

# War as a moral imperative (not just practical politics by other means)

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We present findings from one survey and five experiments carried out in the USA, Nigeria and the Middle East showing that judgements about the use of deadly intergroup violence are strikingly insensitive to quantitative indicators of success, or to perceptions of their efficacy. By demonstrating that judgements about the use of war are bounded by rules of deontological reasoning and parochial commitment, these findings may have implications for understanding the trajectory of violent political conflicts. Further, these findings are compatible with theorizing that links the evolution of within-group altruism to intergroup violence.

**Keywords:** war; psychology; morality; rationality

## 1. INTRODUCTION

The Moral Law causes the people to be . . . undismayed by any danger.

S. Tzu, *The Art of War*, p. 113, ca 540 BC

Deadly intergroup violence (*war*) has been a constant feature of human history [1,2] and is a frequent cause of great suffering [3]. Surprisingly, few empirical studies have directly examined how ordinary people make decisions to support or oppose war. Perhaps one reason for this lack of research is the mainstream assumption of scholars and policy-makers that war is just one particular means to maximize collective or individual utility [4] and that people make decisions about whether to support or participate in war in an instrumentally rational manner. Ever since the end of the Second World War, the assumption that people make instrumentally rational decisions about war has dominated scholarly explanations of political violence (e.g. [5]) as well as strategic thinking by non-governmental organizations, governments and military planners [6–8]. While policy-makers typically attempt to predict the decisions of leaders, the same assumption has guided the small body of research that has investigated the factors that influence whether ordinary people will support war [9–11]. To our knowledge, there are no published studies that directly test whether people decide to support war in an instrumentally rational manner or not.

The literature distinguishes between two broadly different types of decision-making that guide choices in different contexts. The first approach is consequentialist, based on instrumental or material values; the second approach is deontological, based on moral or sacred values. In consequentialist reasoning, decisions are ultimately based on the expected outcomes of one's

actions [12–14]. Modern versions of the consequentialist school have adopted utility theory as a normative framework [15]. In deontological reasoning [16,17], decisions derive from moral rules that circumscribe certain actions independently of, or all out of proportion to, expected outcomes or prospects of success; that is, we act in accordance with values because they are the right or noble thing to do (e.g. as in fundamental matters of religion, or non-religious matters such as refusal to sell one's children).

Despite serious misgivings about the explanatory adequacy of theories of rational choice [18,19], much more is known about consequentialist decision-making than about morally motivated decision-making. However, deontological reasoning may be particularly important in guiding choices in many contexts. Certain values, sometimes called sacred or protected values, may be critically involved in important decisions in life [20–22], as well as in sustaining cultural and political conflicts [23–25]. Decisions based on sacred values, such as whether to become a priest or a suicide bomber, often seem to follow a rule-bound logic of moral appropriateness and absolutist thinking, which, at least in a proximate sense, defies the cost-benefit calculations and means-end logic of *realpolitik* and the marketplace [26,27]. Even in objectively economic contexts, such as when playing one-shot economic games, people will make apparently morally motivated and personally costly decisions to obey social norms, or to punish those who do not (cf. [28,29]).

In this paper, we investigate whether people choosing whether to support or participate in war use the logic of instrumental rationality (as assumed by the preponderance of scholars and policy-makers), or the logic of deontology.

## 2. RATIONAL ACTORS AND THE FREE-RIDER PROBLEM

Charles Darwin, gathering an astounding amount of data from his voyage around the world as a naturalist [30],

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tried to show that all living kinds are basically competitive and selfish. Different forms of life, including humans, develop through a process of natural selection that favours survival of the best competitors for resources. This process, he argued in *The Origin of Species*, promotes adaptations only for the individual's own use in its struggle to gain resources to produce offspring: 'good for itself', but 'never... for the exclusive good of others' [31, p. 210].

Under Darwin's original theory, if we give to charity, or help children, strangers and the infirm, it is because we seek enhanced social status, or a heightened sense of self worth, or whatever else may serve our interests in the short or long run. But heroism, martyrdom and other forms of self-sacrifice for the group appear to go beyond the principles of reciprocity, such as quid pro quo or even the Golden Rule. Darwin puzzled over what would motivate people 'who freely risked their lives for others?' [32, pp. 163–165]. This is particularly perplexing as success in war leads to group-wide collective benefits. For example, if war secures the right for an oppressed group to vote, all members of the group benefit. From the perspective of individual level instrumental rationality, the most effective strategy is to take a 'free ride' on the actions of others [33].

Darwin acknowledged that the brave warrior who survives the fight may gain more wealth or social worth, and so improve his chances for reproducing. But if the risk of death is very high and the prospects for victory low, then it is very doubtful that gain would outweigh loss. Moreover, risk assessments about war are difficult even in simple contexts [34] and the effects of miscalculation, a common occurrence, are extremely severe: frequent intergroup conflict leads to chronic underuse of resources such as land [34] and war leads to high numbers of casualties, with the losing group often being decimated [1,2]. Even if accurate calculation about the relative strength of two sides in a conflict is possible, the underdogs often prevail [35]. Moreover, evidence for selective benefits accruing to individual participants in warfare is inconsistent at best [36].

### 3. WAR AND MORAL COMMITMENTS

How could self-interest alone account for man's aptitude for self-sacrifice to the point of giving his life—the totality of his self-interests—for his extended family, tribe, nation, religion or for humanity? The problem led Darwin to modify his view that natural selection only produces selfish individuals. In *The Descent of Man* [32], he suggests that humans have a naturally selected propensity to moral virtue, that is, a willingness to sacrifice self-interest in the cause of group interest. Humans are above all moral animals because they are creatures who love their group as they love themselves.

It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over the other men of the same tribe, yet that an advancement in the standard of morality and an increase in the number of well-endowed men will certainly give an immense advantage to one tribe over another.

[32, p. 166]

The existence of frequent violent intergroup conflict may be a significant factor in the evolution of altruism, as groups with greater (or more frequently occurring) norms that favour cooperation with fellow group members would be more likely to survive in such conflicts, and would probably be imitated by other groups observing their success [37,38]. This proposed solution to the free rider problem has found empirical support in work modelling the emergence and persistence of social norms associated with various aspects of what we have referred to here as moral virtue, including cooperation in warfare. While some empirical simulations suggest the plausibility of genetic group selection as a mechanism leading to the evolution of altruism in the face of frequent violent conflict [39–41], doubts about genetic group selection remain, particularly concerning the extent to which between-group genetic variation assumed by such simulations are likely [42]. It is perhaps more likely that cultural group selection [43] is the primary mechanism. The theoretical models used to demonstrate the link between violent intergroup conflict and the evolution of altruism apply 'with even greater force to behaviours transmitted culturally rather than genetically, in part because between-group differentiation is considerably greater' [39, p. 1294].

Thus, the free rider problem may be tractable if cultural group selection in the face of frequent intergroup conflict led to the emergence of norms requiring people to reason about participation in, or support for, war using the logic of deontology (e.g. 'I choose something because I think it is appropriate for perceived moral rules or to what I consider to be my social identity' rather than 'I chose the most cost effective means of achieving my goal').

The advantages that accrue to groups with strong norms favouring parochial altruism, or altruism directed towards members of one's group, arise because moral obligations are often a far more powerful and durable glue than the mere social contract. Roy Rappaport has argued that group-level moral obligations, such as religious beliefs and prescriptions, reinforce cooperative norms by associating them with 'sacredness'. Sacred assumptions are ineffable. They cannot be fully expressed and analysed—unlike secular social contracts—because they include a logic of moral appropriateness that is, at least in part, immune to instrumental calculations. To be effective, 'sacred propositions' *must* be immune to instrumental calculations, otherwise they would be undermined by free-riders [44]. This becomes particularly important in times of vulnerability and stress, when social deception and defection in the pursuit of self-preservation are more likely to occur. Examining different waves of invasion in the Maghreb in what is arguably the first comparative study of history, Ibn Khaldūn found that enduring dynastic power stems from moral commitment and 'group feeling'. These factors give a dynasty the ability to unite desires, inspire hearts and support mutual cooperation [45]. Recent studies in social psychology suggest that such group attachments can even blind committed members to the availability of an exit strategy [46].

Thus far, only indirect empirical support exists for the claim that people reason about war in a deontological

manner. Simulations tell us that plausibly frequent levels of intergroup violence may have played a role in the evolution of parochial altruism [39–41], suggesting that moral commitments to the ingroup evolved because they provided an advantage to groups in the context of intergroup violence. Complementary results from behavioural studies of Israeli settlers and Palestinians demonstrate that people reject individual-level incentives for participating in violence as taboo [47] and that willingness to fight is negatively associated with prioritizing personal advancement values and is positively associated with group commitment values [48,49]. However, to date, no published work has directly investigated whether people use the logic of instrumental rationality or deontology when reasoning about war. The research we present in this paper attempts to fill this gap in the literature.

#### 4. OVERVIEW OF STUDIES

In this paper, we present studies directly investigating the hypothesis that when deciding whether or not to support a war, people reason in a deontological rather than in an instrumentally rational manner. We tested this hypothesis in one survey and five experiments.

In study 1, we anonymously surveyed a representative sample of Jewish Israelis living in the West Bank, examining how intentions to engage in violent versus non-violent (but illegal) political actions were, respectively, predicted by the perceived efficacy and righteousness of such actions. In studies 2–5, we turned to experimental methods to examine the extent to which people across different political and cultural contexts were sensitive to quantity when making decisions about intergroup violence. In study 6 we addressed the issue of whether decisions to choose between war and non-violent methods of resolving a crisis would be similarly deontological by investigating whether such choices would be sensitive to instrumental preferences regarding risk.

##### (a) *Study 1: settler survey*

If decisions about war are not instrumentally rational, preferences to take part in war should be relatively insensitive to the perceived effectiveness of such violence. We examined this proposal in our first study by anonymously surveying a representative sample of Jewish residents of the West Bank (hereafter *settlers*). This population consists of people who moved to the West Bank and Gaza after the 1967 war for economic benefits or because of religious/ideological beliefs. Although only a small proportion of settlers approve of acts of deadly force against Palestinians [50], violent attacks by settlers against Palestinians are routine.

*Participants and procedure.* We mailed out surveys to a random sample of settler households. To ensure anonymity, we asked that any adult in the household fill out the survey and send it back in a stamped, addressed envelope. We obtained 656 responses (38% women, 62% men). The electronic supplementary material contains more details about the sampling procedure.

*Measures.* Dependent variables were attitudes towards participation in illegal non-violent protest acts, and in acts of political violence. Respondents were asked to indicate whether they had participated in each of these acts in

the previous 5 years (coded 1 ‘no’ or 2 ‘yes’ for each act) and indicated their intentions to engage in each behaviour in the event that their settlement was to be dismantled in the context of a peace agreement (coded 1 ‘would never do’, 2 ‘might do’ or 3 ‘would do’ for each act). Weighted intentions were created for each protest act by multiplying intention scores by scores on past participation. Two dependent variables were then computed ( $\alpha$ 's > 0.7) to index the degree to which an individual was prone to participate in: *illegal non-violent acts* (mean of weighted intentions to block roads, illegally occupy lands and disobey legal or military order); and *acts of political violence* (mean of weighted intentions to take part in acts of violence against Palestinians or against Israelis enforcing a peace deal).

The first predictor variable was effectiveness. Participants were asked whether each type of act is generally effective when Israelis use them to push for change. (1 ‘not at all effective’ to 4 ‘very effective’). Two separate indexes of perceived effectiveness were computed for illegal non-violent acts and acts of political violence, respectively ( $\alpha$ 's > 0.7). The second predictor variable was ‘righteousness’ (‘*mtzodek*’), intended to index the degree to which different acts were perceived to be morally mandated. Participants were asked to rate the extent to which each act was ‘righteous’ (1 ‘never’ to 4 ‘always’). Two indexes of perceived righteousness were computed for illegal non-violent acts and acts of political violence, respectively ( $\alpha$ 's > 0.61).

*Results.* Using multiple regression, we regressed weighted willingness to take part in violent and non-violent illegal acts on the two predictor variables controlling for gender, age, income, education level, marital status and perceived ‘relative deprivation’ (calculated by taking the mean of responses to three items where participants were asked to indicate on a 7-point scale (1 ‘completely disagree’ to 7 ‘completely agree’) the degree to which they felt that the peace process was unjust, violated their expectations for Israel and their ‘community’ ( $\alpha = 0.87$ )). For brevity, we only present the results of statistically significant control variables.

- *Willingness to take part in political violence.* Perceived righteousness but not perceived effectiveness predicted willingness to take part in political violence. Perceived effectiveness uniquely accounted for less than 0.01 per cent of variance in weighted willingness to take part in non-violent illegal acts ( $p = 0.69$ ), while perceived righteousness uniquely accounted for 11.56 per cent of variance ( $B = 0.33$ ,  $s.e. = 0.04$ ,  $t = 8.89$ ,  $p < 0.001$ ). All other variables each uniquely accounted for less than 0.3 per cent of the variance. Of the control variables, only gender was significant: women were less likely than men to be willing to take part in political violence ( $B = -0.11$ ,  $s.e. = 0.03$ ,  $t = -3.17$ ,  $p = 0.002$ ). In a separate regression, we investigated whether there was an interaction between gender and perceived effectiveness, finding no significant effect ( $p = 0.23$ ).
- *Willingness to take part in non-violence.* By contrast, effectiveness did predict willingness to take part in non-violence. Perceived effectiveness uniquely accounted for 3.04 per cent of the variance. For each unit increase in perceived effectiveness, weighted

Table 1. Support for political violence was relatively insensitive to quantity. (The data are means  $\pm$  s.d.; in all cases, higher numbers indicate that support is more contingent on the scope of success. In each experiment, means from the diplomatic and military conditions are different from each other at  $p < 0.050$ .)

study	sample	diplomatic condition	military condition	dependent variable
2	USA	58.14 $\pm$ 48.65	12.48 $\pm$ 24.48	number of hostages required to be saved
3	USA	52.09 $\pm$ 41.17	13.5 $\pm$ 29.19	number of attacks required to be deterred
4	Nigeria	61.92 $\pm$ 42.85	27.15 $\pm$ 36.66	number of hostages required to be saved
5a	Palestine	0.72 $\pm$ 0.45	0.56 $\pm$ 0.53	extent to which support decreases when 10 instead of 100 hostages are saved
5b	Palestine	0.32 $\pm$ 0.51	0.21 $\pm$ 0.51	extent to which support decreases when 90 instead of 100 hostages are saved

willingness to take part in non-violent illegal acts was predicted to change by 0.316 rating-scale units ( $B = 0.316$ , s.e. = 0.053,  $t = 6.01$ ,  $p < 0.001$ ). Perceived righteousness uniquely accounted for 9.6 per cent of variance in weighted willingness to take part in non-violent illegal acts ( $B = 0.622$ , s.e. = 0.061,  $t = 10.11$ ,  $p < 0.001$ ). All other variables each uniquely accounted for less than 2 per cent of the variance in willingness to take part in non-violent but illegal protest. Women were less likely than men to be willing to take part in non-violent illegal protest ( $B = -0.27$ , s.e. = 0.08,  $t = -3.42$ ,  $p = 0.001$ ), as were the more educated ( $B = -0.02$ , s.e. = 0.008,  $t = -2.46$ ,  $p = 0.014$ ). In a separate regression, we again investigated whether there was an interaction between gender and effectiveness, finding no significant effect ( $p = 0.15$ ).

**Discussion.** Participants' evaluations of the effectiveness of political violence were unrelated to their willingness to participate in political violence. By contrast, willingness to take part in non-violent illegal acts was predicted by perceived effectiveness. Willingness to take part in both violent and non-violent acts was predicted by the perceived righteousness of such acts, a measure intended to index the extent to which an act was perceived to be morally mandated. This study was notable for sampling a population in a politically violent context, for using a realistic scenario centrally important to the lives of the participants. In this study, 'effectiveness' was undefined, so that we avoided closed-world assumptions of the researchers as to what effectiveness might mean in this context. In studies 2–6, we used experiments to more directly examine the proposition that people are relatively insensitive to quantitative indicators of success when making decisions about support for deadly intergroup violence.

#### (b) Study 2: rescuing hostages

Framing the outcomes of choices (such as in terms of gains or losses) can change risk preferences and how people think about maximizing preferred consequences (cf. [51]). For instance, choices in the economic marketplace are strongly sensitive to changing quantitative indicators of price. However, once choices have moral connotations, people may show less sensitivity to quantity [52,53]. If decisions about war are processed in a deontological rather than in an instrumentally rational manner, decisions about support for war should be relatively insensitive to quantitative indicators of success. In the following experiment, we gave people one policy

option—framed as either a 'military' or 'diplomatic' option—to deal with a hypothetical hostage-taking crisis and asked them how many hostages needed to be rescued for them to support that option. In other words, we measured how sensitive their support for that option was to its consequences.

**Participants and design.** Fifty students (48% women, 52% men) at a college campus in the USA were randomly assigned to one of two conditions: diplomatic option or military option. No gender differences were found in studies 2–6.

**Procedure and materials.** Participants were approached by another student individually in public spaces around the campus and were asked to volunteer to anonymously participate in a short decision-making study. Those that consented read a scenario describing 'Country X' that had a brutal history of capturing, torturing and killing hostages (see the electronic supplementary material for additional details and pre-test). They then read the following:

Now 100 more innocent US citizens have been captured and are being held hostage by 'Country X'. 'Country X' is expected to torture and kill all the hostages. Imagine that you need to decide how to resolve this crisis. While there are several options available you now need to make a choice about using a (military/diplomatic) option to rescue the hostages.

Participants were first asked whether 'you would approve of (the use of military force against/negotiating with) Country X if you knew that all the hostages would be saved?' Over 80 per cent of participants in both conditions approved of their respective options given complete success,  $\chi^2(1, n = 51) = 0.214$ , n.s. Sensitivity to quantity was evaluated by then asking participants who approved of their option given complete success to indicate the lowest number of hostages (between 1 and 100) that they required to be freed by the use of negotiation or armed force (depending on the experimental condition) for them to continue to support the option they were evaluating instead of other unspecified options.

**Results and discussion.** As predicted, support for the use of military force was relatively insensitive to the number of rescued hostages. The median (and modal) response for those in the military condition was 1, compared with a median (and modal) response of 100 in the diplomatic condition (table 1;  $z = -2.55$ ,  $p = 0.01$  by Mann–Whitney  $U$ -test).

This experiment supported the proposal that decisions to approve war would be insensitive to quantity. While the

direction of the result was expected, the size of the effect was noteworthy. Note that this response cannot be attributed to a sense that the military response was more favoured than the diplomatic response. The pre-test demonstrated that both responses were seen as equally right and justified, and given complete success, participants in both conditions were equally likely to support the option they were evaluating. Interestingly, while decisions about war were insensitive to quantity, decisions about diplomacy were hypersensitive to quantity. It appears that participants in both conditions were reasoning deontologically, but the experimental manipulation influenced attentional processes that can lead morally motivated decision-makers to be either insensitive or hypersensitive to consequences [54]. In the diplomatic condition, where the means (negotiation) were mundane, participants appear to have attended to the moral value of the lives of the hostages, leading them to demand complete success. However, in the military condition, participants ignored the lives of the hostages in their calculations—their attention appears to have been focused on the means.

#### (c) *Study 3: attacks deterred*

In study 3, we tested the possibility that participants in the military condition in study 2 were trading off short-term instrumental success for the greater long-term benefits of deterring future attacks. In study 3, we made the dependent variable the deterrence of ‘100 planned attacks by Country X’ rather than the immediate rescue of the hostages.

*Participants and design.* Sixty-seven participants were recruited from public discussion boards on the Internet to participate in an online study of ‘political decision-making’. All were US citizens, the median age was 25, 57 per cent of participants had some college education and 35 per cent were women.

*Procedure and materials.* Participants were randomly assigned to make a decision about either a diplomatic or a military option, responding to a scenario that was identical to the one used in study 1, with one exception. In this experiment, participants were not told to consider the effectiveness of their option in securing the release of the hostages. Instead, they were told that Country X was planning 100 similar attacks against US citizens in the future and were asked whether they would approve of the military or diplomatic option ‘if you knew that the (military/diplomatic) option would deter ‘Country X’ from launching any attacks in the future?’.

Given complete success in deterring attacks, both options were equally attractive, with more than 90 per cent of participants in both conditions approving,  $\chi^2_{1,49} = 0.579$ , n.s. To measure sensitivity to quantity, participants were asked to indicate the fewest number of future attacks (between 1 and 100) that they required Country X be deterred from by the use of the military or diplomatic option (depending on condition) for them to continue to approve of the option they were evaluating.

*Results and discussion.* Support for the military option was again relatively insensitive to quantity, in this case to the number of future attacks deterred. To ensure continued support, those in the military condition required a median of only one future attack (also the modal

response) to be deterred compared to a median of 60 in the diplomatic condition (table 1;  $z = -3.92$ ,  $p < 0.001$  by the Mann–Whitney  $U$ -test). Note that in this study, where the end was deterrence rather than the lives of the hostages, participants in the diplomatic condition were no longer hypersensitive to consequences. That is, participants in the diplomatic condition appeared to make choices in a more instrumentally rational manner.

#### (d) *Study 4: Nigerian hostages*

In study 4, we began to examine the extent to which findings from studies 2 and 3 might be consistent across cultural and political contexts. Apart from the general possibility that different cultures may construe political violence differently, it seems sensible to suggest that those with a greater experience of political violence might tend to reason more in instrumentally rational terms about war. While in recent years the USA has had some experience with political violence, it is likely that for most of our participants such experience would be quite removed from their everyday lives. To begin to examine this issue, we sought to replicate study 2 using a sample recruited in the streets of Lagos, Nigeria. Nigerians have experienced a significant amount of recent violent political conflict. Between 1999 and 2007, inter-communal violence in Nigeria has caused approximately 13 000 deaths and has displaced three million people from their homes.

*Participants and design.* Thirty participants were recruited in public areas around Lagos, Nigeria, to participate in a study on political decision-making. All were Nigerian citizens, the median age was 22, 53 per cent were women and 27 per cent of participants had some college education. Again, half were randomly assigned to a military and half to a diplomatic condition.

*Procedure and materials.* This experiment was identical to experiment 1 in all but two details: (i) the hostages captured by Country X were Nigerian citizens, and (ii) in the second stage of the experiment, we repeated the reminder that there were non-military options (for participants in the military condition) or non-diplomatic options (for participants in the diplomatic condition) available.

*Results and discussion.* In the first stage of the experiment, where participants in both conditions were told all the hostages could be saved, 80 per cent of participants in the diplomacy condition, and 67 per cent of participants in the military condition approved of their respective options,  $\chi^2_{1,29} = 0.682$ , n.s. Again, however, support for the military option was relatively insensitive to quantity. In the second stage of the experiment, the median and modal response of those in the military condition was 1, whereas the median response of those in the diplomatic condition was 80 (table 1;  $z = -1.99$ ,  $p = 0.046$  by the Mann–Whitney  $U$ -test).

#### (e) *Study 5: Palestinian hostages*

We further examined cross-cultural variability in two experiments carried out with a sample of Palestinians residing in the West Bank and Gaza. This is a population of people who experience political violence as part of their everyday life. For example, we recently surveyed a representative sample of Palestinians adults asking about their

experience with violence. Twenty five per cent of participants reported seeing ‘right in front’ of them other Palestinians who had been injured or killed by Israeli forces and 41 per cent reported that friends or acquaintances had died as a result of political violence.

*Participants and design.* Seven hundred and twenty Palestinian adults were recruited in 14 university campuses across the West Bank and Gaza to participate in a survey. Approximately half of these participants were women, and half were members of Hamas or Palestinian Islamic Jihad. Participants were first randomly assigned to participate in experiment 5a (measuring sensitivity to large changes in quantity) or experiment 5b (measuring sensitivity to small changes in quantity). Then, participants were randomly assigned to either the diplomatic or military condition.

*Procedure and materials.* These experiments used a modified method where participants were randomly assigned to make a decision about either a diplomatic or a military response to a hostage-taking scenario that entailed 100 Palestinians captured by ‘Zionist extremists’ (electronic supplementary material). Again, participants were told that while other options were available, they needed to consider ‘right now’ whether they would support a ‘military’ or ‘diplomatic’ option (depending on condition) if ‘you knew that all the Palestinians would be saved?’.

Participants in both conditions could answer ‘yes’ (scored as 1), ‘not sure’ (scored as 0.5) or ‘no’ (scored as 0). To measure sensitivity to quantity, we then asked participants to indicate their support, using the same scale, if fewer hostages would be saved. In experiment 5a, participants were told in the second stage of the experiment that only 10 hostages would be saved (a large change in quantity), and in experiment 5b, participants were told in the second stage of the experiment that only 90 hostages would be saved (a small change in quantity).

*Results and discussion.* Sensitivity to quantity was determined by subtracting the support score in the second stage of the experiment from the support score in the first stage of the experiment. We found that support for military action was less sensitive to large and small changes in quantity (in experiments 5a and 5b, respectively) than was support for diplomacy (table 1; experiment 5a,  $z = -3.02$ ,  $p = 0.003$ ; experiment 5b,  $z = -2.07$ ,  $p = 0.038$  by the Mann–Whitney  $U$ -test).

#### (f) *Study 6: risk preferences and framing effects*

The preceding experiments used scenarios that incorporated descriptions of vivid violations of moral norms. The acts of Country X (in studies 2–4) and of Zionist extremists (in study 5) were designed to create the perception that violence was morally mandated, leading to non-instrumental support for war. However, our theory also predicts that opposition to deadly intergroup violence would be similarly non-instrumental.

We tested the prediction that decisions to either support or *oppose* war use the logic of deontology by examining preferences for risk-taking. As Tversky & Kahneman [51] first demonstrated, people are attracted to risky options to avoid material losses, but are averse to risk when thinking about material gains. This finding, called a ‘framing effect’, is typically very robust, but can disappear when people are making moral choices [55].

Thus, if decisions about supporting war are processed deontologically, instrumental preferences for risk may be trumped by the moral desirability of violence, negating framing effects.

*Participants and design.* Three hundred and eighty five students (49% women, 51% men) at the University of Michigan agreed to participate in a ‘decision-making study’. This experiment used a 2 (vivid moral violation scenario or no-vivid moral violation scenario)  $\times$  2 (gain frame versus loss frame)  $\times$  2 (military gamble versus diplomatic gamble) between-subjects design.

*Materials.* Participants responded to a modified version of the ‘Asian disease problem’ [51], with the present version involving 600 civilians held hostage by ‘Country X’, and were given a choice between a diplomatic and military option to deal with the situation. Participants assigned to the no-vivid violation scenario were simply told that ‘Country X’ was threatening to kill 600 US civilians it had taken hostage. Participants in the vivid violation scenario were additionally told of atrocities committed by Country X (as in study 2). Although both scenarios involved a materially identical problem (the fate of 600 hostages), we expected that the vividly immoral actions of Country X would create a moral mandate for a military option, whereas their absence would create a moral preference for the diplomatic option (electronic supplementary material).

Participants were asked to make a choice between two plans to deal with this crisis: a gamble and a ‘sure thing’ of equal expected utility. Some participants chose between these two choices framed as choices between losses, while others had to choose between the same two options framed as choices between gains. In a pre-test, where the options (gamble, sure thing) were given innocuous labels (such as ‘plan A’, ‘plan B’), typical framing effects were found irrespective of scenario type. That is, overwhelming majorities preferred the gamble under the loss frame and the sure thing under the gains frame. This occurred both when the scenario included a vivid moral violation and when it did not (see the electronic supplementary material).

In this study, one of the options was labelled the ‘military plan’ and the other labelled the ‘diplomatic plan’ such that we manipulated which type of option was the gamble and which was the sure thing in each choice set. For example, for participants in the military gamble condition, the gamble was labelled a ‘military plan’ (the sure thing a ‘diplomatic plan’). For those in the diplomatic gamble condition, the gamble was labelled a ‘diplomatic plan’ (the sure thing a ‘military plan’). The choice sets are listed below.

#### — *Losses frame*

- (i) If the (military/diplomatic) plan is adopted, 400 hostages will die.
- (ii) If the (diplomatic/military) plan is adopted, there is a one-third probability that no hostages will die and a two-third probability that 600 hostages will die.

#### — *Gains frame*

- (i) If the (military/diplomatic) plan is adopted, 200 hostages will be saved.
- (ii) If the (diplomatic/military) plan is adopted, there is a one-third probability that all hostages will be saved and a two-third probability that no hostages will be saved

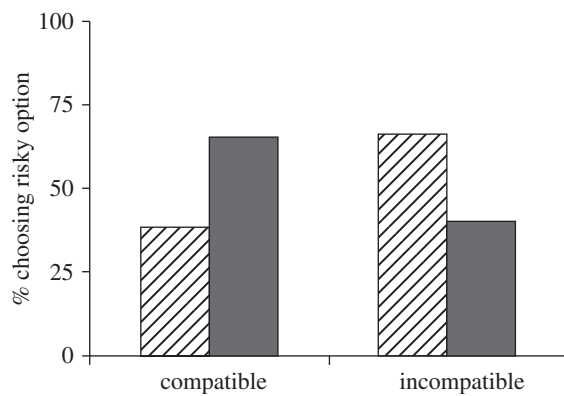


Figure 1. Percentage of participants choosing risk when choices are framed as ‘gains’ (‘hostages will be saved’ striped bars) or losses (‘hostages will die’ black bars) as a function of the compatibility of moral and instrumental preferences.

With this design, instrumental preferences with respect to risk were sometimes compatible and sometimes clashed with putative moral preferences to endorse or oppose military options. Consider, for example, conditions where participants responded to the vivid violation scenario (mandating a military response) where options were framed under losses resulting in an instrumental preference for the gamble. Here, if the military option was the gamble, instrumental and moral preferences were compatible; if the diplomatic option was the gamble, instrumental and moral preferences clashed. The conditions of interest were those where moral preferences clashed with instrumental preferences (electronic supplementary material, table S2).

*Results and discussion.* As expected, the effect of gain/loss framing on the tendency to choose the gamble was moderated by the compatibility of moral and instrumental preferences (Wald = 25.88,  $p < 0.001$ ; figure 1). When moral and instrumental preferences were compatible, the typical framing effect was found; risky choices were more likely under losses than under gains (Wald = 13.48 (95% CI for odds ratio (OR) = 1.66–5.32),  $p = 0.002$ ).

However when moral and instrumental preferences clashed, the preferences for risk were reversed; the predicted odds of choosing the risky option were *lower* by a factor of 0.34 under the losses than under gains (Wald = 12.43 (95% CI for OR = 0.19–0.62),  $p = 0.004$ ). To illustrate: (i) in the vivid violation condition, the military gamble option dominated the no-risk diplomatic option under gains (as well as under losses) and the no-risk military option dominated the diplomatic gamble option under losses (as well as under gains); but (ii) in the no-vivid violation condition, the diplomatic gamble option dominated the no-risk military option under gains (as well as under losses) and the no-risk diplomatic option dominated the military gamble option under losses (as well as under gains). Thus, moral preferences trumped instrumental preferences, leading to a reversal of typical preferences for risk when participants were deciding to support or oppose war.

## 5. GENERAL DISCUSSION

Five experiments and one survey demonstrated that people making judgements about whether to oppose or to support war use the logic of deontology rather than

the logic of instrumental rationality. Participants were relatively insensitive to material consequences or to instrumental preferences regarding risk when making choices about the use of intergroup violence. It is important that these studies be seen as a whole as each has its strengths and weaknesses. While study 1 used only correlational methods, its strength was its realism and the open way ‘effectiveness’ was defined. By contrast, studies 2–6 used different experimental methods to compare reasoning about violent versus non-violent acts, yet it was necessary to narrowly define the meaning of ‘success’ in these studies. The participants in these studies varied greatly in their exposure to political violence and came from diverse linguistic, cultural and political contexts. Overall, the use of both survey and experimental methods suggests that these findings are reliable and can be generalized to real-world conflicts.

It is interesting to note that we did not find much in the way of gender effects. In only one study (study 1) did we find that men were more supportive of war than women, and in no study were women more instrumentally rational than men when reasoning about war. The first finding is relatively easily explained: putative sex differences in intergroup aggression generally reside not in support for war but in participation in war [56]. The second finding is more puzzling as prior research has reported that the presence of intergroup conflict leads to more altruistic group contributions by men but not women [57], suggesting that women may be more instrumentally rational than men when reasoning about war. One possible explanation for this discrepancy is that the type of intergroup conflicts we studied here were far more severe than the one studied in Van Vugt *et al.* [57]. That is, there may be gender differences in the thresholds of severity of intergroup conflict necessary to enhance parochially altruistic behaviour. This is merely a tentative hypothesis, but it does seem an interesting avenue for future inquiry.

This research has significant implications for understanding the trajectory of violent intergroup conflicts. For example, because support for diplomacy is more sensitive to consequences than support for violence, it follows that support for diplomacy will also be more sensitive to fluctuating fortunes. Proponents of violent resolutions to intergroup conflict may find it easier to mobilize consistent popular support than proponents of diplomatic solutions. A related implication is that proponents of non-violent alternatives are likely to find it relatively difficult to mobilize popular support by questioning the efficacy of violence. Instead, a more productive method may be to challenge the very notion that violence is morally mandated.

Might political or military leaders reason about deadly intergroup violence in a more instrumentally rational manner than the participants in our studies? Because group prototypicality is an important quality of leadership [58], this appears unlikely. In our previous research, we have found non-instrumentally rational responses to violation of sacred values by ordinary people [23] reflected in the responses of leaders [59]. Nevertheless, this could be an important topic for future work. Future research could, for example, repeat these experiments while also manipulating or priming leadership roles.

Future research could also explore the boundaries of these findings. For example, it would be interesting to investigate how sensitive support for war is if the prospects of success are reduced to zero. Here we showed that support for war is less sensitive to cost and benefit reasoning than support for other options (e.g. diplomacy). Future research could investigate sensitivity to zero prospects of success. While the literature does not provide a clear answer, studies show that those who reason by their feelings, the proposed mechanism behind moral or deontological decision-making [60], are sensitive to the presence or absence of some stimuli but relatively insensitive to the extent of that stimuli (unlike those reasoning by calculation who are highly sensitive to the extent of a stimuli [61]). Using this as the standard, we would predict that participants reasoning about war may be sensitive to the existence of the presence of some stimuli (e.g. the rescue of a single hostage) but insensitive to further increments of success (as we show here). Nevertheless, there is empirical evidence suggesting that support for violence sometimes increases when material incentives not to fight are increased [23] and anecdotal evidence suggests that sometimes people will fight even after complete failure [62,63] or when there are no prospects of success [64].

Our results undermine assumptions that choices about deadly inter-group violence are based primarily on instrumental calculations and material consequences [4–8,10]. Complementing prior work suggesting that ingroup altruism may have evolved because of the advantages it provides in the context of intergroup violence [1,37,38,40], we show that decisions about use of war appear to be bounded by rules of deontological reasoning, leading to judgements that can be strikingly insensitive to risks and outcomes.

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