

**DO RELIGIOUS CONTEXTS
ELICIT MORE TRUST AND
ALTRUISM? AN EXPERIMENT
ON FACEBOOK**

Bradley J. Ruffle and Richard Sosis
Discussion Paper No. 10-02

March 2010

Monaster Center for
Economic Research
Ben-Gurion University of the Negev
P.O. Box 653
Beer Sheva, Israel

Fax: 972-8-6472941
Tel: 972-8-6472286

Do religious contexts elicit more trust and altruism? An experiment on Facebook

Bradley J. Ruffle
Department of Economics
Ben-Gurion University

Richard Sosis
Department of Anthropology
University of Connecticut

March 2010

Abstract

We design a decision-making scenario experiment on Facebook to measure subjects' altruism and trust toward attendees of a religious service, a fitness class and a local music performance. Secular and religious subjects alike display significantly more altruism and trust toward the synagogue attendees than participants at the other two venues. By all measures of religiosity, even the most secular subjects behave more prosocially in the religious venue than in the comparable non-religious settings. We also find that secular subjects are just as altruistic toward synagogue and prayer group members as religious subjects are. These findings support recent theories that emphasize the pivotal role of religious context in arousing high levels of prosociality among those who are religious. Finally, our results offer startlingly little evidence for the widely documented religious-secular divide in Israel.

Keywords: religion, trust, altruism, religious context, religious-secular conflict.

Contact Information: Ruffle: Department of Economics, Ben-Gurion University, Beer Sheva, 84105, Israel, tel.: 972-8-6472308, fax: 972-8-6472941, e-mail: bradley@bgu.ac.il; Sosis: Department of Anthropology, U-2176, University of Connecticut, Storrs, CT 06269-2176, tel.: (860) 486-4264, fax (860) 486-1719, e-mail: richard.sosis@uconn.edu.

Acknowledgements: We wish to thank Danny Cohen-Zada and Paul Swartwout for comments, Ayala Waichman for research assistance, Noam Vaza for developing the Facebook application, and Etan Markus for help in designing the research. This research was funded by the United States-Israel Binational Science Foundation. Sosis also thanks the Templeton Foundation for financial support.

1. Introduction

A growing body of theoretical and experimental literature associates religion and religious observance with social preferences (see Norenzayan and Shariff 2008 for a survey). In this paper, we compare respondents' trust and altruism toward anonymous attendees of a religious service with participants at similar non-religious events. To do so, we conduct three plausible decision-making scenarios in Israel on the popular social networking site Facebook.

In a between-subject design, respondents are asked to imagine that they are traveling in an unfamiliar Israeli town and, according to the scenario, decide to attend a house of worship of their own religion (or a women's prayer group for female subjects), a local music performance of their favorite musical genre, or a fitness class. Respondents are then informed that after the activity, someone from the prayer, music performance or fitness class approaches them asking to borrow their cell phone. Respondents are asked to indicate for how long they would be willing to lend this person their cell phone. We interpret the degree of willingness as a measure of the respondent's altruism toward attendees of the activity. We collect a second measure, which we interpret as the respondent's trust in anonymous participants in the activity. Specifically, respondents are told that later in the day they realize that they left their wallet at the religious service, local music performance or fitness center. They are then asked to indicate the likelihood that their wallet will be returned to them.

We minimized the differences between the three scenarios so that they differ only by the setting and activity, either a religious activity (for males, attendance at a synagogue and for females, a women's prayer group) or a fitness class or music performance (activities without any religious connotation). Our research is aimed at assessing how different environments influence trusting and altruistic behavior toward anonymous individuals. Do religious individuals extend prosocial behaviors outside of religious contexts? And do religious environments elicit prosocial responses from those who are secular?

We find that religious and secular respondents alike are significantly more altruistic and more trusting toward synagogue and prayer group attendees than toward fitness class and music performance attendees. Moreover and most strikingly, secular participants are no less altruistic toward synagogue and prayer group members than religious participants are; on the other hand, secular subjects do display lower levels of trust toward attendees of the religious activities than that displayed by religious subjects.

Overall, these findings offer startlingly little evidence for the ongoing and well-documented religious-secular conflict in Israel (see, e.g., Efron 2003). Religious respondents are more altruistic in the fitness center scenario than their secular counterparts and no less trusting or altruistic in either of the secular fitness or music performance settings. And even the most secular among our participants exhibit significantly higher altruism and trust toward synagogue and prayer group attendees than comparable attendees of non-religious activities.

2. Related Literature

Scholars have long asserted that religion is associated with prosocial behaviors, that is behaviors which are costly to oneself but benefit others. Recent empirical studies indeed show a positive relationship between religiosity and prosocial behaviors. In a three-person public goods game and a dictator game, Ahmed (2009) finds that imams-in-training (religious subjects) are more cooperative and more altruistic in the respective games compared to social science students at a local college in India (non-religious subjects). Shariff and Norenzayan (2007) show that subjects are more altruistic in a dictator game when they are primed with religious words in a scrambled sentence paradigm. Studies on Israeli kibbutzim demonstrate that religious kibbutz members are more cooperative in a common-pool resource game than secular kibbutz members (Ruffle and Sosis 2007; Sosis and Ruffle 2003, 2004).

These and other findings have ignited considerable debate regarding religious prosociality (Norenzayan and Shariff 2008). Some researchers question whether any relationship between religion and prosocial behavior exists (Batson et al. 1993; Darley

and Batson 1973), while others maintain that such a relationship, repeatedly observed by ethnographers, has now been firmly established through experimental studies (Bulbulia 2004a). But even among those who assert a genuine relationship between religion and prosocial behavior, substantial disagreement persists over the causes of this relationship.

This disagreement concerns whether religious prosociality follows from self-selection or whether there is something inherent in religion that encourages prosocial behavior. If religion encourages prosociality among religious people, what is it about religion that accounts for such a relationship? Some scholars maintain that the shared beliefs of a religious community generate feelings of cohesiveness and solidarity that facilitate prosocial relations (Radcliffe-Brown 1952). Other scholars highlight the importance of shared beliefs in supernatural agents that punish those who neglect their social responsibilities (Bering and Johnson 2005; Johnson 2005; Johnson and Bering 2006). Still others suggest that ritual performance creates social bonds that promote prosocial interactions (Alcorta and Sosis 2005; Sosis and Alcorta 2003).

Alternatively, religion may not influence prosocial behavior directly, but rather those who are more prosocial are simply more likely to become or remain religious. But if religion is associated with increased prosociality through a process of self-selection, how is this process maintained? Some researchers have argued that not only do the costly aspects of religion serve as signals of cooperative intentions, but they also function as gatekeepers preventing those who are not committed to the group and its ideology from entering or remaining in the community (Berman 2000; Bulbulia 2004b; Iannaccone 1992; Ruffle and Sosis 2007; Sosis 2003). Since religion is generally a social affair, it is plausible that those who are socially inclined are more likely to be attracted to the religious life and thus more willing to endure the costs of entrance and the costs of maintaining one's social standing.

Norenzayan and Shariff (2008) have recently offered a third explanation that may account both for studies that report a positive relationship between religiosity and prosociality as well as those studies that fail to find any relationship at all. They argue that reputational concerns explain religion's prosociality. Humans are acutely sensitive to reputation building as one's reputation can have substantial effects on

one's success in many arenas of life. Religion is a social institution of shared cultural beliefs and behaviors and therefore religious environments and activity evoke reputational concerns and associated prosociality. One implication of Norenzayan and Shariff's approach is that religious prosociality should be context-specific and most operative in settings that bring to mind religious thoughts. Such thoughts trigger reputational concerns vis-à-vis one's deity, oneself or other observers. Thus, when religious subjects are primed with religious thoughts or imagery, prosocial tendencies emerge. Yet, as some researchers have found (Batson et al. 1993), without the religious context, religious individuals behave no more prosocially than others.

These three positions aimed at understanding religious prosociality – inherent features of religion, self-selection, and reputational concerns – are not mutually exclusive. Indeed, all three likely play a role in explaining religious prosociality. Nonetheless, resolving the religious prosociality debates and determining what role the various proposed mechanisms play in producing religious prosociality will need to be informed by how religion influences related social behaviors, such as trust. Similar to the unresolved debates regarding religious prosociality, scholars of religion are also divided on the mechanisms and processes through which religion promotes trust (Sosis 2005).

It is generally assumed that religious individuals are prosocial and trusting toward fellow members but there is little expectation that these behaviors are extended across community boundaries (Norenzayan and Shariff 2008; Wilson 2002). Some theorists, however, have argued that outsiders may use the costly religious behaviors of a community as an informative signal that one can be trusted (Sosis 2005). Along these lines, Tan and Vogel (2008) show that the trust the proposer exhibits in the trust game increases with the degree of religiosity of the responder. Moreover, in a recent simulation, Dow (2008) finds that the benefits derived from increased trust afforded by out-group members are critical for the adaptive stability of a religious system.

Here we build on this emerging body of work. First, we examine the importance of religious context in eliciting religious prosociality. Are religious individuals altruistic and trustworthy only in a religious context or when primed with religious ideas or symbols? Or alternatively, do religious individuals extend prosocial behaviors even in

non-religious social environments? Second, do secular individuals respond more prosocially when in a religious environment or in a more familiar secular environment? In other words, can religious environments elicit trusting and altruistic behavior even among the secular?

3. Procedures

3.1 Methods

Noam Vaza, CEO of Social-ly.com, developed a Facebook application available to researchers for conducting decision-making research and questionnaires.¹ Ours is the first, and so far only, research project to make use of the application. The application together with the questionnaire (see the Appendix for the English translation) was launched on May 21, 2008. During the first few days, we publicized the new application on internet forums, at Ben-Gurion University and through Noam Vaza's other Facebook applications, contributing to 686 Facebook users who completed the questionnaire within the first 10 days. An additional 103 users responded during the month of June with the remaining 154 spread out over the next several months for a total of 1026 respondents.

This Facebook platform offers several advantages over more typical laboratory experiments or even decision scenarios and questionnaires posted online. To begin, Facebook offers access to a much larger and more diverse group of users than the typical student subject pool available at a single university. We were able to attract a relatively large sample in a short amount of time without the usual vagaries associated with subject recruitment and no-shows. To participate in the experiment, a Facebook user needs simply to login to her account, download the application to her profile as she would any other Facebook-compatible application and proceed through the questionnaire at her own pace. Facebook's function as a social networking site alleviates concerns that the same user might have multiple accounts or an account using an alias name. This allows us to be relatively confident that each respondent completed the questionnaire only once. Moreover, by downloading any Facebook application the user agrees to allow the application's developer access to the user's

¹ Facebook users can view the application at: <http://apps.facebook.com/academicsurveys/>.

Facebook profile. Where the profile information overlaps with questions that we asked in our questionnaire (e.g. sex, age), we confirmed that the users' responses match the information in her profile.²

As an incentive to complete the questionnaire, we awarded a prize (a 2 GB flash drive) for one in every 50 respondents. The recorded time to complete the questionnaire offers an indication whether the respondent gave thought to her answers. Table 1 reveals that respondents required on average 6.92 minutes (s.d. = 15.73).

In a between-subjects design, each Facebook user who chose to complete the questionnaire was randomly assigned to one of three experimental treatments. Each of the three treatments involves a plausible scenario in which the respondent is asked to imagine that he is traveling in an unfamiliar Israeli town and decides to attend a local activity. The three treatments differ according to the nature of the activity. In the *prayer* treatment, male respondents attend a house of worship of their own religion, while female respondents attend a women's prayer group of their own religion.³ In the *music* treatment, both male and female respondents attend a local music performance of their favorite genre of music. Finally, in the *fitness* treatment, all respondents attend a fitness class at a local fitness center.

Respondents are then informed that after the activity, someone from the synagogue service/prayer group, music performance or fitness class approaches them asking to borrow their cell phone to contact their parents. Respondents are told to assume that they have free long-distance service so that the call won't cost any money and are asked, "How long would you be willing to lend this person your cell phone?" Each respondent provides an answer on the following six-point scale: 1. not at all, 2. one minute, 3. three minutes, 4. five minutes, 5. ten minutes, 6. as long as needed.

² For compelling evidence on the accuracy and reliability of the information in users' Facebook profiles, see Back et al. (forthcoming).

³ This distinction in activities between men and women is natural because while Judaism obligates men to attend synagogue thrice daily, no such requirement pertains to women. Instead, observant Jewish women often gather together in all-women prayer groups (*tefillah* in Hebrew).

The assumption that subjects have a call plan is aimed at eliminating possible subject concerns about the monetary cost of the call. Instead, we focus on the time cost or inconvenience that the respondent incurs. Because the respondent in the scenario finds herself participating in a one-time activity among strangers in an unfamiliar town, reputational concerns are absent and there are no obvious benefits to lending the cell phone to this person. Thus, a willingness to lend one's cell phone is an act of altruism. We ask whether respondents' altruism toward anonymous group participants varies according to the setting and their perception of group participants. To the extent that subjects identify with the setting or feel an affinity with the attendees, we expect that they will agree to lend their phone for a longer duration in response to the question.

We collected a second, complementary measure of respondents' prosocial attitudes toward group participants. Immediately following the *cell phone* question, respondents were told that, "Later in the day you realize that you have lost your wallet and that you must have left it at the [synagogue/prayer group, music performance or fitness center]." They are then asked to indicate on a ten-point scale how likely they think it is that their wallet will be returned to them where one corresponds to "not at all likely" and ten equals "extremely likely". We interpret subjects' responses to this *wallet* question as a measure of their trust or belief in the goodness of anonymous members of the group.

We chose a fitness class as a secular venue because, like prayer in the synagogue or in a women's group, fitness class attendees incur considerable (time and physical) costs engaging in a group activity in pursuit of a common goal. Moreover, fitness classes are typically comparable (or perhaps even smaller) in size to houses of worship and prayer groups. A local music performance was selected as the third venue because music is frequently hypothesized and even demonstrated in both the American (Wiltermuth and Heath 2009) and Israeli contexts (Anshel and Kipper 1988) to create solidarity between attendees through similar channels as religion does (Alcorta and Sosis 2005, Alcorta et al. 2008).

Following the decision scenario and the above two questions measuring prosociality toward group members, subjects answered a number of socio-demographic questions, including self-reported measures of their religiosity.

Below we specifically examine:

1. Whether context (synagogue/prayer group, music performance, fitness center) influences altruistic and trusting decisions.
2. Whether self-defined religiosity influences altruistic and trusting decisions.
3. Whether self-defined religiosity and context interact to influence altruistic and trusting decisions.

3.2 Sample

Table 1 displays descriptive statistics on our sample. Because the *prayer* treatment involves a Jewish context, we restrict our analysis to the 989 respondents (or 96.4% of the total sample) who indicated Judaism as their religion. Twelve participants took more than two standard deviations above the mean time of 6.9 minutes (where one standard deviation equals 15.7 minutes) to complete the survey. We did not exclude these observations from our analyses, however, because their inclusion does not change any of our results.

Respondents range in age from 14 to 61 with an average age of 25.3 years old. Sixty-two percent of our subjects are female and 72% define themselves as secular. As evidence of our largely secular sample, respondents attend a fitness center much more frequently (about once a month) on average than they do a synagogue (just over once a year).

4. Results

Table 2 provides summary statistics for our two dependent measures (which we refer to as "cell phone" and "wallet") by treatment and by the respondent's self-defined religiosity. Our first main result is that subjects are more altruistic and trusting in the *prayer* treatment than in the *music* and *fitness* treatments. The third row in each treatment-cell reveals that the average response to the cell phone question in the *prayer* treatment of 4.82 is about 20% higher than that of the *music* and *fitness* treatments. Similarly, the average response to how likely their wallet will be returned

is 5.27 in the *prayer* treatment, about 20% higher than the *fitness* treatment and over 50% higher than the *music* treatment. To interpret responses to the wallet question in terms of the probability that the wallet will be returned, we can divide all responses by 10. Thus, subjects in *prayer* assign an additional .085 probability that their wallet will be returned compared to *fitness* and nearly .20 more compared to *music*.

To evaluate the significance of these differences, we estimate ordinary least squares (OLS) regressions on the cell phone and wallet measures, displayed in Tables 3 and 4, respectively.⁴ The first, basic regressions (1) and (7) in each respective table include indicator variables for the *music* and *fitness* treatments with the *prayer* treatment omitted. Both regressions highlight the significantly higher levels of altruism and trust, respectively, in the *prayer* treatment than in either of the other treatments. OLS estimates reveal that participants' average response to the cell phone question is about 0.8 points lower in the *music* and *fitness* treatments than in the *prayer* treatment. The gap between the *music* and *prayer* treatment average response increases to about 1.8 points on the 10-point scale for the wallet question.

It is noteworthy that a t-test of coefficients points to significantly higher trust in the *fitness* treatment than in the *music* treatment ($t=7.45$, $p<.001$). The different natures of the two venues suggest a likely explanation for this finding: whereas fitness classes tend to be small, personal and consist largely of regular, repeat attendees, a one-time music performance may conjure up thoughts of a larger, more anonymous event between strangers. This distinction seems to matter less for the cell phone question, which elicits not the respondent's trust but his sense of affinity with attendees. A music performance of the respondent's "favorite genre of music" may well evoke greater sentiments of camaraderie and fellowship among like-minded music enthusiasts compared to a more sterile fitness class. These sentiments appear to counterbalance the size and anonymity of the music event for the cell phone question.

⁴ The relatively large sample justifies OLS regressions. Moreover, it turns out that the predicted values for all observations in all regressions that we estimated are within the six-point and ten-point response ranges of the respective dependent variables. We also replicated the analysis with Poisson regressions. All of the results are qualitatively identical to this alternative estimation method and available from the authors upon request.

Overall, these results demonstrate that our sample responds much more favorably to anonymous individuals engaged in religious worship than they do to anonymous like-minded individuals attending a local music performance or fitness class. We next address whether this result holds across the respondents' spectrum of religious beliefs or is limited to more religiously observant subjects.

Every Jewish Israeli can instantly define him- or herself as secular, traditional or religious. These terms are shorthand for a host of religious beliefs and practices or lack thereof, as Table 5 confirms. By all four measures of religiosity that we collected, self-defined secular participants are strikingly less religious than traditional participants who are less religious than those who define themselves as religious. For instance, the average secular male attends synagogue somewhere between never and once a year (see “*Prayer Frequency*” in Table 5). Traditional males attend between several times a year and once a month, while religious males attend between several times a week and daily. Female frequencies of synagogue attendance display this same ordering across self-definitions of religiosity; however, female levels of attendance are consistently lower than their male counterparts since, as noted in the previous section, there is no religious injunction in Judaism for females to attend synagogue. For the remaining three measures of religiosity, males and females are similarly engaged within each self-definition and there remain substantial differences of religiosity across self-definitions.

To examine whether self-defined secular subjects respond differently in any of the treatments than their religiously observant cohorts, we interact each of the treatment indicators with a dummy variable for secular respondents. None of the interaction terms in (2) is significantly different from zero, indicating that secular participants display similar levels of altruism to traditional and religious subjects in each of the three treatments, including, most notably, the *prayer* treatment. The parallel regression (8) in Table 4 reveals a similar finding for the wallet measure, the one exception being that secular respondents exhibit less trust than their religious counterparts in the *prayer* treatment. Yet, as the mean wallet responses in Table 2 suggest and a Kruskal-Wallis test confirms, even secular subjects display significantly higher levels of trust in the *prayer* treatment than they do in the *fitness* or *music* treatments ($\chi^2(2)=68.8, p<.001$).

For a more continuous measure of religiosity, we can replace the secular-religious distinction with any of the four previously discussed religiosity questions (questions 13 to 16), each measured on a seven-point scale. For example, regressions (3) and (9) substitute the frequency with which subjects attend synagogue (the *prayer frequency* variable in Table 1 and question 16) for the secular-religious delineation. The highly significant and negative *music* and *fitness* treatment variables demonstrate that altruism and trust continue to be significantly higher in the *prayer* treatment than in either of these treatments. What is more, the high levels of altruism and trust observed in the *prayer* treatment apply equally to those who never or rarely attend synagogue and those who attend regularly. Regression (9) also shows that synagogue attendance is unrelated to wallet responses in the *music* and *fitness* treatments. Yet, more frequent synagogue attendance is associated with higher cell phone responses (more altruism) even in the non-religious *fitness* treatment according to (3).⁵

We also find that the higher levels of altruism and trust in the *prayer* treatment than in the other treatments apply equally to males and females. To begin, the second-to-last and third-to-last rows in Table 5 suggest that within each of the self-defined religiosity measures, males and females give similar responses to the cell phone and wallet questions across all treatments.⁶ To determine whether there exist within-treatment differences between the sexes, we interact each of the treatments with an indicator variable for males. As regressions (4) and (10) show, the main treatment effects for *music* and *fitness* continue to be highly significant and negative in both the cell phone and wallet regressions. Five of the six male-treatment interaction coefficients are not significantly different from zero. Only in response to the cell phone question in the *music* treatment do males exhibit significantly different

⁵ These same results (not shown but available from the authors upon request) continue to hold for any of the other three religiosity measures. The lone exception is the *Belief in God* variable: the significant main treatment effects persist, but the interaction of this variable with the *fitness* treatment is no longer significantly different from zero.

⁶ Only the last column of religious participants hints at a gender difference for the cell phone measure only. Still, a t-test of means fails to reject the equality of the mean male response of 3.89 and the mean female response of 4.30 ($t=1.10$, $p=.28$).

behavior from females: male responses are on average 0.34 points higher than female responses ($p=.05$).

Our questionnaire contains additional socio-demographic questions that may be useful in explaining some of the variance in our dependent measures. Respondents' age, age squared, political views, whether they were born in Israel and how frequently they exercise at a fitness center are not significant predictors of the cell phone or wallet responses in any of the regressions we estimated and their inclusion separately or together does not alter any of the results.⁷

We asked two questions about the respondent's number of friends with the thought that more friends might be associated with more prosocial behavior. Our first question, "How many close friends do you have?" (labeled "*Close Friends*" in Table 1), displays no significant relationship with either the cell phone or wallet measure. Feedback from subjects on this same question in an unrelated laboratory experiment, however, suggests that the question's vagueness makes it difficult for subjects to answer. Therefore we asked a second, more specific question on friends, "From how many friends would you feel comfortable asking to borrow their car for an evening (assuming all of your friends have cars and ignoring insurance concerns)?" (labeled "*Borrow Car from Friends*" in Table 1). Interestingly, this more precise measure of close friends shows a highly significant and positive relationship with both the altruism and trust measures. For each additional friend subjects indicate in response to this question, their responses to the cell phone and wallet questions are, respectively, 0.05 and 0.07 points higher on average, as seen in regressions (5) and (11).⁸

⁷ When interacted with each of the three treatments, none of the *Fitness Center Frequency* interaction terms is significant in either the cell phone or wallet regression. Nonetheless, responses to this question provide suggestive evidence that the participants in our experiment identified with fitness class attendees. No respondent in the *fitness* treatment – or any treatment for that matter – indicated that she "never" exercises at a fitness center. Rather, "several times a year" and "several times a week" were the most frequent answers. In a similar vein, the *fitness* treatment elicited significantly more trust than the *music* treatment, as previously noted.

⁸ Secular and religious participants indicate almost identical numbers of friends on average from which they could borrow their car (4.23 and 4.37, respectively). Separate interaction terms for secular and religious respondents for the "*Borrow Car from Friends*" variable are both highly significant in the cell phone and wallet regressions without affecting the significance of any of the other variables.

Finally, to assess the validity of our dependent measures and how they correlate with more abstract, previously used measures, we asked three context-free questions on a later page of the questionnaire after subjects had completed their responses about prosociality. These questions are labeled “*fair*”, “*careful in trust*” and “*willingness to trust*” in the Appendix. Both the *fair* and the *careful in trust* questions have appeared in every wave of the World Values Survey from its initiation in 1981 to the most 2005 version.⁹ Glaeser et al. (2000) first introduced the *willingness to trust* question. We include it as a complementary measure to the binary *careful to trust* question.

The finding (displayed in regression (12)) that the *careful in trust* and *willingness to trust* variables are both positive and highly significant predictors of the wallet question (our central measure of subjects’ trusting behavior) attests to the validity and robustness of our dependent measure. At the same time, regression (6) shows that only the *willingness to trust* variable is a significant (and positive) predictor of the cell phone responses, which we interpret as a measure of a subject’s altruism rather than of trusting behavior. Consistent with these interpretations, the fairness question (i.e., whether most people try to take advantage of you or try to be fair (*fair*)) is not a significant predictor of the trust or altruism measures.

5. Discussion

5.1 Theoretical Explanations

Our results contribute to the current debates concerning religious prosociality. Our finding that the *prayer* treatment elicits more altruism than the music or fitness treatments supports Norenzayan and Shariff’s (2008) contention that religious prosociality is environmentally contingent. Their argument about evoked reputational concerns in religious contexts is important because it explains why some researchers have found religious prosociality (Pichon et al. 2007; Shariff and Norenzayan 2007) and others have not (Batson et al. 1993). Their argument also explains variation in religious prosociality within studies (Orbell et al. 1992).¹⁰ Specifically, when religious

⁹ The four most recent waves of the survey can be downloaded at: <http://www.worldvaluessurvey.org/>.

¹⁰ Orbell et al. (1992) found that church attendance among Mormons in Logan, Utah, where over 75% of the population are members of the Church of Latter-day Saints, was positively correlated with cooperation toward anonymous strangers in prisoners’ dilemma experiments. In a more religiously

identities and thoughts are primed, reputational concerns emerge which encourage religious prosociality and honesty (Randolph-Seng and Nielsen 2007). When such environmental stimuli are absent, reputational concerns are not triggered and those with religious commitments are no more prosocial than others. Indeed, our results show greater prosociality among self-defined religious and secular participants when imagining being in a synagogue or prayer group than in secular environments. However, the religious are no more prosocial than the seculars in any of our treatments. In other words, religious self-identification does not explain variation in prosociality in our experiments; environmental setting, namely religious and secular differences, does.

Our finding that secular participants are more trusting of synagogue and prayer group attendees than music performance or fitness class attendees has at least two explanations. First and along the lines of Norenzayan and Shariff (2008), secular respondents may recognize that the (religious) individuals attending prayer services are acutely aware of reputational concerns in this religious setting and thus can be trusted. Another explanation is that outsiders to the religious community may use the community's costly religious sacrifices (e.g., regular prayer) as an informative signal of their trustworthiness (Sosis 2005). If religious individuals are willing to endure such sacrifices to be part of their group, they will also abide by the moral strictures of the group, which typically include virtues such as honesty and fairness. Frank (1988), for example, observes that affluent New York City families place advertisements in the newspapers of Salt Lake City for Mormon governesses for their children. Apparently, "persons raised in the Mormon tradition are trustworthy to a degree that the average New Yorker is not" (Frank 1988: 111). Similarly, Paxson (2004) argues that Sikhs are recognized by non-Sikhs as trustworthy trading partners, even without a history of prior exchanges. Non-Sikhs can utilize Sikh religious signals, such as the five K's¹¹, as a "seal of approval" signaling trustworthiness. The external displays

diverse area, no correlation was found, suggesting that reputational concerns were not evoked in this environment.

¹¹ The five K's are Kes, Kangha, Kara, Kirpan, and Kache ra: unshorn hair and beard and wearing a comb, steel bracelet, saber, and breeches. Additional constraints on Sikh behavior, such as refraining from alcohol and tobacco and the requirement to pray five times daily, serve as additional signals further marking Sikhs' distinctiveness.

indicate that the individual has already endured the monitoring systems within Sikh communities that allow him to maintain his membership.

5.2 Secular-Religious Conflict

Differences between religious and secular worldviews constitute an age-old and prime source of tension and conflict in numerous societies. In the U.S., these divisions often surface in contemporary debates over family values and the place of evolution versus intelligent design in education, for instance. Turkey continues to struggle with the role of Islam in its society more than 80 years after Mustafa Kemal Atatürk transformed the former Ottoman Empire into a secular state, abolishing numerous Islamic institutions. But nowhere is the religious-secular conflict more visible and more divisive than in Israel (Efron 2003 offers a thorough treatment of the conflict).

The essence of the conflict between religious and secular Israelis is political with each regarding the other as trying to impose its will on the country as a whole. The extent of the perceived religious threat can be witnessed regularly in alarmist media reports of the impending religious takeover of Israel (see, for example, Martin 2009). In a recent column in *Ha'artez*, a leading Israeli newspaper, Nehemia Shtrasler (2009) puts it most poignantly, "We will survive the conflict with the Palestinians and even the nuclear threats from Iran. But the increasing rupture between the secular and ultra-Orthodox communities in Israel will be the end of us."

Yet, our results are at odds with these assessments of the religious-secular conflict. Instead, we find that secular respondents are most trusting and prosocial in the religious venue and that religious respondents are just as trusting and prosocial as seculars in the non-religious settings.

Gordon (1989) provides the only previous quantitative measure of the religious-secular divide of which we are aware. She conducts a survey to evaluate the attitudes of eleventh grade Israeli students at modern Orthodox religious schools and secular schools toward one another. She finds that along all measures investigated, although both groups perceive the other negatively, the secular students view the religious significantly more negatively than the religious view the secular. Similarly, both

groups generally find interactions with the other to be more hostile than friendly, with the seculars' evaluations being particularly negative. She interprets the disparity between secular and religious views of one another as the result of the seculars' perception that the religious threaten their lifestyle and freedom of choice.

When contrasted with our results, three possible interpretations emerge to account for our divergent findings. One theoretically possible, but empirically unlikely, explanation is that the religious-secular conflict has waned over the past two decades. More plausibly, the different methods employed might explain the disparate results. Just as behavior in incentivized experiments sometimes differs from hypothetical choices (see Camerer and Hogarth (1999) for a survey), behavioral responses to decision scenarios may well display qualitatively different patterns than self-reported attitudinal responses to survey questions. Finally, our adult sample of respondents may be less susceptible to the prejudices and preconceptions of eleventh graders that comprise Gordon's sample. Along similar lines, religious users of Facebook likely constitute a non-representative, relatively cosmopolitan and liberal sample of religious Israelis. Even so, Gordon's eleventh graders at modern Orthodox and secular schools constitute a non-representative sample of Israelis. In Gordon's words, "On a religious continuum from ultra-orthodox to atheistic both groups are moderate" (p. 637). One direction for future research specifically aimed at studying the religious-secular divide would be to examine the attitudes and behaviors of not only modern Orthodox Jews but also the ultra-Orthodox toward secular Jews and vice-versa.

6. Conclusions

Social scientists have recently begun to seek explanations for the perdurance and vitality of religion throughout the world. Part of this pursuit uses experimental methods to explore behavioral differences between religious and non-religious individuals. Previous studies have shown that subjects trust anonymous religious partners more than non-religious partners in trust game experiments (Tan and Vogel 2008). Common-pool resource experiments have shown greater cooperation among members of Israeli religious kibbutzim than their secular counterparts (Ruffle and Sosis 2007; Sosis and Ruffle 2003, 2004). Experimental and theoretical work suggests

that environmental context is critical in eliciting religious prosociality (Norenzayan and Shariff 2008; Shariff and Norenzayan 2007). Our study complements this literature with plausible decision scenarios in religious and non-religious contexts. While laboratory experiments offer the advantage of monetary incentives to induce reliable measures of behavior, the games are inevitably abstract. Although our decision scenarios are imagined, they evoke distinct settings in which to compare the prosociality of religious and non-religious respondents.

We find that religious institutions generate significantly higher levels of altruism and trust than comparable non-religious institutions. This result holds for religious and secular respondents alike. In fact, for the most part, secular subjects display levels of altruism and trust that are similar to those of their religious counterparts in all three settings. Most surprisingly, the most secular respondents who never or rarely attend synagogue are just as altruistic toward synagogue attendees as devoutly religious respondents.

Finally, our findings suggest that the religious-secular divide may not be as profound as commonly perceived. While many secular Israelis may express hostility and mistrust toward the religious and their institutions, our experiments uncover secular individuals' inherent altruism and trust toward the central religious institution, the synagogue, and its members.

References

- Ahmed, A. (2009) "Are Religious People More Prosocial? A Quasi-Experimental Study with Madrasah Pupils in a Rural Community," *Journal for the Scientific Study of Religion*, 48:2, 368-374.
- Alcorta, C. and R. Sosis (2005) "Ritual, emotion, and sacred symbols: the evolution of religion as an adaptive complex," *Human Nature*, 16, 323-359.
- Alcorta, C., R. Sosis, and D. Finkel (2008) "Ritual Harmony: Toward an Evolutionary Theory of Music," *Behavioral and Brain Sciences*, 31:576-577.

- Anshel, A. and D. A. Kipper (1988) "The Influence of Group Singing on Trust and Cooperation," *Journal of Music Therapy*, 25:3, 145-155.
- Back, M. D., J. M. Stopfer, S. Vazire, S. Gaddis, S. Schmukle, B. Egloff and S. D. Gosling (forthcoming) "Facebook profiles reflect actual personality not self-idealization," *Psychological Science*.
- Batson, C. D., P. Schoenrade, W. L. Ventis (1993) *Religion and the Individual*. New York: Oxford University Press.
- Bering, J. M. and D. D. P. Johnson (2005) "O Lord . . . you perceive my thoughts from afar: Recursiveness and the evolution of supernatural agency," *Journal of Cognition and Culture*, 5:118–42.
- Bulbulia, J. (2004a) "Religious costs as adaptations that signal altruistic intention," *Evolution and Cognition*, 10, 19-38.
- Bulbulia, J. (2004b) "The cognitive and evolutionary psychology of religion," *Biology and Philosophy*, 18, 655-686.
- Camerer, C. F. and R. M. Hogarth (1999) "The Effects of Financial Incentives in Experiments: A Review and Capital-Labor-Production Framework," *Journal of Risk and Uncertainty*, 19:1-3, 7-42.
- Darley, J. M. and Batson, C. D. (1973). From Jerusalem to Jericho: A study of situational and dispositional variables in helping behavior. *Journal of Personality and Social Psychology*, 27(1), 100-108.
- Dow, J. (2008) Is Religion an Evolutionary Adaptation? *Journal of Artificial Societies and Social Simulation*, 11(2), 2.
- Efron, N. J. (2003) *Real Jews: Secular vs. Ultra-Orthodox and the Struggle for Jewish Identity in Israel*. New York: Basic Books.

- Frank, R. H. (1988) *Passions Within Reason: The Strategic Role of the Emotions*. New York: W.W. Norton.
- Glaeser, E., D. Laibson, J. Scheinkman and C. Soutter (2000) "Measuring Trust," *Quarterly Journal of Economics*, 115:3, 811-846.
- Gordon, C. (1989) "Mutual Perceptions of Religious and Secular Jews in Israel," *Journal of Conflict Resolution*, 33:4, 632-651.
- Iannaccone, L. R. (1992) "Sacrifice and Stigma: Reducing Free-Riding in Cults, Communes, and Other Collectives," *Journal of Political Economy*, 100:2, 271-291.
- Johnson, D. (2005) "God's punishment and public goods: a test of the supernatural punishment hypothesis in 186 world cultures," *Human Nature*, 16, 410-446.
- Johnson, D. and Bering, J. (2006) "Hand of God, Mind of Man: Punishment and Cognition in the Evolution of Cooperation," *Evolutionary Psychology*, 4, 219-233
- Laquer, W. (1976) *A History of Zionism*, Schocken Books, New York.
- Martin, S. (2009) "A hostile takeover of Zionism," *Globe and Mail*, September 25, 2009.
- Norenzayan, A. and A. F. Shariff (2008) "The Origin and Evolution of Religious Prosociality," *Science*, 322, 58, 58-62.
- Orbell, J., M. Goldman, M. Mulford, and R. Dawes (1992). "Religion, Context, and Constraint Toward Strangers," *Rationality and Society*, 4: 291–307.
- Paxson, N. (2004) "The Entrepreneurial Ethic of Sikhs," Paper presented at meetings of the Association for the Study of Religion, Economics, and Culture, October 22–24, 2004, Kansas City, Missouri.
- Pichon, I., Boccato, G., and V. Saroglou (2007) "Nonconscious influences of religion on prosociality: A priming study," *European Journal of Social Psychology*, 37, 1032-1045.

- Radcliffe-Brown, A. (1952) *Structure and Function in Primitive Society*. London: Cohen and West.
- Randolph-Seng, B. and M. E. Nielsen (2007) "Honesty: One Effect of Primed Religious Representations," *International Journal for the Psychology of Religion*, 17, 303-315.
- Ruffle, B. J. and R. Sosis (2007) "Does it Pay to Pray? Costly Ritual and Cooperation," *The B.E. Journal of Economic Analysis & Policy*, 7:1, (Contributions), Article 18.
- Shariff, A. F. and A. Norenzayan (2007) "God is watching you: Supernatural agent concepts increase prosocial behavior in an anonymous economic game," *Psychological Science*, 18:9, 803-809.
- Shtrasler, N. (2009) "The end of the third temple," *Ha'artez*, July 29, 2009.
- Sosis, R. (2003) "Why aren't we all Hutterites? Costly signaling theory and religion," *Human Nature*, 14, 91-127.
- Sosis, R. (2005) "Does religion promote trust? The role of signaling, reputation, and punishment," *Interdisciplinary Journal of Research on Religion*, 1.1-30.
- Sosis, R. and Alcorta, C. (2003) "Signaling, solidarity and the sacred: the evolution of religious behavior," *Evolutionary Anthropology*, 12, 264-274.
- Sosis, R. and Ruffle, B. (2003) "Religious ritual and cooperation: Testing for a relationship on Israeli religious and secular kibbutzim," *Current Anthropology*, 44, 713-722.
- Sosis, R. and B. Ruffle (2004) "Ideology, religion, and the evolution of cooperation: Field tests on Israeli kibbutzim," *Research in Economic Anthropology*, 23, 89-117.
- Tan, J. H. W. and C. Vogel (2008) "Religion and trust: An experimental study," *Journal of Economic Psychology*, 29:6, 832-848.

Wilson, D. S. (2002) *Darwin's Cathedral: Evolution, Religion, and the Nature of Society*.
Chicago: University of Chicago Press.

Wiltermuth, S. S. and C. Heath (2009) "Synchrony and Cooperation," *Psychological Science*, 20:1, 1-5.

Table 1 – Descriptive Statistics

Variable	Mean	Std. Dev.
<i>Time to Complete (minutes)</i>	6.92	15.73
<i>Age (years)</i>	25.27	5.44
<i>Female</i>	0.62	0.48
<i>Secular</i>	0.72	0.45
<i>Born in Israel</i>	0.80	0.40
<i>Religious Beliefs (1-7)</i>	3.72	1.80
<i>Religiously Active (1-7)</i>	2.32	1.52
<i>Belief in God (1-7)</i>	4.40	2.29
<i>Prayer Frequency (1-7)</i>	2.17	1.40
<i>Fitness Center Frequency (1-7)</i>	3.87	1.40
<i>Close Friends (≥ 0)</i>	5.84	4.26
<i>Borrow Car from Friends (≥ 0)</i>	4.33	4.34
<i>Fair</i>	0.50	0.50
<i>Careful in trust</i>	0.36	0.48
<i>Willingness to trust (1-7)</i>	3.37	1.04

N=989

Notes: Sample contains all Jewish respondents. *Time to Complete*: time required for respondent to complete the questionnaire (measured in minutes). All other variables appear in the questionnaire (see the Appendix).

Table 2 – Summary Statistics by Treatment and Population

Variable	Cell phone	Wallet
Prayer, secular	4.81 (1.36), 178	5.09 (2.36), 181
Prayer, religious	4.85 (1.36), 82	5.67 (2.10), 83
Prayer, total	4.82 (1.36), 260	5.27 (2.29), 264
Music, secular	4.06 (1.71), 260	3.37 (2.00), 260
Music, religious	4.08 (1.76), 102	3.60 (2.22), 102
Music, total	4.07 (1.72), 362	3.44 (2.07), 362
Fitness, secular	3.94 (1.61), 272	4.43 (2.08), 272
Fitness, religious	4.14 (1.79), 91	4.36 (2.08), 91
Fitness, total	3.99 (1.66), 363	4.42 (2.08), 363
Totals	4.24 (1.64), 985	4.29 (2.25), 989

Notes: Mean responses for the two dependent measures (cell phone and wallet) by treatment and according to whether the respondent identified himself as secular or traditional/religious. Standard deviations are in parentheses followed by the number of observations. Due to a technical malfunction with the application, four respondents did not complete the cell phone question in the *prayer* treatment.

Table 3 – OLS Regressions on *Cell Phone* responses

Variable\equation	(1)	(2)	(3)	(4)	(5)	(6)
Music	-.757*** (.124)	-.775*** (.229)	-.893*** (.237)	-.902*** (.248)	-.776*** (.227)	-.760*** (.227)
Fitness	-.831*** (.121)	-.711*** (.240)	-1.198*** (.229)	-.936*** (.251)	-.719*** (.237)	-.678*** (.237)
Prayer*secular	---	-.045 (.181)	---	-.068 (.178)	-.069 (.182)	-.048 (.183)
Music*secular	---	-.017 (.203)	---	-.013 (.205)	-.055 (.201)	-.046 (.200)
Fitness*secular	---	-.202 (.211)	---	-.222 (.212)	-.213 (.209)	-.204 (.209)
Prayer* Prayer frequency	---		-.015 (.065)	---	---	---
Music* Prayer frequency	---		.046 (.065)	---	---	---
Fitness* Prayer frequency	---		.161** (.065)	---	---	---
Prayer*male	---	---	---	-.258 (.178)	---	---
Music*male	---	---	---	.037 (.192)	---	---
Fitness*male	---	---	---	.338** (.172)	---	---
Male	---	---	---	---	.029 (.106)	.012 (.106)
Age	---	---	---	---	.006 (.010)	.004 (.009)
Close Friends	---	---	---	---	-.021 (.015)	-.023 (.014)
Borrow Car from Friends	---	---	---	---	.051*** (.014)	.049*** (.014)
Fair	---	---	---	---	---	-.077 (.114)
Careful in trust	---	---	---	---	---	-.117 (.129)
Willingness to trust	---	---	---	---	---	-.143*** (.055)
Constant	4.82 (0.08)	4.85 (0.15)	4.60 (0.20)	4.96 (0.15)	4.60 (0.29)	5.41 (0.43)
Obs.	985	985	985	985	985	985
Adj. R ²	.04	.05	.05	.04	.05	.06

*** The coefficient is significant at the 1% level.

** The coefficient is significant at the 5% level.

* The coefficient is significant at the 10% level.

Notes: The dependent variable is the response to the cell phone question. OLS coefficients with heteroskedasticity-robust standard errors in parentheses.

Table 4 – OLS Regressions on *Wallet* responses

Variable\equation	(7)	(8)	(9)	(10)	(11)	(12)
Music	-1.84*** (0.18)	-2.07*** (0.32)	-1.94*** (0.33)	-2.05*** (0.34)	-2.07*** (0.31)	-2.02*** (0.31)
Fitness	-0.86*** (0.18)	-1.31*** (0.32)	-0.74** (0.33)	-1.27*** (0.34)	-1.32*** (0.31)	-1.27*** (0.31)
Prayer*secular	---	-.586** (.289)	---	-.578** (.289)	-.630** (.288)	-.560** (.286)
Music*secular	---	-.225 (.252)	---	-.222 (.251)	-.283 (.248)	-.255 (.244)
Fitness*secular	---	.071 (.252)	---	.071 (.252)	.048 (.248)	.125 (.248)
Prayer* Prayer frequency	---	---	.074 (.094)	---	---	---
Music* Prayer frequency	---	---	.122 (.079)	---	---	---
Fitness* Prayer frequency	---	---	.021 (.082)	---	---	---
Prayer*male	---	---	---	.100 (.297)	---	---
Music*male	---	---	---	.032 (.228)	---	---
Fitness*male	---	---	---	.005 (.224)	---	---
Male	---	---	---	---	-.021 (.142)	-.051 (.139)
Age	---	---	---	---	.021 (.013)	.012 (.013)
Close Friends	---	---	---	---	-.016 (.020)	-.021 (.018)
Borrow Car from Friends	---	---	---	---	.066*** (.023)	.057*** (.021)
Fair	---	---	---	---	---	.200 (.152)
Careful in trust	---	---	---	---	---	-.547*** (.164)
Willingness to trust	---	---	---	---	---	-.169** (.074)
Constant	---	5.67 (0.23)	5.11 (0.25)	5.63 (0.25)	4.98 (0.43)	5.92 (1.11)
Obs.	989	989	989	989	989	989
Adj. R ²	.10	.10	.10	.10	.12	.15

*** The coefficient is significant at the 1% level.

** The coefficient is significant at the 5% level.

* The coefficient is significant at the 10% level.

Notes: The dependent variable is the response to the wallet question. OLS coefficients with heteroskedasticity-robust standard errors in parentheses.

Table 5 – Religiosity Measures by self-definition and by sex

Variable	Secular		Traditional		Religious	
	Male	Female	Male	Female	Male	Female
<i>Religious Beliefs</i>	2.98 (1.64)	3.26 (1.65)	4.81 (1.24)	5.06 (1.25)	5.62 (1.09)	5.87 (0.86)
<i>Religiously Active</i>	1.68 (0.92)	1.75 (1.00)	3.17 (1.43)	3.23 (1.28)	5.35 (1.09)	5.26 (1.34)
<i>Belief in God</i>	3.43 (2.20)	3.88 (2.22)	5.52 (1.66)	6.15 (1.27)	6.65 (0.79)	6.74 (0.49)
<i>Prayer Frequency</i>	1.70 (0.84)	1.58 (0.72)	3.44 (1.45)	2.50 (0.76)	6.27 (0.87)	4.50 (1.09)
<i>Fitness Center Frequency</i>	4.22 (1.39)	3.78 (1.39)	3.68 (1.36)	3.78 (1.48)	3.65 (1.27)	3.52 (1.31)
<i>Cell phone</i>	4.27 (1.56)	4.17 (1.66)	4.50 (1.64)	4.37 (1.70)	3.89 (1.68)	4.30 (1.72)
<i>Wallet</i>	4.26 (2.27)	4.19 (2.21)	4.57 (2.64)	4.47 (2.19)	4.38 (1.98)	4.39 (2.27)
<i>Obs.</i>	259	454	75	118	37	46

Notes: By self-defined religiosity and sex, mean responses (standard deviations in parentheses) for four religiosity measures (questions 13-16 in the Appendix), the frequency of exercise at a fitness center (question 17) and the two dependent measures (*cell phone* and *wallet*).