than did those in the moderate ($M_{seconds} = 337$, $SD = 524$), and high complexity conditions ($M_{seconds} = 534$, $SD = 682$), $F(2,78) = 5.75$, $p < .005$, $\eta^2 = .13$. We ran the same ANOVA including time spent deliberating as a covariate, to rule out that our effect was simply attributable to the time participants spent thinking before they reported their decision. Results remained the same after controlling for time: the quadratic effect of interest remained significant, $F(1,77) = 4.08$, $p = .047$, $\eta^2 = .05$, with participants in the moderate condition still reporting they would take fewer of their own crew on the boat ($EMM = 1.47$, $SE = .25$) compared to the low ($EMM = 2.09$, $SE = .23$) and high ($EMM = 2.12$, $SE = .27$) complexity conditions.

This study provides a second piece of evidence that Hypothesis 3 is supported, and that moral choices are detrimentally affected at the lowest and the highest levels of cognitive complexity. Importantly, this study manipulates individuals' levels of cognitive complexity, allowing us to make causal inferences about the role that cognitive complexity plays in the decision making process.

Study 3

Using one direct and one manipulated measure of cognitive complexity, Studies 1 and 2 demonstrated that moral choices are most likely at moderate levels of complexity. However, both studies use the same moral choice, which could be considered a "right/right" dilemma (Tenbrunsel & Smith-Crowe, 2008). One could ar-

[2] The manipulation checks have fewer degrees of freedom than the rest of the analyses because seven of the participants left the passage blank, and two could not be coded for integrative complexity (they only wrote a few words). However, excluding these participants from the rest of the analyses does not materially change the results.

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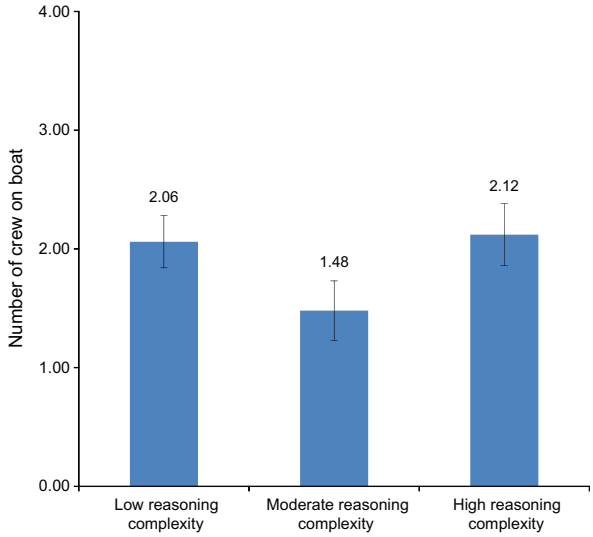

Fig. 2. Mean number of crew by level of reasoning complexity, ±1 SE, Study 2.

gue that placing more crew on the boat may ultimately help more individuals in need of rescue, as it allows the television crew to publicize their plight. Arriving at that realization (or rationalization, depending on your evaluation of the dilemma) may require more deliberation, and may be why high levels of cognitive complexity are associated with sending more crew. Therefore, in Study 3 we sought to replicate our effect using a social dilemma: a moral decision where individuals receive higher payoffs for making self-interested choices, but which, if replicated by other participants in the dilemma, results in suboptimal outcomes for everyone (Dawes, 1980; Weber, Kopelman, & Messick, 2004). In addition, we sought to replicate our effect using a behavioral outcome of consequence. In this case, the selfish choice in the social dilemma was directly tied to participants' monetary payout.

Method

Participants

Two hundred and twelve US-based participants (74% male; M_{age} = 28, *SD* = 9.3) were paid $0.50 for completing a study on-line, with the opportunity to earn up to an additional $2.50, depending on the decision they made during the experiment.

Task and procedure

Participants were presented with a social dilemma based on the Shark Harvesting and Resource Conservation exercise (Wade-Benzoni, Tenbrunsel, & Bazerman, 1997). The exercise is based on the collapse of the North Atlantic cod fishing industry in the 1980s, in which continued overfishing—a behavior which was in any individual fisherman's self-interest—led to the near obliteration of the cod stocks off the coast of Canada (Steele, Andersen, & Green, 1992). Adaptations of the SHARC exercise have been used to study behavior in social dilemmas in prior research (i.e., Epley, Caruso, & Bazerman, 2006; Kopelman, 2009).

Participants were informed they worked for the Large Commercial Fishers Association (LCFA), which, along with three other groups, harvests sharks. Participants were told that the annual total of the four Associations' harvesting rates had been 5000 metric tons, a level that had led to an overharvesting of shark. To avoid the shark's eventual extinction, participants were told it was necessary to reduce the overall harvest across the four associations by half, or a total of 2500 metric tons. As the LCFA representative, they were informed they had the first say in determining how many of the 2500 total metric tons permitted in the next year the LCFA would harvest for itself. They were informed that their role in the exercise was to represent the interests of their association, which currently harvests 1400 metric tons of shark annually—representing about 15% of the LCFA fishers' income. As the LCFA representative, their income would be tied to the harvesting rates of the Association such that they would earn $1.00 for every hundred metric tons the LCFA harvests annually. Individuals were also provided with information about the three other Associations that represent the interests of shark harvesters, and their respective harvesting rates.

Participants then paged forward to the cognitive complexity manipulation. We used the same manipulation of cognitive complexity that we did in Study 2, and then asked participants to decide how much of the 2500 metric tons they were going to harvest on behalf of the LCFA, and how much they were going to leave for the other three fishing associations. The bonus that they earned for the experiment was directly tied to the selfishness of their decision on behalf of the LCFA. Our dependent variable was the number of metric tons that they chose to harvest, which tracked the bonus they earned for the experiment.

Results

We again wanted to check that our manipulation had affected the complexity of the participants' responses. We used the first of the two coders employed in the manipulation check for Study 2 (still blind to the conditions and hypotheses) to again code each of the passages in terms of the cognitive complexity they demonstrated (on a 7-point scale), using the same definition as for Study 2. The manipulation was successful, such that individuals in the low complexity condition (M = 1.44, SD = .65) demonstrated less complexity than individuals in the moderate condition (M = 3.63, SD = 1.30), who demonstrated less complexity than those in the high condition (M = 4.85, SD = 1.63), $F(2,207) = 131.6$, $p = .00$, $\eta^2 = .56$.[3]

The participants' decisions about how many metric tons of shark to harvest ranged from 200 to the maximum limit of 2500 (M = 1506, SD = 564); thus, the bonus the participants were paid ranged from $0.20 to $2.50. As in Study 2, our interest was again in testing the planned contrast between the average harvesting levels for the low and high complexity conditions and the average harvesting level for the moderate condition. This planned contrast tests the hypothesis that the harvesting rate would decrease from the low complexity condition to the moderate complexity condition, and then increase again for the high complexity condition. As expected, the quadratic effect was significant, $F(1,209) = 4.34$, $p = .038$, $\eta^2 = .02$, such that individuals in the low (M = 1521, SD = 564) and high (M = 1609, SD = 596) complexity conditions took more of the overall resource, and a larger financial bonus for themselves ($1.52 and $1.61, respectively), than individuals in the moderately complex condition (M = 1395, SD = 596, or $1.39, see Fig. 3).

As with Study 2, this manipulation was confounded with time. Participants in the low complexity condition took less time ($M_{seconds}$ = 56, SD = 54), than those in the moderate condition ($M_{seconds}$ = 163, SD = 127), and those in the high complexity condition ($M_{seconds}$ = 240, SD = 144), $F(2,209) = 45.61$, $p = .00$, $\eta^2 = .30$. We therefore ran the same ANOVA including time spent reasoning as a covariate, and the planned quadratic effect remained significant, $F(1,208) = 3.99$, $p = .047$, $\eta^2 = .02$, with participants in the moderate condition (EMM = 1402, SE = 66) still harvesting less of the common resource (and taking less bonus for oneself) compared

[3] This analysis has fewer degrees of freedom that the rest of the analyses because two of the participants left the passage blank. However, excluding these participants does not materially change the results.

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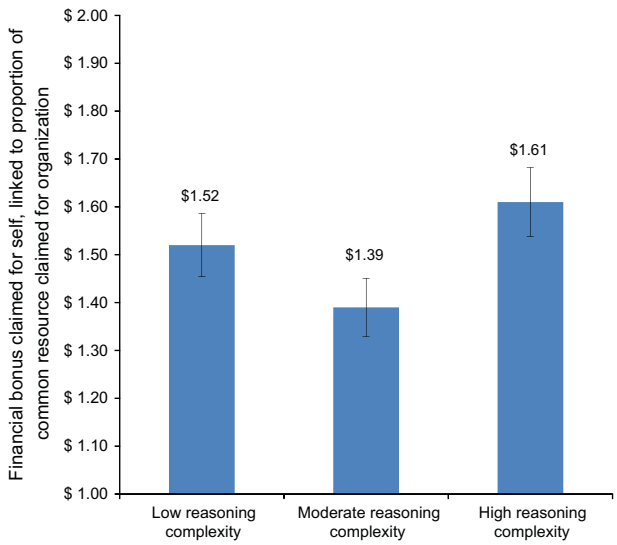

Fig. 3. Mean bonus earned by participants by the amount of the common resource (shark harvest) claimed for organization, by level of reasoning complexity, ±1 SE, Study 3.

to the low (*EMM* = 1471, *SE* = 72) and high (*EMM* = 1657, *SE* = 74) complexity conditions.[4]

This study replicates the results of Studies 1 and 2, using a different moral choice with a non-hypothetical behavioral consequence. The results provide help us generalize the conclusion that moral decisions will be less optimal when reasoning at low or high levels of cognitive complexity.

Discussion

The impact of reasoning on moral decisions has received significant theoretical and empirical attention, but previous explorations have focused on comparing deliberative to other processes, rather than investigating how the structure of our reasoning might influence moral decisions. This paper aimed to tackle the black box of how the structure of our reasoning processes in advance of making a decision can influence moral choices, going beyond the simple assertion that thinking per se helps (or hinders) them. We examined, instead, how the complexity of our reasoning processes influences moral outcomes.

Study 1 demonstrates that the relationship between cognitive complexity (measured using the construct of integrative complexity) and moral choice is curvilinear, such that cognitive complexity is positively associated with moral decisions up to a point, after which it becomes negatively associated with them. Study 2 replicates this result, manipulating rather than measuring complexity. Using a different type of moral decision, Study 3 provides another replication of the curvilinear relationship between cognitive complexity and moral choice using a behavioral outcome: taking a larger bonus for oneself in the face of a social dilemma where the best outcome for the community is to take less.

The findings from these three studies offer a number of theoretical, empirical and practical contributions. Theoretically, our results suggest that the two contradictory perspectives on the relationship between reasoning and moral choices—that increasing the sophistication of one's reasoning will improve moral choices, and that increasing the sophistication of one's reasoning will impair moral choices—are both right and both wrong. Consistent with the rationalist perspective, cognitive complexity is associated with moral decisions *to a point*, after which, and consistent with perspectives that focus on motivated reasoning and rationalization, it becomes negatively associated with such decisions. This paper highlights how cognitive complexity can improve moral decision-making, but can also be marshaled in the service of less ethical outcomes. These results highlight the need for a more comprehensive framework that details the role of moral reasoning in moral psychology and includes consideration of the level of cognitive complexity, in addition to the presence or absence of reasoning, as an important factor in the ethical decision making process.

It is important to note that we are not suggesting that high levels of complexity always have suboptimal outcomes. Indeed, Tetlock argues that the benefits of cognitive complexity will be contextually determined (1992). Our paper actually fits nicely in the landscape of research on cognitive complexity, showing pitfalls of both cognitively simple reasoning and of cognitive complex reasoning: in our case, both facilitate morally sub-optimal decisions in comparison with moderate levels of cognitive complexity. It appears that moderately complex reasoning moves one away from easy reliance on self-interested choices, without falling prey to rationalizations of those same choices.

We also make a number of empirical contributions. First, by examining and testing a curvilinear effect, we respond to recent research that has indicated that non-linear effects may be consistently overlooked in organizational research (Ames & Flynn, 2007; De Dreu, 2006; Groysberg, Polzer, & Elfenbein, 2011). The curvilinear relationship we find between complexity and moral decisions further highlights the need to expand our empirical investigations beyond simple effects. Second, we examine our hypotheses using the construct of cognitive complexity, a variable that we both measure and manipulate. To our knowledge, this is the first time cognitive complexity has been directly manipulated (though accountability manipulations had an incidental effect on integrative complexity in Tetlock & Boettger, 1994), and our results suggest that doing so may be helpful for researchers interested in this construct to better support causal claims. Finally, we respond to the call to examine different types of ethical dilemmas, investigating our hypotheses in both "right-right" and "right-wrong" decisions (Gunia et al., 2012; Tenbrunsel & Smith-Crowe, 2008).

Practically, our findings qualify the common "think about it" recommendation for ethical decisions. This is an especially important implication, given that teaching individuals how to reason through moral dilemmas in more sophisticated ways has been a hallmark of business ethics education for the past two decades (Jones, 2009; Treviño, 1992), as it has been for ethics training for medical professionals (Self, Baldwin, & Wolinsky, 1992), accountants (Eynon et al., 1997) and engineers (Self & Ellison, 1998). Our findings suggest that this pedagogical approach may benefit from amendment: thinking through ethical dilemmas in sophisticated ways may positively impact moral outcomes up to a point, but going too far may lead to unintended effects, actually promoting less moral decisions. Our manipulation of cognitive complexity also suggests another practical contribution: specific directions that may elicit optimal levels of reasoning. Asking individuals to think about a moderate number of dimensions of the decision that are important (versus few or many) may be one way to promote ethical outcomes.

It is important to note that two of the studies reported in this paper were conducted in an experimental setting and thus the results must be interpreted with the limitations of this methodology in mind. This methodology allows us control, replicability and the ability to determine causality. In addition, it would be difficult to

[4] We included an attention check at the end of this study, which asked participants to recall the original harvest level of the LCFA. In all, 58 participants did not successfully recall 1400 as the original harvest rate. When these participants are dropped from the sample, the quadratic effect remains significant, $F(1,151) = 4.52$, $p = .035$, $\eta^2 = .03$, as it does when time is controlled for the same sample, $F(1,150) = 4.31$, $p = .040$, $\eta^2 = .03$.

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manipulate cognitive complexity in a more naturalistic setting. However, as this limitation is considered it is worthwhile noting that our samples are considerably diverse, in terms of nationality, ethnicity, age, and work experience. Study 1 used a sample of MBA students from 62 different countries, with an average age of 29 (range from 23 to 44), and an average of 5 years of work experience prior to entering the program (range from 2 to 13). Study 2 used a sample drawn from a general UK population with an average age of 29 (range from 20 to 72), less than half were full-time students (47%), and the sample was also ethnically diverse (57% white, 18% Indian, 10% Asian, 6% Black, and 9% other). Study 3 used a sample drawn from a general US population with an average age of 28 (range from 18 to 65); again, less than half of the sample was students (46%). The diversity of these samples adds robustness to our conclusions, as they hold across individuals with a wide range of nationalities, multiple ethnicities, a wide range of participant ages, and substantive work experience. Even so, the extent to which these results would replicate in a specific organizational sample remains an open question.

In addition, this study did not explore the role of individual differences. While the experimental design of Study 2 and 3 (compared to Study 1) alleviate the concern that differences observed are due to characteristics of the individuals (Shadish, Campbell & Cook, 2002), hence reducing the need to measure and control for them, it would be interesting to examine how individual differences play a role in the relationship between reasoning complexity and moral choice. For example, individuals who are high in trait levels of Machiavellianism (Christie & Geis, 1970), or moral disengagement (Moore, Detert, Treviño, Baker, & Mayer, 2012) may be less affected by the complexity of the reasoning they use in any particular decision than others, being more predisposed towards less ethical decisions in generally.[5] Future research should also investigate how other traits that impact ethical decisions, including age, gender, and religiosity, interact with the level of cognitive complexity individuals employ to predict outcomes of moral decisions.

Our studies are also limited in the sample of ethical dilemmas that we could test. While our argument was focused on moral choices that pitted an individual's immediate self-interest with a greater good, we did use two different dilemmas: one that was more representative of a "right-right" dilemma and one more representative of a "right-wrong" dilemma (a social dilemma, in this case). However, it would be useful to test how levels of cognitive complexity affect a wider variety of moral choices, and explore whether the hypothesized relationship is supported across an array of dependent variables. Specifically, it would be useful to see if this relationship held for a decision that even more directly pitted right against wrong. Even in the social dilemma, a participant could have framed taking more of the resource in moral terms, as ensuring that the association he or she represented was protected going forward.[6] However, in a context where an unethical temptation is less justifiable, like mugging a pensioner, cognitively complex reasoning may not lead to less ethical choices, as rationalizations in these situations are harder to come by.

Future research should also investigate the mechanisms underlying the curvilinear relationship between cognitive complexity and moral outcomes. It is quite possible, for example, that the mechanism underlying the positive relationship between complexity and moral outcomes at the low end of the complexity range is different than that underlying the negative relationship at the high end of the complexity range. Low levels of cognitive complexity may be associated with less ethical decisions because they facilitate self-interested decisions without worrying about the negative consequences to other stakeholders, whereas high levels of cognitive complexity may be associated with less ethical decisions because they facilitate moral rationalization. Future research should investigate what drives low and high levels of complexity to be associated with less ethical decisions.

Finally, it would also be important to explore boundary conditions of these effects. For example, the relationship between complexity and moral outcomes may be constrained to the first portion of our curvilinear relationship (a linear and positive relationship), when a given issue elicits more normative certainty, due to a more limited ability to justify such behavior. An individual's organizational context may also represent an important moderator to examine in future research. Contexts where individuals must often balance their self-interest against the greater good may be particularly prone to the dynamics we demonstrate here. In contrast, the medical profession typically encourages a focus the best interest of the patient, rather than to balance the doctor's self-interest against the patient's. Since the medical context has fewer opportunities for rampant self-interest than (perhaps) banking, complex thinking may not have as many negative consequences for doctors it may for financial professionals.

Conclusion

The field of behavioral ethics has grown tremendously in the last decade, significantly enhancing our knowledge of why and when people make unethical decisions. However, if the field is to continue provide new insights, it is imperative that we understand the complexities of the ethical decision making process. Doing so will require us to go beyond the study of simple effects to investigate more complex relationships with a goal of developing enriched theoretical frameworks. We hope this paper provides a step in that direction.

Acknowledgments

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[5] We thank a reviewer and the editor for raising this possibility. Though not central to the investigation here, we did collect data on moral disengagement (Moore et al., 2012) from the sample in Study 1. Moral disengagement had a main effect on the number of crew the participant took on the boat, a finding that was consistent with previous work on moral disengagement, which shows a positive relationship with unethical behavior. Additional post hoc analyses suggest that moral disengagement may play a more important role in moral choices made with low levels of complexity (when moral disengagement as an individual difference can motivate behavior without being affected by reasoning), than at high levels of complexity (where reasoning processes are complex enough to overwhelm the influence of the individual difference). These exploratory analyses point to the importance of further investigating how individual differences interact with reasoning processes in making moral choices.

[6] We thank an anonymous reviewer for raising this possibility.

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