

Religion, group threat and sacred values

Hammad Sheikh* Jeremy Ginges* Alin Coman† Scott Atran‡

Abstract

Sacred or protected values have important influences on decision making, particularly in the context of intergroup disputes. Thus far, we know little about the process of a value becoming sacred or why one person may be more likely than another to hold a sacred value. We present evidence that participation in religious ritual and perceived threat to the group lead people to be more likely to consider preferences as protected or sacred values. Specifically, three studies carried out with Americans and Palestinians show: (a) that the more people participate in religious ritual the more likely they are to report a preference to be a sacred value (Studies 1–3); (b) that people claim more sacred values when they are reminded of religious ritual (Study 2); and (c) that the effect of religious ritual on the likelihood of holding a sacred value is amplified by the perception of high threat to the in-group (Study 3). We discuss implications of these findings for understanding intergroup conflicts, and suggest avenues for future research into the emergence and spread of sacred values.

Keywords: sacred values, protected values, group threat, Palestinians, religiosity, ritual.

1 Introduction

Intergroup conflicts become particularly difficult to solve when communities transform preferences (such as rights to water sources or land) into protected or sacred values (Baron & Spranca, 1997; Tetlock, 2003). Neuroimaging studies and behavioral research suggest that people process sacred values in terms of associated deontological rules rather than their utilitarian value (Berns et al., 2012; Ginges et al., 2011; Tetlock et al., 2000). Specifically, when people transform preferences into sacred values they appear to use rules that govern reasoning about religious values, regarding as taboo any attempt to treat sacred values as fungible with secular goods. Ironically, the more money or material things one offers to encourage people to make concessions over their sacred values, the more resistant people seem to be to compromise. Thus, standard negotiation techniques of offering people added material incentives (or threatening disincentives) to encourage compromise backfire when sacred values are involved (Ginges, Atran, Medin & Shikaki, 2007; Ginges & Atran, 2008; Ginges & Atran, 2009b; Ginges & Atran, 2011; Sachdeva & Medin, 2009; Dehghani et al., 2009; Dehghani et al., 2010).

Given the influence of sacred values on decision making, it seems important to understand how values acquire sacredness and to explain why some people are more likely than others to think of their preferences as sacred values. While many sacred values have deep historical roots, others can acquire sacredness quite quickly (Dehghani et al., 2009; Dehghani et al., 2010; Rozin & Wolf, 2008). Famously, Gandhi transformed salt into a sacred value as part of his opposition to British colonial rule (Spear, 1990). In this paper, we report the first steps of a research program investigating this process. Our research was guided by two ideas: first, people may confer sacredness on preferences, objects or practices by incorporating these preferences into religious rituals (Alcorta & Sosis, 2006) thus expanding the category of religious values to include previously secular preferences (Rozin, 1999); and second, that this process is more likely to occur under conditions of high perceived group threat. We report a series of studies that begin to test these assertions.

1.1 Religiosity, conflict, and sacred values

It is important to note that the term “sacred value” is not synonymous with “religious value”. As we shall discuss, even the most mundane material thing may be thought of as a sacred value. Instead, the term “sacred value” denotes a way of thinking about a preference. Specifically, the application of a decision making rule that treats as prohibited any attempt to value that preference along a material scale. In this way, people will make decisions about a sacred value with no explicit religious content (such as the right to a nuclear energy program) in the

Studies 1 and 2 were supported by grants from NSF and ARO. Study 3 was funded by NICHD and AFOSR. We thank Jon Baron and two anonymous reviewers for comments and suggestions. Send correspondence to either Hammad Sheikh (sheikh60@newschool.edu) or Jeremy Ginges (gingesj@newschool.edu)

*Department of Psychology, New School for Social Research

†School of Information Sciences, University of Pittsburgh

‡Centre National de la Recherche Scientifique—Institut Jean Nicod, University of Michigan, and John Jay College of Criminal Justice

same way as they make decisions about a sacred value with obvious religious content (such as a holy site).

Defining the sacred as opposed to the profane, Durkheim (1912/1995) suggested that religious rituals imbue otherwise secular and sometimes mundane phenomena (objects, events, persons, places) with sacredness. Adherents to a religion think differently about things that have been incorporated within religious ritual, investing them with emotional content and meaning that separates them from profane things. For example, once water is incorporated into a ritual it becomes, in that context, “holy” water (see Alcorta & Sosis, 2005, for an excellent review of this process). Once a value becomes sacred, distinct decision making rules are thought to apply. For example, it becomes forbidden to think of sacred values as just another fungible value with a given utility that can be measured along a common scale (Ginges et al., 2007). One should not, for instance, barter one’s child for money.

Why might a group of people transform a secular preference into a sacred value? One idea is that they might do so when a particular preference becomes threatened by other groups (Atran & Axelrod, 2008). Two related processes might lead people who perceive threat to their group to be more likely to think of group preferences as sacred values. Firstly, intergroup disputes that threaten a preference may lead the threatened group to incorporate that preference within religious ritual, thus transforming it into a sacred value. Apart from dividing the world into separate sacred and profane domains, group specific sacred values also separate human groups more closely, defining whom we should trust and cooperate with. Thus, religious ritual is thought to have an important role in conferring group specific designations of sacredness to objects, preferences, and practices and to enhancing strong group identity. Second, evidence suggests that people may engage in ritual more often and that rituals become more costly, as perceived threat to the group increases. A large body of research suggests that people may engage in collective religious ritual as a means of enhancing commitment to the in-group via collective costly signals of commitment to shared group norms (Alcorta & Sosis, 2005; Atran & Henrich, 2010; Atran & Norenzayan, 2004; Henrich, 2009; Ginges, Hansen & Norenzayan, 2009). Indeed, a survey of societies in the Human Relations Area Files reveals that intense group competition and conflict are associated with costlier rituals (Sosis, Kress & Boster, 2007), and evidence suggests that a belief in moralizing gods is greater for groups experiencing significant resource threats (Norenzayan & Shariff, 2008; Atran & Henrich, 2010). Thus, while previous research shows how sacred values may block rational resolution to intergroup conflicts (Ginges, Atran, Sachdeva & Medin, 2011), intergroup conflict may also increase the

likelihood of people linking issues under dispute with religious values via ritual, thus transforming those issues into sacred values.

In this paper, we report three empirical studies that tested specific hypotheses drawn from these broad theoretical assertions regarding the interactive roles of religious ritual and group threat in the creation and spread of sacred values within a community. Specifically, we predicted: (1) that the more an individual took part in religious ritual, the more likely he or she would be to report a preference to be a sacred value, even in cases where these preferences had no obvious religious content (Study 1 and Study 3); (2) that priming reminders of religious ritual would cause people to claim more sacred values (Study 2); and (4) that the effect of participation in religious ritual on the likelihood of holding sacred values will be accentuated under conditions of high perceived threat to the in-group (Study 3).

2 Study 1: Participation in religious ritual and endorsement of sacred values

As a first step in our research program, we conducted a study with US citizens to test whether individuals who participate in religious ritual more often would be more likely to report preferences as sacred values. Additionally, we assessed need for cognitive closure (Webster & Kruglanski, 1994) and disgust sensitivity (Haidt, McCauley & Rozin, 1994), two constructs that have been linked to moral and political decision-making and so were reasonable alternate predictors of individual differences in the extent to which people hold sacred values (e.g., Inbar, Pizarro, Iyer & Haidt, in press; Jost, Glaser, Kruglanski & Sullaway, 2003).

The expectation that need for closure would be associated with holding sacred values stems from the notion that people with a high need for closure are motivated by a preference for structure and a low tolerance of ambiguity (Kruglanski & Webster, 1996). Early anthropological work on sacred values posited that such values serve precisely this need: to structure an inherently ambiguous world to provide a sense of order, meaning, and predictability (Eliade, 1959; Douglas, 1966). While this hypothesis has not been directly tested to our knowledge, indirect evidence is supportive. Specifically, Calogero, Bardi and Sutton (2009) report a positive relationship between need for closure and prioritizing personal values of conformity, tradition, and security.

The expectation that disgust sensitivity could be associated with sacred values rests on the notion that transforming a preference to a sacred value is a way of mor-

alizing that preference. Although the precise relationship between feelings of disgust and moral judgment remains unclear, a large body of evidence links momentary feelings of disgust, or general sensitivity to disgust, with the intensity of one's moral judgment (Pizarro, Inbar & Helion, 2011). Given that Berns et al. (2012) found that people overwhelmingly report to hold a sacred value because of moral concerns (rather than concerns about the costs and benefits to society), it seemed sensible to expect that higher disgust sensitivity might predict the likelihood of people reporting their preferences as sacred values.

2.1 Method

2.1.1 Participants and procedure

Three hundred and thirty four participants (164 females, 165 males, 5 did not indicate gender) of ages ranging from 21 to 69 ($M = 42$) were recruited for a "survey on values" via Craigslist and received a compensation of \$5. Participants in the survey were first presented with our measure of sacred values.

2.1.2 Sacred values measure

We used a measure for sacred values developed by Berns et al. (2012). The measure consists of a list of 62 pairs of opposing statements expressing values (e.g., "I believe in God" vs. "I don't believe in God") and preferences (e.g., "I am a Mac" vs. "I am a PC"). For each pair, respondents pick one of the two opposing statements, and are then asked if there is a dollar amount they would accept to switch their position on the given issue. People who refuse this material trade-off are categorized as holding the relevant preference as a sacred value. In Berns et al. (2012), such self-reports of a sacred value strongly predicted whether or not participants were willing to auction off their value for a real monetary reward. To limit the length of our survey, we split this list into two sets containing 31 pairs of statements each. After giving consent, participants were presented randomly with one of the two sets. The number of statements that a participant refused to trade-off was summed up into a measure of total sacred values ($M = 22.23$, $SD = 7.20$, ranging from 0 to 31), after factor analysis suggested the extraction of one factor. Across the two sets of statements, participants did not differ in terms of the total number of sacred values, $t(332) = .13$, $p = .89$. Because the number of sacred values was negatively skewed, we applied a Box-Cox transformation ($\lambda = 1.9$) as suggested by Venables and Ripley (2002), resulting in a sacred values score closer to a normal distribution ($M = 14.35$, $SD = 6.71$). This sacred values score was used in subsequent analyses.

2.1.3 Predictor variables

Participants indicated their need for closure (Kruglanski, Webster & Klem, 1993) by evaluating 16 statements (e.g., "Any solution to a problem is better than remaining in a state of uncertainty") on a 6 point scale ranging from "totally agree" to "totally disagree" ($M = 3.53$, $SD = .75$, Cronbach's $\alpha = .84$). They also indicated their disgust sensitivity (Haidt, McCauley & Rozin, 1994, modified by Olatunji, Willaims & Tolin, 2007) by evaluating 12 statements (e.g., "It would bother me tremendously to touch a dead body") on a 5 point scale ranging from 'totally agree' to 'totally disagree' ($M = 3.21$, $SD = .71$, Cronbach's $\alpha = .80$). To assess religiosity, we asked participants to indicate how often they prayed and how often they attended church, mosque or a temple, on a 5-point scale ranging from "never" to "daily". These measures were strongly correlated, $r = .54$, $t(326) = 11.46$, $p_{\text{one-tailed}} < .001^1$, so we averaged the two into a measure of religiosity ($M = 2.96$, $SD = 1.21$). After responding to a number of demographic questions, the participants were debriefed and given contact information for questions and comments.

2.2 Results and discussion

The extent of participation in religious ritual was correlated with the number of reported sacred values: $r = .10$, $t(326) = 1.76$, $p_{\text{one-tailed}} = .040$. Notably, neither the need for closure measure nor the disgust sensitivity measure were positively correlated with the sacred value score, $t(311) = -1.31$, $p_{\text{one-tailed}} = .905$ and $t(317) = -1.07$, $p_{\text{one-tailed}} = .857$, respectively. Religiosity remained a positive predictor of the sacred values score, $\beta = .11$, $t(317) = 2.02$, $p = .044$, after controlling for the potentially confounding variables of gender, age, political affiliation, and education in a regression analysis (see Appendix A for the regression table).

Religious ritual was positively correlated with sacred values that had religious content, and sacred values with no obvious religious content. We created two separate sacred value scores: one comprising the statements that relate to religion (e.g., "I believe in God."), and one that included statements that are not religious (e.g., "There are too many restrictions on gun ownership."). Both measures were negatively skewed and were transformed using a Box-Cox transformation ($\lambda = .32$, and $\lambda = 2.4$, respectively) before further analysis. As expected from the factor analysis, both scores were strongly correlated, $r = .76$, $t(332) = 21.194$, $p < .001$. Religiosity was positively related with both scores, $r = .11$, $t(326) = 2.006$, $p_{\text{one-tailed}} = .023$ and $r = .10$, $t(326) = 1.768$, $p_{\text{one-tailed}} = .039$, respectively.

In summary, the more frequently participants took part in religious rituals, the more they considered their preferences to be sacred values. This was true for preferences pertaining to religious topics as well as for those that did not have any religious content. In contrast, disgust sensitivity and—more surprisingly—cognitive need for closure were not related to our sacred values measure. These null results suggest that we should cast a more critical eye on these motivational accounts for sacred values. However, because of the theoretical strength of these accounts, we believe that further research is necessary before they should be discounted.

3 Study 2: Priming religious ritual

The results of Study 1 provide correlative evidence for the hypothesis that greater participation in religious ritual increases the likelihood of people reporting that a preference is a sacred value. In our second study we were interested in investigating whether priming reminders of participation in religious ritual would cause people to claim more sacred values. Question order in surveys has been shown to influence responses because a question primes cognitive constructs that can temporarily influence subsequent questions (Schwarz & Sudman, 1996). Building on this finding, we randomly varied, using a between subjects design, whether participants answered a sacred values questionnaire before or after answering questions about religiosity. This allowed us to test whether reminders of religious ritual would increase the number of preferences (religious or non-religious) that people claim as sacred values.

3.1 Participants and procedure

We recruited 60 U.S. citizens in the New York City area for a short 5 minutes questionnaire on values. Because of missing values on some of the items in the dependent measure, we had to exclude four participants resulting in sample of $N = 56$ (48% were female, the average age was $M = 30$ years, ranging from 18 to 71 years).

In order to keep the questionnaire as short as possible, we used a subset of the statements from the measure of sacred values used in Study 1. Based on our data from Study 1, we selected the most differentiating items (i.e., those that showed the most variance across individuals) and excluded preferences; these changes resulted in a more concise measure of sacred values, which was likely to yield individual differences in a U.S. sample (see Appendix B). As an experimental manipulation, we manipulated the order of the measures: participants were asked about the extent to which they took part in religious ritual (same measures as in Study 1) and the importance of reli-

Table 1: Regression of sacred value score on condition and religiosity.

Predictor	B	SE	t	p
Intercept	10.954	1.204	9.096	<.001
Condition	4.975	1.647	3.201	<.001
Religiosity	.704	.243	2.897	<.001
Cond x Religiosity	-.771	.315	-2.446	.018
N	323			
R ²	.167			
Overall model: $F(3, 47) = 3.981, p = .013$				

gious beliefs in their lives (from 1 “not important at all” to 9 “the most important thing in my life”) either before or after they reported their sacred values. Subsequently, they provided demographic information, were debriefed, and had opportunity to leave comments and give feedback. The interviewers were blind to our research hypothesis.

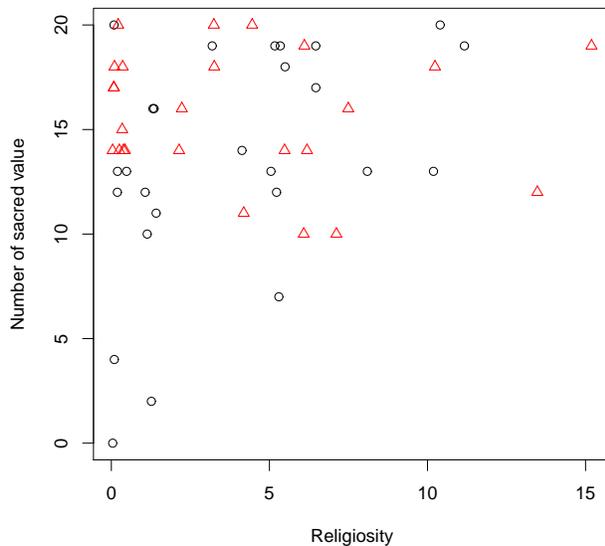
3.2 Results and discussion

The religious prime increased the number of values people claimed to be sacred. We conducted a Welch t-test (because of unequal variances in the dependent measure across conditions) to test our hypothesis. There was a reliable effect of condition on the number of sacred values, $t(39.51) = -1.90, p_{\text{one-tailed}} = .033, d = 0.53$. As expected, people who were reminded of their religiosity beforehand reported more sacred values ($M = 15.85, SD = 3.11$) than those who were not ($M = 13.50, SD = 5.49$). This finding held even when six items containing explicit religious content (e.g., mandatory school prayers) were excluded from the sacred values measure: $t(43.56) = -1.85, p_{\text{one-tailed}} = .036, d = 0.51$.

Subsequently, we explored the influence of the degree of participants’ religiosity on the effect of the religious prime. We combined the three items assessing religiosity (sum of the three religious items minus 3), resulting in a religiosity score ranging from 0–15, $M = 3.67, SD = 3.83$. A regression analysis of number of sacred values on condition and religiosity revealed a negative interaction effect of condition and religiosity (see Table 1). Visual inspection of the interaction (see Figure 1) showed that it stemmed from the fact that the reminder of religiosity led to a ceiling effect of the number of reported sacred values, which in turn led to a collapse of the positive correlation between religiosity and sacred values that could be observed in the other condition, $r = .44, t(24) = 2.419, p_{\text{one-tailed}} = .012$.

An analysis using a religiosity score excluding importance of religious beliefs, thus looking at religious ritual

Figure 1: Interaction between condition and religiosity on the number of sacred values. (Points are jittered horizontally to avoid overlap.)



alone (average of prayer and attendance, intercorrelation $r = .69$, $t(49) = 6.743$, $p_{\text{one-tailed}} < .001$, range = 1–5, $M = 1.83$, $SD = 1.01$), exhibited the same results. There was a positive correlation between religiosity and number of sacred values in the control group ($r = .38$, $t(24) = 2.014$, $p_{\text{one-tailed}} = .028$), which collapsed when participants were reminded of religiosity.

In summary, this study shows that reminders of religious ritual lead people to claim more preferences as sacred values. It is consistent with the general hypothesis that some property of religious ritual affects the emergence of sacred values.

4 Study 3: Religiosity, perceived threat and sacred values among Palestinians

Studies 1 and 2 showed that participation in religious ritual is associated with the likelihood of people regarding their preferences to be sacred; that is, not fungible with material goods. In Study 3, we investigated the proposition that the relationship between participation in religious ritual and transforming preferences into sacred values would be accentuated under conditions of high perceived threat to the in-group in the context of intergroup conflict. We tested this hypothesis in a longitudinal study of Palestinian adolescents living in the context of the Israeli-Palestinian conflict.

4.1 Methods

Sampling Procedures. Data are from four waves of a longitudinal study of 600 Palestinians living in the West Bank (64% of the sample) and Gaza (36% of the sample) carried out by the Palestinian Center for Policy and Survey Research under the direction of Khalil Shikaki. Three waves of data collection were carried out in 2006, 2007, and 2008 with a fourth wave of data collection carried out in 2011. Participants were drawn from three cohorts who were aged 8, 11, and 14 in the initial wave of data collection and were aged 12, 15, and 18 in the fourth wave. On the basis of census maps of the West Bank and Gaza provided by the Palestinian Central Bureau of Statistics, residential areas were sampled proportionally to achieve a representative sample of adolescents in the general population.

Measures. The independent variables were frequency of participation in religious ritual (“religiosity”) and perception of threat (“threat”). To measure participation in religious rituals we computed the average frequency of prayer and of mosque attendance (both ranging from 1 “never” to 5 “daily”, intercorrelation $r = .51$, $t(570) = 14.155$, $p < .001$) across the first three waves of data collection. On average, participants engaged in religious activities from several times a month to several times a week, $M = 3.57$, $SD = 1.11$. To measure perception of threat we computed the average response over the first three years of data collection to the item “Palestinians must always be fearful of danger to their security and safety” (ranging from 1 “strongly disagree” to 5 “strongly agree”). Overall, participants agreed that Palestinians must always be fearful of danger, $M = 3.60$, $SD = .95$.

The dependent variable was assessed in the fourth wave of data collection where we measured if participants saw the sovereignty over East Jerusalem, the right of return, and recognizing the right of the Jewish people to Israel as sacred (see Appendix C for wording of the items). These are three core issues in the Israeli-Palestinian conflict. Any future peace agreement requires a solution over the right of Palestinian refugees to return to the homes they lost during the 1948 war inside what is now Israel, rights to both sides over Jerusalem, and mutual recognition. Participants were categorized as holding the given issue as a sacred value if they claimed to disapprove of a compromise over the issue “no matter how great the benefits” for the Palestinian people.

4.2 Results and discussion

The majority of participants held sovereignty over East Jerusalem (89.7%), right of return (84.1%), and unwillingness to recognize Israel (86.8%) as sacred values. Perceived threat to the Palestinian people and religiosity

Table 2: Logistic regression of holding a sacred value on religiosity and perceived threat.

Predictor	B	SE	z	p
East Jerusalem				
Intercept	4.725	1.669	2.832	.005
Religiosity	-1.109	.448	-2.473	.013
Threat	-.891	.455	-1.958	.050
Threat x Religiosity	.362	.125	2.903	.004
Right of Return				
Intercept	3.137	1.414	2.219	.027
Religiosity	-.651	.390	-1.671	.095
Threat	-.517	.387	-1.335	.182
Threat x Religiosity	.210	.107	1.962	.050
Recognition of Israel				
Intercept	.599	1.442	.415	.678
Religiosity	.420	.437	.962	.336
Threat	.195	.398	.489	.625
Threat x Religiosity	-.071	.118	-.605	.545

ity were positively correlated, $r = .12$, $t(563) = 2.794$, $p_{one-tailed} = .003$.

For two out of three values, we found an interaction effect of religiosity and perceived threat consistent with our hypothesis. For each value, we ran a logistic regression predicting holding a sacred value with religiosity and perceived threat to the Palestinian people, see Table 2.

Figures 2 and 3 show the expected likelihood of sovereignty over East Jerusalem and the right of return as a sacred value, one standard deviation below (low) and above (high) of the means of religiosity and threat.

The results provide support for the prediction that, under perceived threat in the context of group conflict, people who participate in religious ritual are more likely to hold issues that are under dispute as sacred values. This finding is correlative in nature and does not imply causation. However, it is consistent with our hypothesis that in intergroup conflict, group preferences may get transformed into sacred values via religious ritual, leading to situation where the core issues of the conflict become non-negotiable.

5 General discussion

When are people more likely to consider their preferences to be sacred values? We carried out studies with Americans and Palestinians to begin to address this question, finding important roles for participation in religious rit-

Figure 2: Interaction effect of Religiosity and Threat for sovereignty over East Jerusalem: estimated likelihoods one s.d. above and below the mean for each variable.

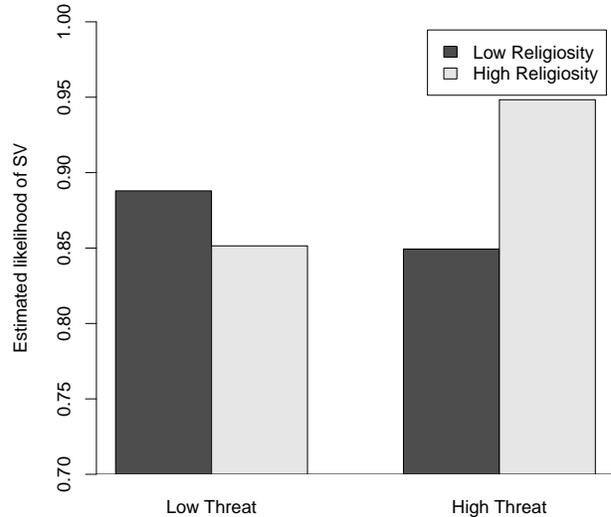
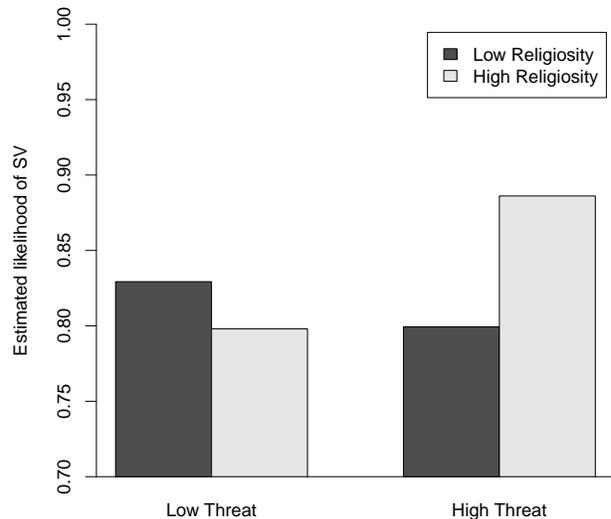


Figure 3: Interaction effect of Religiosity and Threat for the right of return: estimated likelihoods one s.d. above and below the mean for each variable.



ual and perceived threat to one’s group. Specifically: the more people participate in religious ritual the more likely they are to treat preferences as sacred values, and perception of threat to the in-group (e.g., in the context of intergroup conflicts) accentuates the positive relationship between participation in religious ritual and treating disputed values as sacred values.

The results suggest that religion plays an important indirect role in conflict between groups. According to this theory, people are able to “create” sacred values by incorporating values into religious ritual and that this pro-

cess is accentuated by the presence of intergroup conflict. Together with prior work investigating people's reasoning about sacred values in intergroup disputes (Ginges et al., 2011), these findings show how group conflict and sacred values can interact to make conflicts difficult to solve. We should note here that there are likely secular avenues to achieve the same process (Belk, Wallendorf & Sherry, 1989). The use of ritual to pair one sacred value with a non-sacred value, transforming the latter, may be found in non-religious contexts. What is not well known is whether religious rituals are more efficient than non-religious rituals in achieving this result. This may provide a promising avenue for future research.

The studies presented here represent the beginning of a research program. Clearly, more work is needed to directly investigate the social and cognitive processes involved in the emergence of sacred values. Future research needs to examine the narrative processes that link preferences with existing sacred values in group discourse, the incorporation of secular preferences into religious rituals, and test whether both these processes increase during times of perceived threat. In addition, an important topic for future research would be to investigate the biological basis for this process. A final important topic is to investigate the opposing process. While values can lose as well as acquire sacredness, we do not yet know how it is that preferences lose their sacredness.

Our studies strongly suggest that intensity of participation in religious ritual and perceived threat to the group lead people to transform otherwise mundane and secular phenomena into protected or sacred values. In the United States, we found that individuals who participate more in religious ritual, or who are reminded of religious ritual, are more likely to consider personal preferences as sacred values. Among Palestinians, we found that heightened perceptions of intergroup conflict lead people to "sacralize" conflict-relevant preferences in morally absolute terms, thus rendering sensitive political issues on a par with non-negotiable religious values that mark group identity. The greater the perception of threat to the group, the stronger the relationship between displaying social solidarity in religious ritual and treating values disputed with other groups as sacred. To the extent that a group's sacred values, which often involve association with unquestionable and inviolable religious beliefs, are proprietary to the group, they identify cooperators and galvanize solidarity for defense (Atran & Henrich, 2010). But proprietary sacred values also psychologically distance groups from one another, furthering potential for distrust and conflict. Understanding how people may create, maintain and expand the cooperative advantages of sacred values without increasing conflict remains a fundamental challenge for psychological research and public policy.

References

- Alcorta, C. S., & Sosis, R. (2005). Ritual, emotion, and sacred symbols: The evolution of religion as an adaptive complex. *Human Nature, 16*, 323–359.
- Alcorta, C. S., & Sosis, R. (2006). Why ritual works: A rejection of the by-product hypothesis. *Behavioral and Brain Sciences, 29*, 613–614.
- Atran, S. (2003). Genesis of suicide terrorism. *Science, 299*, 1534–1539.
- Atran, S. & Axelrod, R. (2008) Reframing sacred values. *Negotiation Journal, 24*, 221–224.
- Atran, S. & Henrich, J. (2010) The evolution of religion: How cognitive by-products, adaptive learning heuristics, ritual displays, and group competition generate deep commitments to prosocial religions. *Biological Theory, 5*, 18–30.
- Atran, S., & Norenzayan, A. (2004). Religion's evolutionary landscape: Counterintuition, commitment, communion. *Behavioral and Brain Sciences, 27*, 713–770
- Baron, J., & Spranca, M. (1997). Protected values. *Organizational Behavior and Human Decision Processes, 70*, 1–16.
- Belk, R. W., Wallendorf, M., & Sherry, J. F. (1989). The sacred and the profane in consumer behavior: Theodicy on the Odyssey. *Journal of Consumer Research, 16*, 1–38.
- Berns, G. S., Bell E., Capra C. M., Prietula M. J., Moore S., Anderson B., Ginges J., & Atran S. (2012). The price of your soul: neural evidence for the non-utilitarian representation of sacred values. *Philosophical Transactions of the Royal Society B, 367*, 754–762.
- Calogero, R. M., Bardi A. & Sutton, R., (2009). A need basis for values: Associations between the need for cognitive closure and value priorities. *Personality and Individual Differences, 46*, 154–159.
- Dehghani, M., Atran, S., Iliev, R., Sachdeva, S., Medin, D., & Ginges, J. (2010). Sacred values and conflict over Iran's nuclear program. *Judgment and Decision Making, 5*, 540–546.
- Dehghani, M., Iliev, R., Sachdeva, S., Atran, S., Ginges, J., & Medin, D. (2009). Emerging sacred values: Iran's nuclear program. *Judgment and Decision Making, 4*, 930–933.
- Douglas, M. (1966). *Purity and danger: an analysis of concepts of pollution and taboo*. New York: Praeger.
- Durkheim, E. (1912/1995). *The elementary forms of the religious life*. New York: Free Press.
- Eliade, M. (1959). *The sacred and the profane: the nature of religion*. San Diego, California: Harcourt Brace Jovanovich.
- Ginges, J., & Atran, S. (2008). Humiliation and the inertia effect: Implications for understanding violence and

compromise in intractable intergroup conflicts. *Journal of Cognition and Culture*, 8, 281–294.

Ginges, J. & Atran S. (2009a). Why do people participate in violent collective action? Selective incentives versus parochial altruism. *Annals of the New York Academy of Sciences*, 1167, 115–123.

Ginges, J. & Atran, S. (2009b). Noninstrumental reasoning over sacred values: An Indonesian case study. In B. H. Ross (Series Ed.) & D. Bartels, C. Bauman, L. Skitka, & D. Medin (Eds.), *Psychology of learning and motivation, Vol. 50: Moral judgment and decision making*, pp. 193–206. San Diego, CA: Academic Press.

Ginges, J. & Atran, S. (2011). War as a moral imperative (not just politics by other means). *Proceedings of the Royal Society B*, 278, 2930–2938.

Ginges, J., Atran, S., Medin, D. & Shikaki, K. (2007). Sacred bounds on rational resolution of violent political conflict. *Proceedings of the National Academy of Sciences*, 104, 7357–7360.

Ginges, J., Atran, S., Sachdeva, S. & Medin, D. (2011). Psychology out of the laboratory: The challenge of violent extremism. *American Psychologist*, 66, 507–519.

Ginges, J., Hansen, I., & Norenzayan, A. (2009). Religion and support for suicide attacks. *Psychological Science*, 20, 224–230.

Haidt, J., McCauley, C., & Rozin, P. (1994) . Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences*, 16, 701–713.

Inbar, Y., Pizarro, D. A., Iyer, R., & Haidt, J. (in press). Disgust sensitivity, political conservatism, and voting. *Social Psychological and Personality Science*.

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sullaway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129, 339–375.

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: “Seizing” and “freezing.” *Psychological Review*, 103, 263–283.

Norenzayan, A. & Shariff, A. (2008). The origin and evolution of religious prosociality. *Science*, 322, 58–62.

Olatunji, B. O., Williams, N. L., Tolin, D. F., Sawchuck, C. N., Abramowitz, J. S., Lohr, J. M., et al. (2007). The disgust scale: Item analysis, factor structure, and suggestions for refinement. *Psychological Assessment*, 19, 281–297.

Pizarro, D. A., Inbar, Y., & Helion, C. (2011). On disgust and moral judgment. *Emotion Review*, 3, 267–268.

Rozin, P. (1999). The process of moralization. *Psychological Science*, 10, 218–221.

Rozin, P., & Wolf, S. (2008). Attachment to land: The case of the land of Israel for American and Israeli Jews and the role of contagion. *Judgment and Decision Making*, 3, 325–334.

Sachdeva, S., & Medin, D. (2009). group identity salience in sacred value based cultural conflict: An examination of the Hindu-Muslim identities in the Kashmir and Babri Mosque issues. Proceedings of the 31th Annual Conference of the Cognitive Science Society, Washington, D.C.

Schwarz, N., & Sudman, S. (Eds.). (1996). *Answering questions: Methodology for determining cognitive and communicative processes in survey research*. San Francisco: Jossey-Bass.

Spear, P. (1990). *A history of India: Vol. 2*. London: Penguin Books.

Sosis, R., Kress, H. C., & Boster, J. S. (2007). Scars for war: Evaluating alternative signaling explanations for cross-cultural variance in ritual costs. *Evolution and Human Behavior*, 28, 234–247.

Tetlock, P. (2003). Thinking the unthinkable: Sacred values and taboo cognitions. *Trends in Cognitive Sciences*, 7, 320–324.

Tetlock, P. E., Kristel, O., Elson, B., Green, M., & Lerner, J. (2000). The psychology of the unthinkable: Taboo trade-offs, forbidden base rates, and heretical counterfactuals. *Journal of Personality and Social Psychology*, 78, 853–870.

Venables, W. N., & Ripley, B. D. (2002). *Modern Applied Statistics with S. Fourth edition*. Heidelberg: Springer.

Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, 67(6), 1049–1062.

Appendix A: Regression of sacred value score on religiosity

Predictor	B	SE	t	p (2-tailed)
Intercept	8.300	2.431	3.41	<.001
Gender	−1.302	.704	−1.85	.065
Age	.171	.034	5.05	<.001
Political Affiliation	.027	.220	0.12	.901
Education	−.622	.335	−1.86	.064
Religiosity	.623	.309	2.02	.044
N	323			
R ²	.123			
Overall model:	F (7, 317) = 8.90, p < .001			

Appendix B: Sacred value measure used in Study 2 (religious values in italics)

You support/oppose mandatory vaccinations.

Mentally handicapped people should not/should be allowed to have kids.

You are Pro-Life/Pro-Choice.

You support/oppose pre-emptive military attacks as a policy.

Assisted suicide should be legal/illegal.

You support/oppose the use of the death penalty.

It is ok/not ok to use nuclear weapons on civilians.

All illegal immigrants should not /should be deported.

Cheating on your spouse is ok/not ok even if there is no chance of getting caught.

North Korea should not/should be nuked.

You support/oppose the use of embryos for stem cell research.

There are not enough/too many restrictions on gun ownership.

Global warming is real/not real.

There should not/should be mandatory school prayer.

You are a Republican/Democrat.

You support/oppose medical testing on animals.

You support/oppose gay marriage.

You support/oppose hiring quotas based on race.

It is ok/not ok to sterilize people with genetic conditions.

You support/oppose the use of torture to gain intelligence.

Appendix C: Sacred value measures used in Study 3

Some Palestinians believe that it may be OK for Palestinians to give up the right of return, if giving up this right would bring great benefits to the Palestinian people. For example, if giving up the right of return would lead to a future Palestinian state where Palestinians would enjoy peaceful and happy lives. Which of these statements comes closest to how you think about this:

1. I do not object to this.
2. If the benefits are great enough, the Palestinian people should at least discuss giving up the right of return.
3. No matter how great the benefits, Palestinians should not even think about giving up the right of return.

Some Palestinians believe that it may be OK for Palestinians to give up the claim to sovereignty over East

Jerusalem, if giving this up would bring great benefits to the Palestinian people. For example, if giving up the claim to sovereignty over East Jerusalem would lead to a future Palestinian state where Palestinians would enjoy peaceful and happy lives. Which of these statements comes closest to how you think about this:

1. I do not object to this.
2. If the benefits are great enough, the Palestinian people should at least discuss giving up the claim to East Jerusalem.
3. No matter how great the benefits, Palestinians should not even think about giving up the claim to East Jerusalem.

Some Palestinians believe that it may be OK for Palestinians to recognize the right of the Jewish people to Israel, if doing this would bring great benefits to the Palestinian people. For example, if recognizing the right of the Jewish people to Israel would lead to a future Palestinian state where Palestinians would enjoy peaceful and happy lives. Which of these statements comes closest to how you think about this:

1. I do not object to this.
2. If the benefits are great enough, the Palestinian people should at least discuss doing this.
3. No matter how great the benefits, Palestinians should not even think about doing this.