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Abstract

Following the assumptions of the mental model theory (Johnson-Laird, 1983; 2006) and its account of moral judgments (Bucciarelli, Khemlani & Johnson-Laird, 2008), we argue for a main role of reasoning in moral judgments, especially in dealing with moral conflicts. In four experiments we invited adult participants to evaluate scenarios describing moral or immoral actions. Our results confirm the predictions deriving from our assumptions: given a moral or immoral scenario, the manipulation of the propositions which refer to norms and values results in a scenario eliciting a moral conflict (Experiment 1); when invited to create conflict versions from no-conflict versions of moral or immoral scenarios, individuals manipulate the propositions in the scenario which describe norms and values rather than emotional factors (Experiment 2); the evaluation of conflict scenarios takes longer than the evaluation of no-conflict scenarios (Experiment 3), and this is because conflict scenarios involve more deliberative reasoning (Experiment 4). We discuss our results in relation to competing theories of moral judgments.

Key words: moral judgments, moral conflicts, moral reasoning, intuitions, deliberative reasoning

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1. Introduction

Moral judgments are at the core of many of our choices in everyday life. The classical studies by Piaget (1965/1932) and Kohlberg (1984) focused on the development of moral judgment from childhood to adulthood and recognized a predominant role of reasoning. Both authors argue that moral judgments are grounded on well defined principles, resulting from a complex interaction between experience, social inferences and reasoning ability. Since Kohlberg (1981), only few recent theories on moral judgment, within a dual-process framework, recognize the role of moral reasoning (see, for a review, Paxton, Ungar & Greene, 2011).

Our aim is to conduct an in-depth analysis on the role of reasoning in moral judgments, with a focus on moral conflicts. Moral conflicts have been much investigated through moral dilemmas devised in the philosophical literature (see, e.g., Foot, 1967; Thomson, 1986); some of them are known as 'trolley problems'. These dilemmas present quite atypical scenarios in which individuals are faced with two alternative possibilities (course of action or inaction), both of which entail morally right and morally wrong aspects. In our investigation we adopted scenarios eliciting a conflict like in the classical moral dilemmas: individuals are in trouble in deciding about judgment of 'right' or 'wrong'. However, our scenarios are nearer to our daily life and (or) depict situations likely to be topics of news. Also, our conflict scenarios, differently from the classical moral dilemmas, face individuals with one single possibility, which they have to judge as morally right or morally wrong. Classical moral dilemmas, instead, entail comprehension of disjunctive possibilities, which is by itself a difficult task (see, e.g., Bara, Bucciarelli & Lombardo, 2001). Thus, in our view, they add a confound to the study of moral judgments.

Within our proposed theoretical framework proper moral conflicts are concerned with conflicts between reasons for judging a situation as morally right or morally wrong; by 'moral conflict' we refer to an individual's experience when faced with a situation in which moral norms or principles acknowledged by the individual are partly respected and partly violated. Following the assumptions of the mental model theory (Johnson-Laird, 1983; 2006) and its account of moral

judgment according to which moral judgments always rely on reasoning (Bucciarelli et al., 2008), we argue that reasoning assumes a particularly relevant role with respect to moral conflicts.

Sometimes, when we evaluate a scenario concerning a moral matter, we experience a conflict. Upon hearing, for example, about a pregnant woman who refused cancer treatment to avoid endangering the life of her baby, it might take some time to evaluate whether the woman's decision was morally right or wrong. At times it might even be impossible to decide. Similarly, we might experience a conflict when faced with the choice of going to see a friend who is depressed and needs company or avoiding him in order to preserve our own well being when we are already going through a difficult time. During our daily life we are often faced with choices that presuppose moral judgments, many of which elicit a moral conflict. Understanding the processes involved in moral judgments in general and the experience and resolution of conflict in particular, has wide implications for all contexts involving intra- and inter-individual conflicts. Alas, there is no agreement on the processes underlying moral judgments and, for some theories, an account of moral conflict is a real challenge.

The socio-intuitionist theory advanced by Haidt (2001; 2007) assumes that moral judgments are like instant feelings of approval or disapproval, they appear suddenly and effortlessly without needing to go through any steps of searching, weighing evidence or inferring a conclusion. In particular, it is assumed that moral intuitions, including moral emotions, occur before reasoning and directly cause moral judgments (Shweder & Haidt, 2000; Wilson, 1993). Haidt (2001) points out that emotion, intuition and appraisal are all contents of emotions, and thus different forms of cognition than reasoning. Reasoning is an *ex post facto* cognitive process to affect the intuitions and as a consequence other people's evaluations; it occurs slowly, requires effort and includes at least some steps that are accessible to consciousness. Intuition, instead, is fast, automatic and easy; it does not occur through a gradual and conscious process, but it is based on an implicit perception of the problem as a whole. It resembles an aesthetic judgment rather than a reasoning process. As regards moral conflicts, the theory admits the possibility that these may arise between intuitions; in

that case, the final judgment will depend either on following the stronger intuition or on allowing deliberative reasoning to choose between the alternatives by applying rules or principles (Haidt, 2001). However, the theory argues that deliberative reasoning rarely occurs in moral judgments (see also Haidt & Graham, 2007).

The moral grammar theory formerly advanced by Mikhail (2000; but see also Hauser, 2006a) assumes the existence of a universal moral grammar, a series of principles operating at an unconscious level and guiding moral judgments. Mikhail (2011) argues that a moral theory can be usefully modeled on aspects of Chomsky's Universal Grammar (see, e.g., Chomsky, 1986); "ordinary individuals possess a complex moral grammar that enables them to judge the deontic status of actions in a manner roughly analogous to how native speakers intuitively recognize the grammaticality of sentences" (ib., p. 309). It is assumed the existence of a set of grammatical principles, or rules, of which people are unaware and that guide their moral intuitions. Relevant to the topic of our investigation, Mikhail (2011) seems to admit that a judgment might lack certitude in that it is not formulated with sufficient confidence. However, he argues that most of the familiar trolley problem intuitions are quite certain in this sense, because individuals are confident about the deontic status they would assign to the possible acts involved. Further, Mikhail argues that, although emotions may lead to feel uneasy about our own intuitions, they do not play a causal role in our moral judgments (see also Hauser, 2006b). Hence, the moral grammar theory implicitly assumes that it is always possible to evaluate an action as morally "right" or "wrong". This assumption parallels the Chomskyan assumption that, given a string of words, the universal grammar always allows us to determine whether or not it belongs to our own natural language. Hence the difficulty of the theory to account for the experience of moral conflicts without appealing to a role of deliberative reasoning in moral judgments.

Differently from the socio-intuitionist theory and the moral grammar theory, mental model theory assumes that moral judgment is deontic reasoning on moral matters. Bucciarelli and Johnson-Laird (2005) formulated a theory of the meaning of the fundamental deontic assertions, of

their mental representation and of elementary deontic reasoning. Thus, for example, based on individuals' interpretations of 'obligates' and 'prohibits', from the premises:

Having children obligates you to look after them (A obligates B)

To look after children prohibits you from leaving them unattended (B prohibits C)

the theory predicts the conclusion mostly drawn, 'Therefore, having children prohibits you from leaving them unattended (A prohibits C)'. The inference is valid, i.e., if the premises are true, then the conclusion must be true, based on the interpretations of 'obligates' and 'prohibits' by naïve individuals. In particular, model theory assumes that comprehension and reasoning from deontic premises, as well as comprehension and reasoning from factual premises, depend on mental models which have appropriate annotations representing the status of a model as factual or deontic (Bucciarelli, 2009). We construct mental models of the possibilities described by deontic assertions like we construct mental models of the possibilities described by factual assertions. The mental models for the deontic assertions, however, also capture the relations between the possibilities and the states of affair permissible within such possibilities. Deontic reasoning is based on the mental models of the premises.

In this paper we illustrate the model theory for moral judgment that, unlike the current accounts of moral judgment, acknowledges the relevance of reasoning. We present four experiments aimed at demonstrating how, when judging scenarios pertaining to the moral domain, individuals rely on their personal norms and values and, when such cognitive reasons support contrasting moral evaluations, they resort to deliberative reasoning to weigh them and reach a moral evaluation. The overall results of the experiments highlight the role of reasoning in moral judgments.

2. Model theory for moral judgments

The model theory assumes that reasoning plays a main role in moral judgments (Bucciarelli et al., 2008) and purports that moral judgments rely either on reasoning from unconscious premises to

conscious conclusions (namely intuitions, in the proposed account) or from conscious premises to conscious conclusions (deliberative reasoning; see Johnson-Laird, 2006). The theory postulates four principles.

> *The principle of moral indefinability*: there is no simple principled way of telling from a proposition alone whether or not it concerns a moral issue as opposed to some other sort of deontic matter.

The theory assumes that moral propositions are deontic propositions concerning what is obligatory or not, permissible or not. The principle states that it is difficult to identify the moral propositions within the set of deontic propositions. Indeed, there are deontic propositions that are not moral, such as the rules of good manners in a particular culture. Thus, the possibility of discriminating between moral deontic propositions and non-moral deontic propositions depends on cultural aspects. Provided that the boundaries between propositions that are moral and propositions concerning deontic but non-moral matters are very unclear, the assumption of the existence of a special mechanism dedicated to moral reasoning (i.e., a moral grammar) is rather implausible; indeed, there is no way the mind can identify the (moral) propositions on which such a mechanism should operate. Mikhail proposes that the moral grammar enables individual to determine the deontic status of an infinite variety of acts and omissions. Alas, it is not clear how the system would distinguish between deontic moral and deontic non moral acts. Therefore, it is plausible to assume that moral reasoning is simply deontic reasoning about propositions whose content is of relevance to morality. In line with this assumption, neuroimaging studies have not detected areas in the brain specifically involved in moral judgments: several brain areas appear to offer important contributions to the production of a moral judgment (see, e.g., Moll, De Oliveira-Souza & Zahn, 2008).

The second principle of the theory advanced by Bucciarelli et al. (2008) derives from the consideration that emotions are older than deontic evaluations, from an evolutionary point of view, and may occur in many circumstances in which the deontic component is irrelevant, like when admiring a painting. Moreover, when we judge that a minimal infraction, such as using the office

phone to make a personal call, is deontically wrong, we do not necessarily experience an emotional reaction. Therefore:

> *The principle of independent systems*: emotions and deontic evaluations are based on independent systems operating in parallel.

As we have seen, some theories imply that emotions can contribute to moral judgments (Greene et al., 2001; Haidt, 2001), while others imply that moral evaluations can contribute to emotions (Hauser, 2006b; Mikhail, 2011). According to the principle of independent systems, neither of these views is correct. Bucciarelli and colleagues (2008) conducted an experiment and found that there are scenarios, both moral and immoral, for which people either experience an emotion first, or make an evaluation first, or scenarios that are neutral in prevalence. In line with Bucciarelli et al. (2008), Royzman, Goodwin and Leeman (2011) found evidence that the evaluation of moral dilemmas eliciting strong and conflicting emotions relies on moral rules which are not necessarily linked to strong emotions (see also Royzman, Leeman & Baron, 2009). These findings support the principle above mentioned of the two systems working independently (see also Gubbins & Byrne, 2014): as a consequence, the emotion experienced in relation to a moral scenario may not be predictive of the moral judgment produced. Nevertheless, experiencing an emotion may also be cognitively mediated. Oatley and Johnson-Laird (1996), for example, argue that emotions are like a signal system organized on multiple levels. At the lower level, emotions have a simple, biological and adaptive function for the individual. At the higher level, emotions acquire a "propositional" value; they become signals which are cognitively mediated in that they are experienced after evaluating an event in relation to one's own goals. As a result, emotions and reasoning may affect one another.

Our proposed theoretical framework acknowledges the possibility that emotions in general can inform our decisions, and in particular moral evaluations, but we reject the assumption that emotions *cause* moral evaluations. The principle of independent systems stresses the difference between emotions and intuitions which seems to disappear, for example, in Haidt's account; the

reason may rely on the fact that emotions and intuitions share some features which distinguish them from deliberative reasoning. Consistent with this view, Thompson (2014) argues that emotions are a form of intuition. These differences are outlined by the dual-process accounts of thinking, who distinguish between System 1 and System 2, and which tend to consider emotions, at least the basic ones, and intuitions, products of System 1, not under the control of System 2, the analytic processing system. However, Stanovich (2004) advanced a multi-componential view of System 1, and considers emotions and intuitions as different products of TASS, a set of autonomous subsystems. In line with Stanovich's multicomponent view, we do not consider emotions and intuitions as synonymous although we recognize that both involve domain general processes of unconscious implicit learning and conditioning; rather, in line with model theory's assumptions, intuitions are a form of reasoning and emotions and reasoning are two independent systems.

The principle of independent systems allows for the possibility of a positive emotion being associated with a moral negative evaluation (e.g., harming an enemy might make us happy, even though we judge the action as immoral), or of a negative emotion being associated with a moral positive evaluation (e.g., I may judge it morally right to give the precious engagement ring back to my former fiancé, even though this could make me experience a negative emotion). Moreover, the principle of independent systems allows for the possibility of emotions and moral judgments of opposite sign triggering a moral conflict (see also Greene, 2009). One of the aims of our investigation was to manipulate no-conflict scenarios in order to make them scenarios eliciting conflicts at a purely cognitive level, between norms or values. In order to avoid scenarios that might possibly elicit a conflict between emotions and moral judgment, we manipulated scenarios that on the basis of previous unpublished studies were judged as clearly morally 'right' or 'wrong' and featured a correlation between the strength of the moral judgment and the strength of the emotional reaction.

Starting from the principle of moral indefinability we know that there are no inferential mechanisms dedicated to dealing with moral propositions. Therefore conscious reasoning

concerning moral propositions has to depend on the same process which supports every type of deontic reasoning. Bucciarelli and Johnson-Laird (2005) argue that such deontic reasoning depends on mental models; they postulate that representing possibilities is central to reasoning and deontic propositions concern deontic possibilities, such as the permissible states of affairs. Each model of a deontic proposition represents a permissible or (in more rare cases) an impermissible state of affairs. If an action is common to all the models that represent what is permissible, then it is mandatory. Hence, moral evaluations should depend on a general deontic mechanism:

> *The principle of deontic reasoning*: all deontic evaluations, including those concerning matters of morality, depend on inferences, either unconscious intuitions or conscious reasoning.

Current theories about our thinking and reasoning abilities agree on the existence of two systems of reasoning, one fast, automatic and not subject to doubt, and the other slow, deliberate, able to consider more than one option at the same time (for a review see Evans, 2010). Johnson-Laird (2006) suggests that intuitions, rather than being similar to emotions (as Haidt argues) are a type of reasoning. His proposal is consistent with the existence of two systems, one based on intuition and the other on deliberative reasoning, and purports that moral evaluations may rely on intuitions or deliberative reasoning. According to the social-intuitionist theory however, conscious reasoning does not yield moral evaluations, which rely solely on intuitions akin to emotions (Haidt, 2001). Hence, a crucial issue is whether clear-cut cases occur in which individuals reason consciously in order to make a moral evaluation. Bucciarelli et al. (2008) conducted an experiment to verify whether individuals sometimes reason consciously to produce a moral evaluation. The participants were asked to think aloud while evaluating scenarios involving moral and immoral actions. The participants' verbal protocols revealed their use of chains of inferences to make a moral evaluation.

The fourth assumption of the theory presented by Bucciarelli and colleagues is:

The principle of moral inconsistency: the beliefs that are the basis of moral intuitions and conscious moral reasoning are neither complete nor consistent.

The principle predicts the occurrence of inconsistencies in moral evaluations, as well as in deontic systems. If we define a moral logical system in terms of a set of consistent moral principles (axioms) and a valid reasoning method, then the system cannot yield inconsistencies or conflicts: it cannot yield a case for both the permissibility and the impermissibility of an action. A grammar, like the one proposed by Chomsky, also precludes inconsistencies: a string of words cannot be at the same time grammatically correct and wrong. Analogously, a moral grammar should be a logical system that does not produce conflicts: an action should not be evaluated as permissible and impermissible at the same time.

The principle of moral inconsistency predicts the onset of moral conflicts that individuals may not be able to solve. Therefore, according to the principle of deontic reasoning we can not only expect such conflicts to occur, but also that individuals can manipulate moral scenarios in order to make them conflict scenarios. In line with the predictions of the theory, the participants in an experiment by Bucciarelli and colleagues (2008) were able to modify scenarios involving a moral choice to make them insolvable from their personal point of view.

In summary, the model theory argues that it is not plausible that emotions guide moral judgments and it is also contrary to the existence of mental processes dedicated to dealing with moral issues; the theory argues that moral judgments are based on reasoning.

3. Reasoning about norms and values: The case of moral conflict

The model theory (Bucciarelli & Johnson-Laird, 2005) argues that moral judgments are deontic judgments applied to moral contents (see also Cushman & Young, 2011; Uttich & Lombrozo, 2011). There is evidence that decisions about deontic matters are achieved by finding a reason consistent with the facts presented (Green, McClelland, Muckli & Simmons, 1999), that reasons are factors that motivate decisions (Shafir, Simonson & Tversky, 1993), and that even when

thinking counterfactually individuals take into account the (moral) reasons why the protagonist of the scenario decided to act in a specific way (McCloy & Byrne, 2000). Further, there is evidence that cognitive reasons play a more important role in deontic decisions than emotional factors (Green et al., 1999). We argue the same considerations hold for moral decisions and assume that cognitive reasons, and thus reasoning about norms and values, play a more important role than emotional factors in solving moral dilemmas (moral conflicts).

The propositions describing a scenario can provide reasons for judging a scenario as morally right (for example, a proposition that describes a charitable person who helps poor people) or morally wrong (for example, a proposition that describes a thief who robs people); we assume that these scenarios (hereafter no-conflict scenarios) do not lead to the experience of a moral conflict. On the other hand, the propositions describing a scenario may provide reasons for judging a scenario both right and wrong (for example, a proposition describing a charitable person who also steals, or a thief who helps poor people); we assume that these scenarios (hereafter, conflict scenarios) lead to the experience of a moral conflict. We assume that moral judgments are the product of reasoning about whether an action is moral or immoral: these reasons consist of personal norms and values. We assume that moral/immoral scenarios trigger norms and moral principles that the individuals learnt to be suitable for themselves and are stored in their long term memory. The scenarios may depict actions of respect or violation of such echoed norms and principles. In case the norms and principles are partly respected and partly violated the individual experience a conflict leading her to actively and consciously appeal to personal norms and moral principles, in order to resolve the conflict and evaluate the scenario. This process, which leads from conscious premises to conscious conclusions, is accomplished through deliberative reasoning. Otherwise, in case the scenario triggers norms and moral principles in long term memory that are either fully respected, or fully violated, the individual reach an intuition, a type of reasoning from unconscious premises to conscious conclusions. Thus, we assume that intuitions suffice to deal with no-conflict scenarios, but not with conflict scenarios.

Our proposal is in line with Topolinski (2011) in that we assume that System 1, which is capable to spontaneously produce coherent scenarios (see Shafir et al., 1993, Tversky & Kahneman, 1974), is also capable of intuition of coherence: we argue that intuitions provide the instant feeling of whether a scenario is fully morally right or fully morally wrong in that adheres or violates moral principles coded in long-term memory. Still in line with Topolinski's proposal, we assume that System 1 is also capable of intuition of inconsistency through the experience of not fluent processing: we argue that individuals have the intuition of a moral conflict. Once a conflict has been detected, deliberative reasoning (System 2) must solve the inconsistency.

Hence, our first prediction, tested in Experiment 1:

Prediction 1: Given a scenario concerning a moral issue, it is possible to manipulate the propositions in the scenario that refer to norms and values to turn it into a scenario eliciting a moral conflict.

If conflicting cognitive reasons can account for moral conflicts, and if moral judgments are based on reasoning rather than on emotions, then we would expect individuals to exploit cognitive reasons rather than emotional factors when invited to create conflict versions from no-conflict versions of moral scenarios. Hence, the prediction verified in Experiment 2:

Prediction 2: When invited to modify a scenario to turn it into a conflict scenario, individuals manipulate the propositions that refer to norms and values rather than those referring to emotional factors.

We argue that in the case of both no-conflict scenarios and conflict scenarios moral evaluations rely on reasoning, either intuitions or deliberative reasoning. In particular, we argue that intuitive processes are able to evaluate coherent scenarios such as no-conflict scenarios, whereas the evaluation of conflict scenarios relies more on deliberative reasoning, because it involves weighing conflicting reasons in order to formulate a moral judgment.

Hence, the prediction verified in Experiment 3:

Prediction 3: Individuals evaluate no-conflict scenarios faster than conflict scenarios.

We assume that the predicted difference in terms of response time is due to a greater involvement of deliberative reasoning in evaluating conflict scenarios as compared to no-conflict scenarios. Our assumptions led to the prediction tested in Experiment 4:

Prediction 4: The verbal protocols of individuals engaged in the evaluation of conflict and no-conflict scenarios reveal a greater occurrence of deliberate reasoning in evaluating conflict scenarios.

Experiment 1: The manipulation of the propositions that describe norms and values produces scenarios eliciting a moral conflict

The participants in the experiment dealt with four sorts of scenario, created by crossing whether the scenario describes moral or immoral events with whether the scenario is a no-conflict or conflict scenario. For each scenario, their first task was to consider whether it was pertinent to the moral domain; since there is no simple principled way of telling from a proposition alone whether or not it concerns a moral issue as opposed to some other sort of deontic matter (see the principle of moral indefinability), the purpose of this task was to ascertain whether the scenarios were indeed considered pertinent to the moral domain. Further, for each scenario, the participants rated their moral reaction, which could range from a very strong negative reaction to a very strong positive reaction, with the possibility of obtaining an intermediate score which, in case of scenarios pertinent to the moral domain, reflects the experience of a moral conflict. Further, the participants in the experiment were invited to evaluate their emotional reaction, so that we could check whether the scenarios elicited a moral conflict due to already existing moral and emotional reactions of opposite sign. In this case, the experience of a moral conflict might not be attributable to conflicting cognitive reasons.

METHOD

Participants One-hundred and twenty students of a General Psychology course at Turin University (11 males and 109 females, mean age: 21 years) voluntarily took part in the experiment in order to obtain course credits.

Design The experimental material, as detailed below, consisted of moral and immoral scenarios, each devised in one no-conflict version and one conflict-version. Sixty participants encountered 14 immoral scenarios and 14 moral scenarios, with 30 of the 60 participants encountering the no-conflict version of the immoral scenarios and the conflict version of the moral scenarios, and 30 of them encountering the conflict version of the immoral scenarios and the no-conflict version of the moral scenarios. The other 60 participants encountered a different set of 14 immoral and 14 moral scenarios, with the same logic of assignment. As a result, each version of each scenario was encountered by 30 participants. Each participant read only one version of the scenario, either the conflict or the no-conflict one, for a total of 28 scenarios, encountered twice, in two blocks: in the first block the task was to rate the moral reaction experienced with respect to the action described in each scenario, and in the second block to rate the emotional reaction (the order of the two blocks was counterbalanced over all participants). Further, in the first block the first task for the scenario was to evaluate whether the action described was pertinent or not to the moral domain (either as a moral or immoral issue).

To sum up, the tasks for each scenario were:

1. To judge whether it pertained to the moral domain through a binary judgment, i.e., *yes* or *no*.
2. To rate the moral reaction evoked by reading the scenario on a five-point Likert scale, with score 1 labeled “Very strong negative evaluation”, score 2 labeled “Moderately negative evaluation”, score 3, corresponding to the mid-point labeled “50:50”, score 4 labeled “Moderately positive evaluation”, and score 5 labeled “Very strong positive evaluation”.
3. To rate the emotional reaction elicited by the scenario, again on a five-point Likert scale, with score 1 labeled “Very strong bad emotion”, score 2 labeled “Moderately negative emotion”,

score 3, corresponding to the mid-point labeled “50:50”, score 4 labeled “Moderately positive emotion”, and score 5 labeled “Very strong good emotion”.

Each scenario was printed on a single page and assembled with the others in booklets with the scenarios of each block presented in random order.

Material The experimental material comprised moral and immoral scenarios which, according to a series of pilot studies, tend to elicit clear-cut “right” and “wrong” moral evaluations and clear-cut “makes me feel well” and “makes me feel bad” emotional reactions, whose sign is the same as the moral evaluation (e.g., “right” and “makes me feel well”). There were 28 immoral scenarios and 28 moral scenarios. For each scenario we created one conflict version. From the operational point of view, and as a general procedure, in order to create the conflict versions, we manipulated the propositions in the scenarios concerning norms and values (i.e., cognitive reasons). In particular, in conflict moral scenarios we introduced elements of *violation* of norms and values, and in conflict immoral scenarios we introduced elements of *respect* of norms or values. As an example, consider the following no-conflict moral scenario:

1) A married couple, after the death of two friends in a car accident, took care of their children as if they were their own, continuing to also care for their children

and the parallel conflict version:

2) A married couple, after the death of two friends in a car accident, took care of their children as if they were their own, neglecting their children on several occasions.

As a further example consider the following no-conflict immoral scenario:

3) A medical student desecrated tombs to dissect corpses and put into practice their theoretical knowledge and to do a little practice

and the parallel conflict version:

4) A medical student desecrated tombs to dissect corpses and put into practice their theoretical knowledge and be able to cure his fellow villagers in Africa.

The full experimental material is in the on-line supplementary material.

Procedures The experiment was run in a collective session. Each participant received a booklet with 28 scenarios. On the first page of the booklet there were the following instructions: 'This is an experiment on how people experience news. It is not an intelligence or personality test, and there are no correct answers. What is important for us is to understand your reactions. You'll be presented with a series of news. For each news your task is:

1. Tell whether the news is concerned with a moral/immoral issue, or not;
2. Assign a score to your reaction (either at the emotional or judgment level).

You have no time limits.' The experiment took approximately 1 hour.

Results and Discussion

We limited our analysis to the pairs of scenarios (i.e., no-conflict and conflict) that 20 out of 30 participants in each block of 30 participants considered as pertaining to the moral domain (such a bias is significant on the Binomial test: $p<.05$, one tailed): 13 pairs of immoral scenarios and 13 pairs of moral scenarios. The full set of 26 pairs of scenarios is illustrated in the on-line supplementary material. A preliminary analysis excluded the possibility that the scenarios featured conflicting strengths of moral and emotional reactions. A series of statistical analyses by problem (Spearman's ρ) revealed that the strength of the moral reaction and emotional reaction correlated in no-conflict scenarios, considering both moral scenarios ($\rho= .90$, $p<.0001$) and immoral scenarios ($\rho= .92$, $p<.0001$), and in conflict scenarios, considering both moral scenarios ($\rho= .96$, $p<.0001$) and immoral scenarios ($\rho= .98$, $p<.0001$). Hence, any moral conflict possibly induced by the scenarios cannot be ascribed to a conflict between reasoning and emotions.

We then verified whether the conflict versions of the scenarios, obtained by manipulating the propositions that refer to norms and values, elicited moral conflicts (i.e., the intermediate score on the Likert scale). Table 1 illustrates the mean score assigned to the strength of the moral reaction by the participants in the experiment.

(Insert Table 1 about here)

The results revealed that “right” evaluations decreased from the no-conflict to the conflict version of the moral scenarios (Wilcoxon test: z=3.04, p=.002, Cliff’s δ = .81), and that “wrong” evaluations decreased from the no-conflict to the conflict version of the immoral scenarios (Wilcoxon test: z=3.18, p=.001, Cliff’s δ = 0.60). We also detected an interaction: the experimental manipulation intended to elicit a moral conflict had a greater effect on moral scenarios than on immoral scenarios. The introduction of the violation of norms and values in no-conflict moral scenarios produced scenarios eliciting a greater moral conflict, as compared to the introduction of the respect of norms and values in no-conflict immoral scenarios (Wilcoxon test on the difference between “right” evaluations of no-conflict and conflict moral scenarios and the same difference between “wrong” evaluations of no-conflict and conflict immoral scenarios: z= 3.18, p=.001, Cliff’s δ = 0.99).

We thus concluded that no-conflict moral scenarios were perceived as morally positive, whereas the parallel conflict versions obtained an intermediate score on the Likert scale, which reflects the experience of a moral conflict. No-conflict immoral scenarios were perceived as clearly immoral, whereas the parallel conflict versions obtained an intermediate score on the Likert scale. Therefore, the results of Experiment 1 revealed that, in line with our prediction, the manipulation of the propositions referring to cognitive reasons, i.e., norms and values, results in scenarios eliciting a moral conflict.

Following the assumptions of the model theory for moral judgment, we argued for a relevant role of reasoning. We assumed that moral conflicts can result from conflicting cognitive reasons, and changed no-conflict scenarios into scenarios eliciting moral conflicts by manipulating the propositions referring to norms and values. If, when invited to change no-conflict scenarios into conflict scenarios, individuals manipulated the propositions referring to the cognitive reasons for making a “right” or “wrong” evaluation rather than the propositions referring to emotional factors, that would provide stronger evidence to support our assumption. We therefore conducted an experiment in which participants were invited to modify moral and immoral scenarios to turn them

into scenarios eliciting a moral conflict. We assumed that moral judgments are mainly based on reasoning about norms and values rather than on emotional factors. Hence we predicted that individuals would tend to directly manipulate the propositions referring to norms and values.

Experiment 2: Individuals manipulate the propositions referring to norms and values to make a conflict scenario from a no-conflict scenario

The participants in the experiment encountered the no-conflict scenarios of Experiment 1. For each scenario, their task was: 1) to judge whether the action it described was morally "right" or "wrong", 2) to create a conflict version of the scenario, to make it difficult or even impossible to evaluate whether the action was right or wrong.

METHOD

Participants Forty-three students attending a General Psychology course at the University of Turin (3 males and 40 females, mean age: 22 years) took part in the experiment on a voluntarily basis in exchange for course credits. None of them had taken part in Experiment 1.

Design The participants encountered a booklet with 26 scenarios pertaining to the moral domain according to Experiment 1. Each page of the booklet illustrated one scenario, and below the scenario there were two queries:

1. Do you think it is RIGHT__ WRONG__
2. You'd have difficulty or experience an insolvable conflict if the scenario were (write the scenario again, by altering it slightly)..

Materials The experimental material consisted of the 26 no-conflict scenarios (13 moral and 13 immoral) that, according to the results of Experiment 1, pertain to the moral domain. The scenarios were assembled in a booklet with one scenario per page, and in a different random order for each participant.

Procedures The test was run in a collective session. The participants were given the booklet with the scenarios, whose first page contained the following instructions: 'You'll be presented with a

series of scenarios, your task is to judge whether the action described is morally right or wrong, and then to modify the scenario so to make it a conflict scenario, namely a scenario respect to which you'd be in trouble in deciding whether the action described is right or wrong'. The experiment took approximately 1 hour. Two independent judges, blind to the scope of the experiment, coded each participant's individual protocol in three different categories. They were instructed as follows: "Given a scenario to modify, a participant might produce a scenario in which she refers to rational thoughts, personal opinions, norms and beliefs; this would be a 'cognitive reasons' manipulation. Also, a participant might produce a scenario in which she refers to emotional states, moods, and sentiments such as fear, shame, happiness. These emotional elements must be explicitly introduced in the scenarios; do not deduce these emotional elements from the verbal manipulation; this would be an 'emotional factors' manipulation. Finally, the participant might produce a scenario in which she refers to both rational thoughts, personal opinions, norms, beliefs and emotional states, moods, and sentiments; this would be a 'cognitive reasons and emotional factors' manipulation." Hence, every explicit reference to emotions and moods was took as evidence of manipulation of emotional factors, a criterion which runs against our predictions. Consider, as an example of cognitive reasons manipulation, the no conflict scenario "A single woman has taken care of 20 stray dogs that would otherwise have been put in a kennel and left to die, treating them with great care and love" changed to "A woman took care of twenty stray dogs that otherwise would have been left to die, training them to be aggressive". The manipulation evokes the violation of norms and values: it is impermissible or inacceptable from the moral point of view to train dogs to be aggressive. Consider, as an example of emotional factors manipulation, the no conflict scenario "A student who won a scholarship gave it to another student more in need than him, that otherwise could not have afforded to continue his studies" changed to "A student who had been awarded a grant renounced the grant in favor of another student more in need than him to make him feel humiliated as he continued his studies". The manipulation evokes an emotional state. Consider as an example of cognitive reasons and emotions factors manipulation the no conflict scenario "A woman, suffering for years from

HIV, has voluntarily hidden from her new partner her state of health and spread the disease" changed to "A woman who had been suffering from HIV for years, voluntarily hid her condition from her new and violent boyfriend and transmitted the disease to him. She feared he would kill her". Further examples are shown in the Table 2.

Results and Discussion

Two independent judges identified the scenarios to be excluded from the analysis in relation to the first task, namely to judge whether the action described in the scenario was either moral or immoral. Scenarios for which an answer was not provided or that were evaluated differently from how we meant them to be (i.e., moral scenarios evaluated as immoral, and immoral scenarios evaluated as moral), were excluded from the analysis. Then the two judges identified the scenarios to be excluded in relation to the second task, namely to modify the scenario to turn it into a conflict scenario. Scenarios for which the participants did not perform the task or performed a different task (i.e., if they wrote a scenario that was completely different from the original one instead of modifying it, or made it even more moral or immoral), were excluded from the analysis. The two judges reached a significant level of agreement on their first judgments (Cohen's K=.74, p<.0001). For the final scores, they discussed each item on which they disagreed, until reaching a full agreement. Then, the data of eight participants were excluded because for eight or more of the 26 scenarios they failed to accomplish the tasks according to the criteria illustrated above (such a bias is significant on the Binomial test: p<.05, one tailed). Hence, the protocols of 35 participants were considered for the critical analysis.

The two judges coded the protocols of the 35 participants as involving a modification of cognitive reasons, emotional factors, or a combination of the two. They reached a significant level of agreement on their first judgments (Cohen's K=.56, p<.0001). For the final scores, they discussed each item on which they disagreed, until reaching a full agreement. Table 2 illustrates the percentages of the types of modifications performed by the participants in the experiment.

Insert Table 2 about here

The overall results showed a general bias to modify the scenarios by manipulating cognitive reasons rather than emotional factors (a mean percentage of 94 versus 3, respectively) and cognitive reasons rather than a combination of cognitive reasons and emotional factors (a mean percentage of 3; Wilcoxon test: in both cases z= 5.19, p<.0001, Cliff's $\delta = 1$). The same results held for moral and immoral scenarios considered separately. In order to produce a conflict the participants were more likely to modify cognitive reasons rather than emotional factors or a combination of the two in the moral (Wilcoxon test: in both cases z=5.51, p<.0001, Cliff's $\delta = 1$) as well as in the immoral (Wilcoxon test: in both cases z=5.20, p<.0001, Cliff's $\delta = 1$) scenarios.

The results of Experiment 2 suggest that when invited to create conflict scenarios from no-conflict scenarios, individuals manipulate the propositions referring to cognitive reasons rather than emotional factors. This result enforces the assumption that moral judgments rely on reasoning rather than emotions. Moral judgments about conflict scenarios, compared to no-conflict scenarios, involve the evaluation of cognitive reasons in conflict and, therefore, rely more on deliberative reasoning. From these assumptions derives the prediction that response times for the evaluation of conflict scenarios are longer than for the evaluation of no-conflict scenarios.

Experiment 3: The evaluation of conflict scenarios takes longer than the evaluation of no-conflict scenarios

Experiment 3 is a response time study meant to validate the prediction that the evaluation of conflict scenarios would take longer than the evaluation of no-conflict scenarios. The participants encountered no-conflict and conflict versions of moral and immoral scenarios.

METHOD

Participants The participants in the experiment were 40 students attending courses at the University of Turin. Their age ranged from 19 to 27 years (22 males and 18 females: mean age: 23 years). They took part in the experiment voluntarily, in exchange for course credits. None of them had taken part in Experiments 1 or 2.

Design The experiment was computer controlled: the participants encountered 24 scenarios pertaining to the moral domain according to Experiment 1. For each scenario their task was to decide whether the action described was morally right or wrong.

Materials The experimental material consisted of 24 pairs of scenarios, 12 moral and 12 immoral, that were judged as pertaining to the moral domain by the participants in Experiment 1 (see the on-line supplementary material). Each pair included one no-conflict version and one conflict version. Both the set of no-conflict scenarios and the set of conflict scenarios has a mean length of 56 syllables. Each participant encountered only one version of each scenario, for a total of 24 scenarios, six in each of the following categories: no-conflict moral, conflict moral, no-conflict immoral, conflict immoral. We devised two experimental protocols; half of the participants were assigned to one protocol and half to the other. The occurrence of the evaluation "right" on the right hand side or the left hand side of the computer screen was balanced in each protocol. The order of presentation of the 24 scenarios was randomized for each participant.

Procedures The participants were tested individually in a computer-controlled experiment (Super Lab 4.0.): each scenario was presented on the computer screen with the request to read it and decide whether the action it described was "right" ("giusto") or "wrong" ("sbagliato"). The instructions were presented through the computer screen and read as follows: 'This is an experiment on how individuals experience newspaper and television news. You'll be presented with 24 news, one at a time. For each news your task is to tell whether the news is morally wrong or right. The news will appear on the computer screen. You'll use the buttons of the keyboard, according to the instructions that will appear on the screen. You have no time limits. You'll not be allowed to go back to read again the previous news, or change your decision about them. I ask you to not interrupt the experiment, until no more news will appear on the computer screen". After reading the instructions, the participants were told to answer freely, as there was not a correct answer, and were informed that they would not be allowed to ask questions during the test (e.g., more details about some scenarios). Also, the participants were instructed to position their hands on the buttons of the

keyboard (the “right” and the “wrong” buttons). Then the experiment begun, and the software timed the interval from the onset of the scenario until the participant pressed the response key. The participants were unaware that their response times were being recorded.

Results and Discussion

First of all we ascertained whether the conflict versions of the scenarios were really experienced as such by the participants in the experiment. The results for moral scenarios revealed that “right” evaluations decreased from the no-conflict to the conflict version of the scenarios (86% versus 49%, respectively: Wilcoxon test: z=4.99, p<.0001, Cliff’s $\delta = 0.83$). Further, the results for immoral scenarios revealed that “wrong” evaluations decreased from the no-conflict to the conflict version of the scenarios (92% to 75%, respectively: Wilcoxon test: z=3.77, p<.0001, Cliff’s $\delta = 0.57$). Moreover, we detected an interaction: the experimental manipulation meant to elicit a moral conflict had a greater effect on moral scenarios than on immoral scenarios (Wilcoxon test on the difference between “right” evaluations about the no-conflict and the conflict moral scenarios and the same difference between “wrong” evaluations about the no-conflict and the conflict immoral scenarios: z= 3.52, p<.0001, Cliff’s $\delta = 0.49$). These results fully replicate those of Experiment 1; they reveal that the experimental manipulation succeeded. Therefore, we were able to test our main prediction.

The statistical analysis on the response times was performed after the exclusion of the outliers (2 standard deviations above or below the mean). The results were in line with our prediction: response times for the evaluation of conflict versions were longer than for the no-conflict versions (a mean of 14 secs, sd=4.3, and a mean of 10 secs, sd=2.8, respectively: Wilcoxon test: z=5.23, p<.0001, Cliff’s $\delta = 0.50$). The breakdown of the results for moral and immoral scenarios revealed that response times for conflict versions compared to no-conflict versions, were longer for moral scenarios (a mean of 15 secs, sd=5.2, versus a mean of 11 secs, sd=3.7, respectively: Wilcoxon test: z= 4.92, p<.0001, Cliff’s $\delta = 0.46$), as well as for immoral scenarios (a mean of 13 secs, sd=4.3, versus a mean of 10 secs, sd=2.7, respectively: Wilcoxon test: z= 4.73, p<.0001, Cliff’s $\delta = 0.47$).

We detected no interaction: the difference in response times to no-conflict and conflict scenarios was comparable for moral and immoral scenarios (Wilcoxon test: $z = .94$, $p = .35$, Cliff's $\delta = 0.03$).

Our predictions were confirmed: the evaluation of conflict scenarios takes longer than the evaluation of no-conflict scenarios. We assumed that the evaluation of conflict scenarios involves the evaluation of conflicting norms and values; the longer response times for conflict scenarios, both moral and immoral, might reflect a process of cognitive evaluation through which the individual weighs the reasons for making a judgment. We assumed that deliberative reasoning plays a fundamental role in the evaluation of the conflicting cognitive reasons: the longer response times with conflict scenarios as compared to no-conflict scenarios might reflect a greater use of deliberative reasoning. Further evidence of a greater use of deliberative reasoning with conflict scenarios may emerge from verbal protocols of individuals engaged in the evaluation of no-conflict and conflict scenarios.

Experiment 4: Deliberative reasoning is more frequent with conflict scenarios than with no-conflict scenarios

The aim of the experiment was to shed light on the nature of the cognitive processes involved in moral evaluations. We analyzed the verbal protocols of the participants while evaluating no-conflict and conflict scenarios. When individuals think aloud as they reason, their protocols are a reliable guide to their sequences of thought (Ericsson & Simon, 1980); hence, the fact that a sequence of thoughts anticipates the formulation of a moral judgment excludes the possibility that such sequences are post-hoc rationalization. Also, think aloud protocols are a reliable guide to individuals' strategies in reasoning (see Van der Henst, Yang & Johnson-Laird, 2002). When individuals think aloud while making their moral evaluations they may first describe a sequence of pertinent thoughts leading to the evaluation (*reasoned evaluation*). We considered protocols of this type as evidence of deliberative reasoning culminating in a moral evaluation. On the other hand, individuals might reach an immediate moral evaluation (*intuitive evaluation*) not preceded by

reasoning of any kind. In this case the evaluation might be followed by a *because* clause and then the exposition of the reasons on which the evaluation is based. We considered such verbal protocol as evidence of intuitive rather than deliberative reasoning; intuitions are reasoning from unconscious premises to conscious conclusions and may suffice to deal with no-conflict scenarios. However, such protocols are also consistent with the assumption that intuitions are akin to emotions and precede and guide conscious reasoning (see Haidt, 2001, 2007). Hence, the aim of the experiment was primarily to search for evidence of reasoned evaluations.

METHOD

Participants The participants in the experiment were 40 students (36 females and 4 males: mean age: 22 years) attending a General Psychology course at Turin University. They voluntarily took part in the experiment in exchange for course credits. None of them had taken part in Experiments 1, 2 or 3.

Design The participants in the experiment encountered the 24 scenarios used in Experiment 3. Their task was to evaluate each scenario as morally right or wrong. Half of the participants were invited to think-aloud while taking their decision.

Material The experimental material consisted of the 24 pairs of scenarios used in Experiment 2 (each pair included one no-conflict and one conflict version of the same scenario). We created two experimental protocols so that each one only contained one version of the same scenario, for a total of 24 scenarios, with six in each of the following categories: no-conflict moral, conflict moral, no-conflict immoral, conflict immoral scenarios. Each scenario was written on a single page and assembled with the others in a booklet, in random order. Half of the participants were assigned to a *Think-aloud condition* and half to a *No-think-aloud condition*. The occurrence of the two experimental protocols over the two conditions was counterbalanced.

Procedures The participants in the Think-aloud condition were instructed as follows: “This is an experiment on how individuals experience news. You’ll be presented with 24 news, each written on a paper. Your task is to read out-loud each news and write down whether according to you the news

is morally 'right' or morally 'wrong'. It is important that you think aloud while taking your decision. Once you've decided, write down your answer, and pass to the following news without going back to the previous ones". The participants in the No-think-aloud condition took part in the experiment in a collective session and were given the same instructions, with the only difference that they were not invited to think aloud while making their evaluations.

Two independent judges, blind to the scope of the experiment, coded the verbal protocols of the participants in the Think-aloud condition as reasoned or intuitive. The coders were instructed as follows: "Given a scenario to evaluate, participants might:

• Make either an immediate moral evaluation (right/wrong) or an immediate moral evaluation followed at once with a *because* clause describing the reasons for the evaluation (intuitive evaluation).

• State a sequence of thoughts leading to a moral evaluation (reasoned evaluation).

Examples of the two different sorts of think aloud protocols are in Table 3.

Insert Table 3 about here

Results and Discussion

An analysis of the consistency of the evaluations, namely "right" evaluations for moral scenarios and "wrong" evaluations for immoral scenarios, excluded the possibility that the participants in the No-think-aloud and the Think-aloud conditions might have performed differently. The results for the moral scenarios revealed that the participants in the No-think-aloud and Think-aloud conditions produced a comparable percentage of "right" evaluations, both for no-conflict (94% and 95%, respectively, Mann-Whitney test: U=190, z=.33, p=.74, Cliff's $\delta = 0.05$) and conflict (48% and 58%, respectively, U=141,5, z=1.67, p=.095, Cliff's $\delta = 0.29$) scenarios. Analogously, the results for immoral scenarios revealed that the participants in the No-think-aloud and Think-aloud conditions produced a comparable percentage of "wrong" evaluations, both for no-conflict (98% and 99%, respectively, U=180, z=1.04, p=.30, Cliff's $\delta = 0.1$) and conflict (81% and 86%, respectively, U=160 , z=1.17, p=.24, Cliff's $\delta = 0.2$) scenarios. We came to the conclusion

that thinking aloud did not affect the participants' evaluations. Hence, we were able to analyze the verbal protocols of the participants in the Think-aloud condition to gain some insight into the kind of thinking involved in evaluating no-conflict and conflict scenarios.

The two independent judges coded the verbal protocols of the participants in the Think aloud condition as reasoned or intuitive. They reached a significant level of agreement on their first judgments (Cohen's K=.88, p<.0001). For the final scores, they discussed each item on which they disagreed, until reaching a full agreement. Table 4 illustrates the mean of reasoned and intuitive evaluations as a function of the scenario, i.e., no-conflict and conflict scenarios.

(Insert Table 4 about here)

The results confirmed our prediction: more reasoned evaluations were made in conflict scenarios than in no-conflict scenarios; the results also showed that there were more intuitive evaluations in no-conflict scenarios than in conflict scenarios (z=3.1, p<.002, Cliff's $\delta = 0.37$ in both cases). The same results held when considering moral and immoral scenarios separately. As regards moral scenarios, there were more immediate evaluations in no-conflict than in conflict scenarios (a mean of 5.3 versus 4.2, respectively), and there were more reasoned evaluations in conflict than in no-conflict scenarios (a mean of 1.8 versus 0.8, respectively: Wilcoxon test: z=2.8, p=.004, Cliff's $\delta = 0.34$, in both cases). As regards immoral scenarios, there were more immediate evaluations in no-conflict than in conflict scenarios (a mean of 5.5 versus 4.5, respectively), and there were more reasoned evaluations in conflict than in no-conflict scenarios (a mean of 1.5 versus 0.5, respectively: Wilcoxon test: z=2.7, p=.007, Cliff's $\delta = 0.34$, in both cases).

The results of the experiment confirmed the prediction that individuals would rely more on deliberative reasoning with conflict scenarios than with no-conflict scenarios.

4. Conclusions

The current theories on moral judgments, with few exceptions, either emphasize a causal role of emotions (see, e.g., Haidt, 2001) or purport the existence of an innate domain-specific

mechanism to evaluate moral scenarios (see, e.g., Mikhail 2000). From the point of view of our theoretical framework, they all underestimate the role of reasoning in moral evaluations, particularly the role of deliberate reasoning in evaluating scenarios eliciting a moral conflict.

We conducted four experiments, the results of which highlight the role of deliberative reasoning in weighing the reasons for providing a positive or a negative moral judgment with respect to scenarios eliciting moral conflicts. Experiments 1 and 2 involved the manipulation of the propositions referring to norms and values in moral and immoral scenarios: they revealed that such a manipulation leads participants to experience a moral conflict (Experiment 1); the results also reveal that when participants were invited to modify scenarios to turn them into conflict scenarios, they manipulated the propositions referring to norms and values (Experiment 2). These results enforce our assumption that moral conflicts arise because of values and norms deeply endorsed by an individual, but which lead to opposite evaluations (see also Dupoux & Jacob, 2007). Experiments 3 and 4 involved a more in-depth investigation into the role of deliberative reasoning compared to intuitions in evaluating conflict scenarios. They showed that the evaluation of conflict scenarios takes longer than the evaluation of no-conflict scenarios (Experiment 3), and the verbal protocols of participants engaged in moral evaluations suggest that it is because they resort more to deliberative reasoning when dealing with conflict scenarios as compared to no-conflict scenarios (Experiment 4).

An unpredicted result that emerged from Experiments 1 and 3 was that the manipulation of the scenarios intended to turn them into conflict scenarios had a greater effect on moral scenarios than on immoral scenarios. In particular, moral scenarios were manipulated by introducing negative moral elements (i.e., violation of norms and values), and immoral scenarios were manipulated by introducing positive moral elements (i.e., respect of norms and values). These results according to which the negative elements have a greater force than the positive ones, parallel the results of many studies in the literature (see, e.g., Baumeister et al., 2001; Rozin & Royzmann, 2001). Also, these results have implications for how individuals perceive each other as a function of their moral and

immoral behaviors. We might speculate that immoral actions are stronger than good actions in order to get a sense of the moral status of a person: it seems that our moral judgments are likely to be influenced by immoral actions more than the moral ones. Thus, for example, a good reputation, gained through the performance of one moral action, may be more affected by one immoral action (i.e., it becomes uncertain whether the person has either a moral or an immoral status) than a bad reputation, gained through the performance of one immoral action, may be affected by one moral action.

Considered as a whole, the results of the four experiments run against Haidt's proposal. The assumption that moral judgments rely on quick and effortless intuitions akin to emotions is incompatible with the role of cognitive reasons, i.e., norms and values, in turning a scenario into a moral conflict scenario. The intuitionist model is also inconsistent with evidence of slow and cognitively demanding deliberative reasoning in evaluating conflict scenarios. Haidt admits that moral conflicts may arise because of competing intuitions, and claims that they are solved when the stronger intuition wins or the individual resorts to deliberative reasoning. At the same time Haidt purports that deliberative reasoning is rarely involved in moral evaluations. Further evidence in favor of our assumption that emotions do not cause moral judgments comes from additional considerations. Within the dual-process accounts of thinking, intuitions have a strong affective component. For example, studies reveal that more fluent processing, compared to less fluent processing, triggers positive affect and cognitive ease accompanying intuitions in general is associated with positive affect (see, for reviews Kahneman, 2011; Topolinski, 2011). If affect would account for moral judgements, then in our studies no-conflict immoral scenarios, which are supposed to involve fluent processing, would trigger positive affect. However, the results of our experiments reveal that, although no-conflict immoral scenarios are processed fluently and fast, compared to conflict-immoral scenarios, they do not trigger positive affect. Hence, our results enforce the assumption that affect can't be all the story. Yet, a sceptical may argue that encountering a case of norm respect may elicit a positive emotion while encountering a case of

norm violation may elicit a negative emotion; this would explain the 'right' judgment to moral scenarios and the 'wrong' judgment to immoral scenarios. However, this explanation does not apply to individuals' performance with conflict scenario; why individuals take longer to evaluate them and are more likely to resort to deliberative reasoning? We assume that scenarios depicting either the full respect or the full violation of norms elicit fast intuitions, whereas the scenarios featuring a mix of the two (respect and violation) elicit deliberative reasoning. Intuitions rather than emotions can better account for the performance of the participants in Experiment 1 with no-conflict scenarios, especially if we consider that not necessarily emotions precede moral evaluations (see Bucciarelli et al., 2008)), and dilemmas eliciting conflicting emotions are solved by appealing to moral rules rather than a balance of the two emotional reactions (see Royzman et al., 2011). Intuitions, rather than emotions, can be viewed as pre-packed evaluations of a situation respect to moral principles.

The results of our four experiments also run against Mikhail's proposal. As a first consideration, Mikhail assumes that the system of moral cognition represents and evaluates acts and assigns them a deontic status. A weakness we see in such an assumption is the impossibility to distinguish between deontic non moral acts and deontic moral acts. In the end, it is purported the existence of a universal deontic grammar. As a second consideration, the assumption that an unconscious moral grammar guides our moral evaluations is not consistent with the possibility of experiencing a moral conflict or altering a scenario to turn it into a conflict scenario. It is difficult to envisage how the moral grammar theory might be revised to accommodate this possibility without abandoning the assumption of the existence of a set of consistent moral principles in the human mind. Moreover, the theory ought to envisage a role for deliberative reasoning in moral evaluations.

The model theory recognizes the role of reasoning in moral evaluations. Within such a framework we advanced an account of moral conflicts: moral judgments rely on reasoning, either from unconscious premises to conscious conclusion (intuitions) or from conscious premises to conscious conclusions (deliberative reasoning). While intuitions may suffice in evaluating moral

and immoral scenarios evoking reasons that do not conflict, deliberative reasoning may be necessary in weighing opposing reasons for making “right” or “wrong” moral evaluations. The results of our investigation enforce our assumptions on the involvement of reasoning in moral evaluations, thus leading us to recognize our responsibility in the moral choices we make. Also, they are consistent with the results of studies in the literature revealing that individual differences in analytic thinking can predict variation in moral judgments (Pennycook, Cheyne, Barr et al., 2013), and studies in domains different from the moral one revealing that conflict resolution involves analytic thinking (Bonner & Newell, 2010).

Our results are also consistent with the classical studies in the literature showing an improvement in our reasoning ability when we experience a conflict (see, e.g., Bruner, Oliver & Greenfield, 1966; Levin, Siegler & Druyan, 1990 for cognitive conflict, and Doise & Mugny, 1984 for socio-cognitive conflict, and Sacco & Bucciarelli, 2008 for a review); they reveal that we are more likely to reason deliberatively when a conflict occurs in evaluating a moral issue. It seems that moral conflicts are likely to help us to be more rational at the expense of making our judgment more difficult.

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Table 1. The mean score (and standard deviation) assigned to the strength of the moral reaction by the participants in Experiment 1 (the scale ranged from 1, labeled “very strong negative evaluation”, to 5, labeled “very strong positive evaluation”, with 3 as intermediate score, labelled “50:50”).

	No-conflict scenarios	Conflict scenarios
Moral scenarios	4.4	3.0
	(.44)	(.80)
Immoral scenarios	1.4	2.1
	(.23)	(.72)

Table 2. Examples and percentages of type of modification performed by the participants in Experiment 2 to turn a no conflict scenario into a scenario eliciting a moral conflict.

Type of Modification	**Example Protocol**	**Example Scenario**
Cognitive reasons Moral scenarios 96% Immoral scenarios 92%	In order to protect a family member a woman intentionally lied to cause the arrest of a person who had not committed any crime. At the market in a village a young gypsy woman, to buy food for her sick child, robbed all the old ladies who had shopping bags in hand for a week.	A woman has intentionally lied to cause the arrest of a person whom she didn't like, but he had not committed any crime. At the market in a small village a young gypsy woman robbed all the old ladies who had shopping bags in hand for a week.
Emotional factors Moral scenarios 2% Immoral scenarios 5%	A commissioner annoyed by the continuous complaints, has prepared the addition of a bus stop in front of the home of a disabled person, in order to allow him to move about, which otherwise would not have been possible. . A woman, suffering for years from HIV, has voluntarily hidden from her new partner her state of health and transmitted him the disease because she was afraid of his family's prejudice.	A commissioner has prepared the addition of a bus stop in front of the home of a disabled person, in order to allow him to move about, which otherwise would not have been possible. A woman, suffering for years from HIV, has voluntarily hidden from her new partner her state of health and spread the disease.
Cognitive reasons and emotional factors Moral scenarios Immoral scenarios	A woman desperate and out of work and with a dependent child found a wallet on the street with a lot of money in it and instead of returning it she kept it for herself and threw the documents that were in the wallet. A woman donated a kidney to a friend since he was suffering from severe kidney disease. She was in love with him very much, but he did not reciprocate; she saved him from certain death on condition that after his rally he would engage with her.	A girl found a wallet on the street with a lot of money in it, and instead of returning it to its owner kept it for herself and threw away the papers that were in it. A woman donated a kidney to a friend she loved who was suffering from serious kidney problems, saving him from certain death.

Table 3. The two different sorts of think-aloud protocols with examples of each of them, in Experiment 4. A *reasoned* protocol is one in which the participant consciously reasoned to reach a moral evaluation and an *intuitive* protocol is one in which the participant either made an immediate moral evaluation or started with the moral evaluation, but immediately appended a "because" clause reflecting a process of reasoning.

Type of Response	**Example Protocol**	**Example Scenario**
Reasoned	Well taking care of their friends' children was a beautiful gesture because maybe they could be brought somewhere they did not like, however, if my mother had neglected me, her natural daughter .. I would have had some discussion to do, so according to me it is right on one side, but morally wrong in respect of natural children, so according to me it is wrong.	A married couple, after the death of two friends in a car accident, took care of their children as if they were their own, neglecting their children on several occasions.
Intuitive	Well I think it is wrong, however, because the two things can coexist heem because…yes, it was a nice gesture what they did to take care of the two friends' children, however, you should never neglect your own children.	
Reasoned	So here is unspecified the crime and living in Italy, considered that people who go in prison maybe stole in a supermarket and maybe people who kill and rape stay three months in prison and then go out I do not know how to see it; for the rest that is he had committed other crimes if you tell me that maybe he lied about something I don't know he went into a house to rob but the other crimes were the killing of a person or the rape of a girl I tell you he did well so for me it is right well then again it depends on what he did because if she lied about a rape of a child, but in reality the only thing he had done was stealing from the supermarket it is not right if it was the opposite of that in hindsight I say that it is right and it is wrong to lie that I do not know it is right with this argument behind.	A woman has intentionally lied to cause the arrest of a person who had not committed the crime, but had committed others.
Intuitive	It is wrong however. Because in spite having committed other crimes the person had not committed.	

Table 4. The mean (and standard deviation) of reasoned and intuitive evaluations as a function of the scenario, i.e., no-conflict and conflict scenarios, in Experiment 4.

Evaluations	No-conflict scenarios	Conflict scenarios
Intuitive	10.8	8.70
	(1.37)	(3.31)
Reasoned	1.20	3.30
	(1.37)	(3.31)

Reasoning in moral conflicts
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Supplementary material

The couples of moral and immoral scenarios in Experiment 1, translated from Italian. In each couple, the first scenario is the no-conflict version and the second scenario is the conflict version. The first scenarios in each couple were the experimental material in Experiment 2. Experiments 3 and 4 used all the scenarios but those marked with the asterisk.

Couples of moral scenarios (in parentheses, for the conflict version, the norm violated in the manipulation)

The manager of a factory adopted the policy of hiring and paying people with disabilities and people without disabilities to the same extent, according to actual hours worked.
The manager of a factory adopted the policy of hiring and paying people with disabilities and people without disabilities to the same extent by lowering the wages of people without disabilities. (Not to discriminate between able and disabled people)

A woman donated a kidney to a friend she loved who was suffering from serious kidney problems, saving him from certain death.
A woman donated a kidney to a friend suffering from serious kidney problems, saving him from certain death but she ends up getting sick. (Not to help others at the expense of hurting ourselves)

A married couple, after the death of two friends in a car accident, took care of their children as if they were their own, continuing to care for their children, too.
A married couple, after the death of two friends in a car accident, took care of their children as if they were their own, neglecting their children on several occasions. (Not to neglect our own sons)

The publisher of the newspaper was esteemed by all journalists because he went to jail rather than divulge the source of his information to the police.
The publisher of the newspaper was esteemed by all journalists because he went to jail rather than divulge the source of information to the police, who could have captured the Camorra. (Not to obstruct the justice)

A single woman has taken care of 20 stray dogs that would otherwise have been put in a kennel and left to die, treating them with great care and love.
A woman has taken care of 20 stray dogs that otherwise would be put in a kennel and left to die, making them live in a small enclosure. (Not to rear animals in captivity)

A person found a wallet with money and documents in a crowded park, and tracked down the owner to return everything.
A person found a wallet with money and documents and tracked down the owner, a drug dealer in the area, to return everything. (Not to allow dishonest gain)

In her spare time, a very generous girl took care of an elderly lady who had no relatives dedicating part of her free time.
In her spare time, a very generous girl took care of an elderly lady who had no relatives and in so doing isolated herself from her peers. (Not to isolate ourselves from peers)

*A pregnant woman has decided to postpone treatment for cancer to not create complications in her pregnancy and allow her child to be born healthy.
*A pregnant woman has decided to postpone treatment for cancer to allow her child to be born healthy, but she died soon after birth. (Not to make an orphan of our son)

The commissioner has prepared the addition of a bus stop in front of the home of a disabled person, in order to allow him to move about, which otherwise would not have been possible.

The commissioner has prepared the addition of a bus stop in front of the home of a disabled person, in order to allow him to move about, asking him to pay for the service. (Not to charge a right)

A girl, with patience and consideration, has helped her deaf sister to graduate with her, with honors and on schedule.
A girl helped her deaf sister to graduate with her, with honors and on schedule, in exchange for money. (Not to charge a charitable action)

Two very close sisters decided to look after their mother who suffered from depression for all their lives.
Two sisters decided to give up their love life to care for their mother who suffered from depression. (Not to give up living our own life)

A very renowned hunter, during a big hunt with friends, gave up a kill when he saw that it had two newborn cubs.
A very renowned hunter gave up a kill when he saw that it had two newborn cubes, and so his children went hungry. (Not to starve children)

A student who won a scholarship gave it to another student more in need than him, that otherwise could not have afforded to continue his studies.
A student who won a scholarship gave it to another student who needed it more than him because he knew there would be another scholarship contest with a greater value. (Not to act unfairly in a competition)

Couples of immoral scenarios (in parentheses, for the conflict version, the norm respected in the manipulation)

A woman has intentionally lied to cause the arrest of a person whom she didn't like, but he had not committed any crime.
A woman has intentionally lied to cause the arrest of a person who had not committed the crime, but had committed others. (To punish those who commit a crime)

To find a solution to a problem at work, a supplier has bribed the chef of a restaurant with a large sum of money to buy expired and toxic food.
A supplier that was sold expired and toxic food under false pretenses, has bribed the chef of a restaurant with a large sum of money to buy that food. (To avenge a wrong)

* A bar owner forced the three foreign girls who worked for him in the summer and went home for the winter, to have sex with him.
* A bar owner forced the three foreign girls who worked for him in the summer and prostituted themselves in the winter, to have sex with him. (To expect sexual intercourse from prostitutes)

At the market in a small village a young gypsy woman robbed all the old ladies who had shopping bags in hand for a week.
In a market a hungry young gypsy woman robbed all the rich old ladies who had shopping bags in hand for a week. (To redistribute wealth)

A student disobeyed his math teacher several times and because he refused to apologize was slapped in front of his classmates.
A student disobeyed his teacher and because he refused to apologize and violently assaulted her, he was slapped in front of his classmates. (To punish aggression)

A boy, who had taken part in the robbery that a group of fellows carried out on a jewelry but was not to be arrested, unjustly blamed his best friend.
A boy, who had taken part in the robbery, in order to avoid to be arrested, unjustly blamed his best friend, who had however pressured him to carry out the robbery. (To punish those who instigate crimes)

A girl found a wallet on the street with a lot of money in it and instead of returning it to its owner kept it for herself and threw away the documents that were in it.
A girl found a wallet on the street with a lot of money in it and instead of returning it to its owner kept it for herself, giving the money to a poor man. (To help those who are in financial difficulty)

A gas station attendant in a small mountain village diluted gasoline with water, aware of the damage that would be caused to the cars of their customers.
A gas station attendant diluted gasoline with water, aware of the damage that would be caused to the cars of its customers that paid him with fake money. (To avenge a wrong)

A doctor made a complacent colleague punch in to the hospital for him and instead worked in his private office to supplement his already impressive salary.
A doctor made a complacent colleague punch in to the hospital for him and instead worked in his private office for free by visiting non-EU citizens without a residence permit. (To help those who are in financial difficulty)

A medical student desecrated tombs to dissect corpses and put into practice his theoretical knowledge and to do a little practice.
A medical student desecrated tombs to dissect corpses and put into practice his theoretical knowledge and be able to cure his fellow villagers in Africa. (To help those in need)

A woman, suffering for years from HIV, has voluntarily hidden from her new partner her state of health and spread the disease.
A woman has hidden the fact that she is HIV-infected from new partner, who is terminally ill, and transmitted the disease. (Not to give worries to a terminally ill patient)

A six-month pregnant woman is abandoned by her husband when he decides to flee the city along with her mother-in-law which he fell in love with during the years of marriage with his wife.
A six-month pregnant woman is abandoned by her husband when he discovers that the child is not his, and decides to leave the city together with her mother-in-law which he fell in love with. (To take distance from deceivers)

A girl gives birth to a baby with down syndrome and as soon as she was discharged from the hospital without anyone noticing, she kills him in a plastic bag.
Following a gang rape, a girl gives birth to a child with down syndrome and once discharged from the hospital she kills him in a plastic bag. (To refuse an unwanted child)