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Research Article

Religion and Support for Suicide Attacks

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ABSTRACT—*In four studies carried out across different cultural, religious, and political contexts, we investigated the association between religion and popular support for suicide attacks. In two surveys of Palestinians and one cognitive priming experiment with Israeli settlers, prayer to God, an index of religious devotion, was unrelated to support for suicide attacks. Instead, attendance at religious services, thought to enhance coalitional commitment, positively predicted support for suicide attacks. In a survey of six religions in six nations, regular attendance at religious services positively predicted a combination of willing martyrdom and out-group hostility, but regular prayer did not. Implications for understanding the role of religion in suicide attacks are discussed.*

The suicide attack can be thought of as belonging to an extreme subset of *parochial altruism* (Choi & Bowles, 2007), as it combines a parochial act (the attacker killing out-group members) with the ultimate act of sacrifice for the in-group (the attacker killing him- or herself). In the past decade, there has been an exponential increase in the frequency of suicide attacks. For example, whereas 142 suicide attacks were carried out worldwide between 1983 and 2000 (Pape, 2005), 312 suicide attacks were carried out between 2000 and 2003 (Atran, 2003). Since the U.S. invasion of Iraq, the number of suicide attacks has increased further, with more than 500 carried out in 2006.

Organizations motivated by some fusion of religious and political goals (hereafter, “religious groups”) were responsible for more than 70% of suicide attacks carried out since 2000 (Atran, 2006). There has been widespread popular and scientific debate regarding the relationships among intergroup violence, suicide attacks, and religion, with particular attention paid to Islam (Dawkins, 2003; Harris, 2005). What has been sorely lacking in this debate is empirical investigation into the relationship

between religion and suicide attacks. In this article, we aim to bridge this gap by reporting an investigation of the relationship between religion and popular endorsement of violent parochial altruism in general, and suicide attacks in particular.

A possible reason that most groups using suicide attacks are religious may be that religious groups find it easier than others to mobilize popular support for such attacks from “constituent” communities. Violent insurgent organizations typically require a threshold of passive and active popular support to survive (Merari, 1993). Moreover, most insurgent organizations that use suicide attacks do so with the intention of inspiring even greater levels of popular support (Bloom, 2005). It has been widely speculated that devotion to religious belief might facilitate support for suicide attacks (Harris, 2005) because certain religious beliefs denigrate people of other faiths (Dawkins, 2003), promise martyrs the reward of an afterlife (Hoffman, 1998), or contain narrative traditions that glorify acts of combative martyrdom (Gambetta, 2005; Rapoport, 1990), such as suicide attacks. We call this general class of explanation *the religious-belief hypothesis*. Proponents of the religious-belief hypothesis tend to rely on selected violent content of religious texts and traditions, rather than on an empirical investigation of the relationship between religious belief and suicide attacks. Such an approach has been criticized for overlooking the complex way people interpret and contest the use of their religious texts to justify violence (Esposito, 2002).

Alternatively, religion’s relationship to suicide attacks may be independent from belief per se, but derive instead from religion’s ability to enhance commitment to coalitional identities (Atran, 2003; Irons, 2001) and within-group cooperation (Norenzayan & Shariff, 2008; Sosis & Ruffle, 2003) or parochial altruism (Choi & Bowles, 2007) via collective ritual. We term this the *coalitional-commitment hypothesis*. Participation in group activities is a good index of strong group identity (Deaux, 1996), but there is evidence that participating in collective religious ritual has a particularly powerful positive effect on within-group cooperation. For example, in a study of Israeli kibbutzim, frequency of attendance at synagogue, but not frequency of communal meals, positively predicted within-group altruism (Sosis & Ruffle, 2003). Because suicide

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attacks are an extreme form of within-group cooperation (involving the sacrifice of the attacker's life to his or her collective), the positive effect of collective religious ritual on within-group cooperation in general may hold for support of suicide attacks in particular.

Collective religious rituals may enhance coalitional commitment and create a sense of fictive kinship within congregations (Irons, 2001) via two possible mechanisms. First, mimicry has been shown to increase cooperative behavior (van Baaren, Holland, Kawakami, & van Knippenberg, 2004), and collective religious rituals common to mosques, synagogues, temples, or churches typically involve ritualized coordinated movements (Atran & Norenzayan, 2004) that might be thought of as large-scale mimicking behavior. Second, these rituals typically also include costly commitment to shared counterintuitive beliefs that signal in-group commitment (Atran & Norenzayan, 2004; Irons, 2001). Greater in-group commitment, in turn, may be associated with greater intergroup conflict (Ginges, Atran, Medin, & Shikaki, 2007). In one cross-cultural study, costly behaviors that mark in-group identity (e.g., ritual genital mutilation, body piercings) were shown to predict the existence of wars with out-groups (Sosis, Kress, & Boster, 2007).

To summarize, the religious-belief hypothesis holds that measures of devotion to specific religious beliefs should positively predict support for suicide attacks. Our coalitional-commitment hypothesis holds instead that any relationship between religion and support for suicide attacks is a by-product of the positive effect of collective religious ritual on coalitional commitment and, thus, that attendance in collective religious activities should positively predict support for suicide attacks.

We tested these alternative hypotheses in four studies. In Studies 1 and 2, we investigated whether support for suicide attacks was predicted by prayer frequency (an index of devotion to religious belief¹) and frequency of mosque attendance (an index of coalitional commitment), respectively, in two surveys of Palestinian Muslims living in the West Bank and Gaza; in Study 3, we used a cognitive priming experiment to test whether reminders of praying to God or reminders of synagogue attendance increased the likelihood that Israeli Jews would support an Israeli suicide attack against Palestinians; and in Study 4, we carried out a broader cross-cultural investigation of the relationships among prayer, attendance, and parochial altruism among Indonesian Muslims, Mexican Catholics, British Protestants, Russian Orthodox in Russia, Israeli Jews, and Indian Hindus.

STUDY 1: PALESTINIAN SURVEY, 1999

We began by analyzing data from a nationally representative survey of 1,151 Palestinian Muslim adults (572 men, 579 women; mean age \approx 34 years) who participated in individual

face-to-face home interviews carried out in 1999.² This study had two purposes. First, we tested our assumption that prayer and attendance at collective religious services (*attendance*) constitute overlapping but distinct aspects of religious experience, and that prayer would more strongly predict devotion to religious beliefs or deities (*religious devotion*). The second, and primary, goal was to test our hypothesis that, compared with prayer, attendance at religious services would more strongly predict support for suicide attacks.

Method

We regressed religious devotion and support for suicide attacks, respectively, on frequency of prayer and frequency of mosque attendance in the first step, adding additional control variables in the second step. This strategy allowed us to examine the unique relationships between our primary predictor variables and our dependent variables.

Predictor Variables

To assess prayer frequency, we used responses to the question, "How often do you pray?" Responses were as follows: 9.1% "never," 7.1% "very little," 6.2% "on Fridays and religious holidays," 8.4% "more than once a week," and 69.3% "five times a day." To assess frequency of mosque attendance, we used responses to the question, "How often do you go to mosque?" Responses were as follows: 24.1% "on religious holidays only," 35.6% "on Fridays and religious holidays," 22% "at least once a week," and 18.3% "once a day." Prayer frequency and mosque attendance were correlated ($r_s = .28, p < .01$).

Dependent Variables

To assess support for suicide attacks, we used responses to the question, "Do you support martyrdom attacks?" Twenty-three percent said they supported such attacks, and 77% were opposed. To assess religious devotion, we used responses to the question, "How important is religion in your life?" Responses were as follows: 75% "very important," 20% "somewhat important," 4% "not very important," and 1% "unimportant."

Control Variables

In our analyses, we controlled for gender, age, education level, refugee status, standard of living, support for the rule of Palestine by Sharia (this is the stance of Hamas and Palestinian Islamic Jihad, or PIJ, the groups responsible for most Palestinian suicide attacks), and support for the Oslo peace process. Our sample was representative of the population in terms of gender, education level, and refugee status.

¹Because prayer is an inward communication with a divine power (James, 1902/1961), religious devotion can be inferred from prayer frequency. In Studies 1 and 4, we empirically validated prayer's importance as an index of religious devotion.

²The supplementary materials available on-line (see p. 230) provide additional details on the methods for all four studies.

TABLE 1

Summary of Regression Analyses Predicting Religious Devotion, Support for Suicide Attacks, and Parochial Altruism From Prayer and Attendance Frequency in Studies 1, 2, and 4

Study and dependent variable	Prayer to God	Attendance at collective religious services
Study 1: Palestinian survey, 1999		
Religious devotion	Wald = 47.19, odds ratio: 3.3–8.55	Wald = 0.45, odds ratio: 0.58–1.97
Support for suicide attacks	Wald = 0.71, odds ratio: 0.71–2.3	Wald = 6.42, odds ratio: 1.15–3.02
Study 2: Palestinian survey, 2006		
Support for suicide attacks	Wald = 0.95, odds ratio: 0.57–5.22	Wald = 4.23, odds ratio: 1.03–3.84
Study 4: Six-nation survey		
Religious devotion	$\beta = .25$	$\beta = .08$
Parochial altruism	Wald = 2.17, odds ratio: 0.93–1.64	Wald = 38.4, odds ratio: 1.71–2.82

Note. The analyses reported in this table included control variables. For odds ratios, 95% confidence intervals are reported. Significant results ($p < .05$) are in boldface. Full tables including results for control variables may be found in the supplementary materials on-line (see p. 230).

Results and Discussion

Because our dependent and predictor variables were strongly skewed, we carried out logistic regressions, which make no assumptions regarding the normality of the distribution of dependent or independent variables. Regressions used reverse Helmert contrasts, comparing the effect of each category of a given predictor variable except the first (reference) category with the average effect of the previous categories. The reference category for prayer was “never pray,” and the reference category for attendance was “on religious holidays only.”

Religious Devotion

Religious devotion was recoded as 1 (religion is “very important”) or 0 (religion is “somewhat important” or less). When we regressed religious devotion on attendance and prayer, we found that compared with praying less frequently, praying five times a day increased the predicted odds of a respondent saying that religion is “very important in my life” by a factor of 6.6 (Wald coefficient = 70.07; the 95% confidence interval for the odds ratio = 3.30–8.85, $p < .001$), whereas attendance was unrelated to religious devotion once prayer was accounted for (all Wald coefficients < 1.30 , $ps > .1$). The effect of prayer was reliable when we included control variables in the second step of the analysis (see Table 1). Thus, frequency of prayer was found to be a good measure of religious devotion.

Support for Suicide Attacks

Compared with attending less frequently, attending a mosque once a day increased the predicted odds of a respondent supporting suicide attacks by a factor of 2.11 (Wald coefficient = 12.11; 95% confidence interval for the odds ratio = 1.38–2.20, $p < .01$), whereas prayer was unrelated to support for suicide attacks (all Wald coefficients < 2.30 , $ps > .1$). The effect of attendance was reliable when control variables were included in the second step of the analysis (see Table 1).³ We found the same

results using alternate contrast methods, and prayer frequency did not moderate the effect of attendance frequency.

Discussion

In summary, Study 1 found (a) that prayer frequency was a significant predictor of religious devotion, but mosque attendance was not, and (b) that mosque attendance was a significant predictor of support for suicide attacks, but prayer was not. These results provided initial evidence for the coalitional-commitment hypothesis and against the religious-belief hypothesis.

STUDY 2: PALESTINIAN SURVEY, 2006

We replicated the findings of Study 1 in a survey, carried out in 2006, of 719 Palestinian Muslim university students (360 men, 359 women; mean age ≈ 21 years) who participated in individual face-to-face interviews across 14 university campuses in the West Bank and Gaza. In this study, we were able to control for two additional variables that could predict support for suicide attacks: support for Hamas or PIJ (most Palestinian suicide attackers have been student members of these groups) and dehumanization of Israelis. In addition, we used a different wording to measure support for suicide attacks in an attempt to assess the robustness of the previous findings.

Method

Predictor Variables

Each predictor variable was assessed with one question. Participants were asked, “How often do you pray to Allah?” Responses to this question were as follows: 3% “never,” 5% “very little,” 2% “on Fridays only,” 4% “once a day,” and 85% “five times a day.” Participants were also asked, “How often do you go to mosque?” Responses to this question were as follows: 30% “never,” 22% “rarely,” 12% “on Fridays only,” 5% “daily,” and 32% “more than once a day.”

³In this study, and in all other studies reported in this article, gender did not have a main effect and did not interact significantly with any of our predictor variables.

Dependent Variables

To measure support for suicide attacks, we asked participants, "In your opinion, what is the position of Islam regarding the bomber who kills himself with the aim of killing his enemies as some Palestinians do? Do you believe that Islam forbids, allows, encourages, or requires such acts in defense of Islam and of the Palestinian people?" Responses to this question were as follows: 4.2% "forbids," 59% "allows," 23.8% "encourages," and 13% "requires." Our analyses focused on the last response category, as we were interested in extreme responses. However, the results were unchanged when we pooled "encourages" and "requires" responses.

Control Variables

Our sample was representative of the population in terms of gender and refugee status. We controlled for age, gender, whether participants identified with either Hamas or PIJ (vs. Fatah), location (West Bank or Gaza), income, and dehumanization of Israelis. We measured dehumanization by asking participants whether two "uniquely human" emotions, "care and compassion for the family" and "pain at the death of a loved one" were typical of Israelis. Responses for "care and compassion" were 41% "very typical," 32% "somewhat typical," 10% "somewhat atypical," and 16% "very atypical." Responses for "pain at death" were 54% "very typical," 28% "somewhat typical," 8% "somewhat atypical," and 11% "very atypical." These two items formed an adequately reliable scale (Cronbach's $\alpha = .68$).

Results and Discussion

We used logistic regression employing reverse Helmert contrasts to test our hypothesis because of the nonnormal distribution of variables. First, we regressed the belief that Islam requires suicide attacks on prayer frequency and frequency of mosque attendance. As in Study 1, frequency of mosque attendance positively predicted support for suicide attacks (Wald coefficient = 14.45, 95% confidence interval for the odds ratio = 1.89–6.80, $p < .001$), but frequency of prayer did not (all Wald coefficients < 2.00 , $p > .1$). Compared with respondents who attended the mosque less often, those who attended more than once a day were more likely by a factor of 3.58 to believe that Islam requires suicide attacks. This relationship was still reliable when control variables were included in the second step of the analysis (see Table 1).

Again, devotion to Islam, measured by prayer frequency, was unrelated to Palestinian support for suicide attacks. In contrast, frequency of mosque attendance strongly predicted support for suicide attacks. The effect of mosque attendance cannot be attributed solely to propaganda by religious clerics or to recruitment efforts at mosques, as it held even when we controlled for identification with organizations carrying out suicide attacks and for dehumanization of Israelis.

STUDY 3: ISRAELI SETTLER EXPERIMENT

We further investigated the relationship between religion and suicide attacks in a cognitive priming experiment carried out with a representative sample of Israeli Jews living in the West Bank and Gaza (hereafter "settlers"). The purpose of this study was twofold. First, we investigated whether the association between participation in collective religious services and support for suicide attacks would generalize to a different religious group experiencing intergroup conflict. Second, controlled experiments are necessary to increase confidence in the hypothesized relationship between any two variables. Social-cognition research consistently demonstrates that priming cognitive constructs can temporarily increase their influence on subsequent evaluative and behavioral tasks (Schwarz & Sudman, 1996). By manipulating the order of questions in our survey, we were able to test whether activating cognitions related to "praying to God" or "attending synagogue" had different effects on the evaluations of an Israeli Jew's suicide attack against Palestinians.

Method*Prime Manipulation*

We randomly selected 198 respondents (100 women, 98 men; median age = 34 years) in a telephone survey to participate in this experiment and then randomly assigned them to one of three experimental conditions. Some were randomly assigned to the synagogue-prime condition and were asked about their frequency of attendance at synagogue; others were assigned to the prayer-prime condition and were asked about their frequency of praying to God. Then both groups were asked about their support for a suicide attack against Palestinians (see Dependent Variable). A third group was not primed; they were simply asked about their support for the suicide attack.

Dependent Variable

Because suicide attacks by Israeli Jews are uncommon, we measured support for a single act carried out by a settler, Baruch Goldstein. On February 25, 1994, Goldstein died while killing 29 and injuring 60 Muslims at prayer in the Cave of the Patriarchs, a site that is holy to both Muslims and Jews and is located in Hebron, the West Bank. Goldstein's act was widely condemned by Israelis, but his supporters refer to him as a martyr (Sprinzak, 2000). To measure support for suicide attacks, we asked participants whether they believed that Goldstein's act was "extremely heroic" or not.

Results and Discussion

Study 3 replicated the first two studies in a different religious group and using an experimental design, demonstrating the effect of attendance on support for suicide attacks. In the synagogue-prime condition, 23% of participants reported believing that

Goldstein's act was extremely heroic, whereas 15% of those in the no-prime condition and only 6% of those in the prayer-prime condition reported this belief, $\chi^2(2, N = 198) = 7.81, p = .02$. We examined these effects further with a logistic regression, entering the priming conditions as separate predictor variables (prayer prime vs. other conditions, synagogue prime vs. other conditions) so that the reference condition for both variables was the no-prime condition. Compared with participants in the no-prime condition, those primed with attending synagogue were more likely to regard Goldstein's act as extremely heroic (Wald coefficient = 4.01, 95% confidence interval for the odds ratio = 1.01–3.55, $p < .05$), whereas those primed with prayer were marginally less likely to regard his act as extremely heroic (Wald coefficient = 2.83, 95% confidence interval for the odds ratio = 0.14–1.16, $p = .09$).

STUDY 4: SURVEY OF SIX RELIGIOUS MAJORITIES IN SIX NATIONS

In Study 4, we analyzed data from representative surveys of Indonesian Muslims, Mexican Catholics, British Protestants, Russian Orthodox in Russia, Israeli Jews, and Indian Hindus ($N = 4,704$) that were conducted in 2003–2004 on behalf of the British Broadcasting Corporation by ICM Research. The goal was to further investigate whether the relationship between attending collective religious services and a propensity for parochial altruism holds across a wider variety of political and cultural contexts. We also retested our assumption that prayer frequency is more strongly associated with levels of religious devotion than is attendance frequency.

Method

Predictor Variables

To measure prayer frequency, we asked participants whether they prayed regularly or less than regularly; 58.6% reported praying regularly, and 41.4% reported praying less than regularly. To measure religious attendance, we asked participants whether they agreed or disagreed with the statement "I regularly attend an organized religious service"; 42% agreed, and 58% disagreed.

Dependent Variables

We constructed a cross-cultural measure of parochial altruism relevant in contexts devoid of suicide attacks. Respondents received a positive score for parochial altruism if they endorsed both of the following two items: "I would be willing to die for my God/beliefs" (a measure of altruism toward the in-group) and "I blame people of other religions for much of the trouble in this world" (a measure of hostility to out-groups). Nine percent of the entire sample endorsed both items.

Religious belief and devotion was measured by agreement or disagreement with the following statements: "I have always believed in God," "God judges my actions and the way I live my life," "God created the universe," "God could prevent suffering

if He wanted to," "I don't believe death is the end," "I find it hard to believe in God when there is so much [suffering]" (reverse-scored), "The world would be a more peaceful place if people didn't believe in God" (reverse-scored), and "Religion is a cloak for politics" (reverse-scored). These items formed an adequate index (Cronbach's $\alpha = .67$).

Control Variables

Our sample was representative of each nation's population in terms of gender and age. In addition to gender and age, control variables included work type (arranged from highest to lowest socioeconomic status), a measure of belief in superiority of in-group beliefs (response of "agree," "disagree," or "don't know" to the statement "My God/beliefs is the only true God/beliefs"), and a measure of national human development (United Nations Human Development Program, 2004).

Results and Discussion

Religious Devotion

Prayer was again a stronger predictor of the religious-devotion index, $\beta = .39, SE_{\beta} = .02, t(4704) = 25.94$, than was attendance at collective religious services, $\beta = .14, SE_{\beta} = .02, t(4704) = 9.18$, both $ps < .001$. This remained true when other variables were controlled for (see Table 1).

Parochial Altruism

Because our dependent variable was strongly skewed, we used a logistic regression strategy similar to our approach in Studies 1 and 2. For the whole sample, endorsement of parochial altruism (i.e., both declaring a willingness to die for one's God or beliefs and reporting that people of other religions were to blame for much of the trouble in the world) was not uniquely predicted by prayer frequency when we controlled for frequency of attendance (Wald coefficient = 2.19, $p > .1$). However, endorsement of parochial altruism was higher, by a factor of 2.54, for regular (compared with irregular) attendees at the mosque, church, synagogue, or temple when we controlled for prayer frequency (Wald coefficient = 55.15, 95% confidence interval for the odds ratio = 1.99–3.26, $p < .001$). The effect of attendance remained when we included our control variables in the regression, odds ratio = 2.20, $p < .001$ (see Table 1).

The strength of the relationships of prayer and attendance to parochial altruism differed somewhat across subsamples (see Fig. 1). We tested whether the effects of prayer and attendance on endorsement of parochial altruism interacted with subsample membership, finding that the positive effect of attendance on endorsement of parochial altruism was reliably stronger for the Russian Orthodox than for the other subsamples averaged together (Wald coefficient = 7.31, 95% confidence interval for the odds ratio = 1.33–5.91, $p < .01$) and that the negative effect of prayer on endorsement of parochial altruism was reliably stronger for the Indonesian Muslims than for the other subsamples

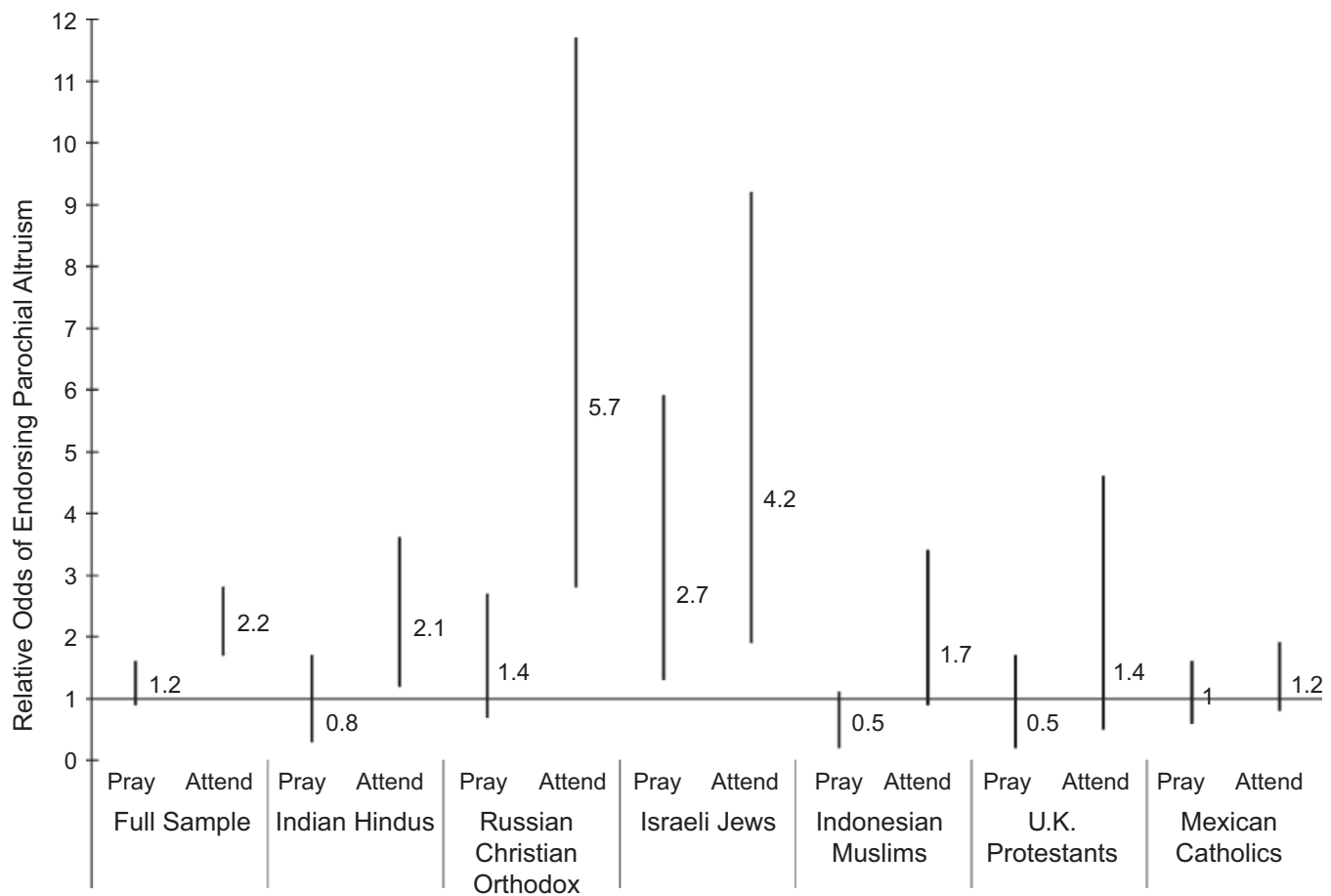


Fig. 1. Results from Study 4: relative odds of endorsing parochial altruism as a function of engaging in regular prayer (vs. less than regular prayer) and attending religious services regularly (vs. less than regularly). Results are presented for the six faith groups separately and for the full sample. Each line is an error bar indicating the 95% confidence interval for the odds ratio to the right.

averaged together (Wald coefficient = 5.97, 95% confidence interval for the odds ratio = 0.43–0.86, $p < .05$). No other interactions were statistically significant. We caution against overinterpreting these differences, however, as our samples differed along multiple dimensions.

GENERAL DISCUSSION

In Studies 1 and 2, the frequency with which Palestinian Muslims attended mosque, but not their frequency of prayer, positively predicted support for a specific and extreme example of parochial altruism: suicide attacks. In Study 3, priming synagogue attendance (but not prayer to God) increased the likelihood of Jewish Israeli settlers believing that a specific suicide attack carried out against Palestinians was “extremely heroic.” Study 4 demonstrated, in a multinational and multireligious sample, that parochial altruism was positively predicted by frequency of attendance at organized religious services, but not by frequency of prayer.

Other behaviors, such as direct propaganda and recruitment in places of collective worship, may also increase support

for suicide attacks. However, these behaviors do not provide counterexplanations for our results. In Study 1, more frequent mosque attendance predicted greater support for suicide attacks even when we statistically controlled for support for political Islam. In Study 2, frequency of mosque attendance predicted support for suicide attacks even when we controlled both for identification with religious Palestinian groups that carry out such attacks and for dehumanization of Israelis. Thus, at both high and low levels of such identification and dehumanization, more-frequent attendees demonstrated greater support for suicide attacks.

We should note that building coalitional commitment may have many positive and benign consequences, leading to strong communal institutions (Putnam, 2000). Only in particular geopolitical contexts is the parochial altruism associated with such commitments translated into something like suicide attacks. It is also evident that social mechanisms that facilitate parochial altruism (e.g., youth groups, military parades, sports events) are available to nonreligious groups. For example, the nonreligious Tamil Tigers of Sri Lanka use such mechanisms to recruit support for intergroup violence and, indeed, suicide attacks (Gambetta, 2005). Clarifying

the links between such secular activities and parochial altruism is an important goal for future research.

Taken together, these four studies represent strong support for the coalitional-commitment hypothesis and disconfirmation of the religious-belief hypothesis. Our findings suggest that the relationship between religion and support for suicide attacks is real, but is orthogonal to devotion to particular religious belief, or indeed religious belief in general. Of course, economic and political conditions may contribute strongly to support for suicide attacks. Our studies concern only the relationship between religion and support for suicide attacks. The proposal that there is some relationship between religious devotion and intergroup violence did not receive empirical support. It appears that the association between religion and suicide attacks is a function of collective religious activities that facilitate popular support for suicide attacks and parochial altruism more generally.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the on-line version of this article:

Additional Information About Studies 1 Through 4

Table S1. Likelihood of saying that “Religion is very important in my life” in Study 1

Table S2. Likelihood of supporting suicide attacks in Study 1

Table S3. Likelihood of believing that Islam “requires” suicide attacks in Study 2

Table S4. Frequencies of sex and age group for the six subsamples in Study 4

Table S5. Religious devotion as predicted by prayer and attendance in Study 4

Table S6. Likelihood of endorsing parochial altruism in Study 4

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