

Religious Ritual and Cooperation: Testing for a Relationship on Israeli Religious Kibbutzim

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The research presented here aims to evaluate the relationship between religious ritual and intra-group cohesion and cooperation. Anthropologists have long noted that one of the primary functions of religion is to promote group solidarity, and most have recognized ritual as the mechanism through which this solidarity is achieved. Guided by Durkheim (1995 [1912]), who was among the first to appreciate the unifying nature of religious ritual, functionalists have explored how ritual sustains the social order within a community (e.g., Douglas 1966; Radcliffe-Brown 1952). They have argued that collective rituals enable the expression and reaffirmation of shared beliefs, norms, and values, and are thus essential for maintaining communal stability and group harmony. For Durkheim, collective rituals are the means by which individuals bond with one another in the community. He claimed that the “effervescent” state of ritual performance minimizes individual distinctions and emphasizes the unity of the group. Others, including neuroscientists, have also noted that religious experiences involving ritual performance can strengthen interpersonal relations between performers (e.g., d’Aquilli and Newberg 1999; Hayden 1987).

Rappaport (1968; 1979) also sought to explain ritual in terms of its functional role for society. In contrast to Durkheim, he interpreted ritual’s affect on group solidarity as a consequence of ritual’s communicative abilities. Rappaport posited that ritual was necessary for human sociality; indeed, ritual is “*the* basic social act” [Rappaport 1979: 174 (his italics)]. Inherent in the structure of ritual is the ability to communicate true information. Rappaport claimed that the ubiquity of ritual across human societies is a result of its facility at resolving the inherent problems of deception in symbolic communication created by the emergence of language. Rituals overcome the possibility of deception because they are indexical. That is,

rituals promote trust and cooperation within communities because they indicate the accurate intentions of their performers (see also Watanabe and Smuts 1999).

Differing from previous functional explanations that sought to explain religion in terms of its societal purpose, Irons (1996a, b, c, 2002) has recently offered an explanation of religious behavior that focuses on individual costs and benefits by considering the selective pressures that have favored religious practices in human history. Similar to Rappaport, Irons regards ritual performance as a means of communication. Humans have faced problems of collective action throughout their evolutionary history. Irons argues that rituals have enabled humans to overcome these dilemmas and achieve high levels of cooperation. He emphasizes that the costliness of ritual performance enables rituals to serve as honest signals of commitment to the group. Only those individuals who are committed to the group's beliefs and goals will be willing to pay the time and energetic costs of ritual performance. In other words, individuals pay the costs of ritual performance, but by doing so they demonstrate their commitment and loyalty to the group and can thus benefit from successful collective action.

Many others have also acknowledged and discussed the relationship between religious ritual and intra-group cohesiveness and cooperation (e.g., Burhoe 1986; Steadman and Palmer 1995; Swanson 1978; Turner 1969). Although there is no consensus about how ritual promotes solidarity and cooperation, it is widely accepted that the collective nature of ritual is a critical feature. Ritual activity entails physically congregating individuals who are assumed to share ideological beliefs and social values. Indeed, anthropologists typically define ritual as an inherently social act (e.g., Radcliffe-Brown 1979; Rappaport 1979). There is of course recognition that many rituals are performed in solitude; however, it is collective rituals and ceremonies that are believed to enhance unity within the group.

Despite achieving the status of conventional anthropological wisdom, little research has actually sought to demonstrate a causal relationship between ritual performance and group solidarity. Nor has research focused on how intra-group solidarity translates into intra-group cooperation, as is expected by various researchers (e.g., Irons 2001, Rappaport 1999, Steadman and Palmer 1995). Anthropological knowledge about the relationship between religion and group-solidarity is based on theory and ethnographic description (e.g., Durkheim 1995 [1912]; Radcliffe-Brown 1948; Turner 1969). With the exception of a few studies (e.g., Hayden 1987, Swanson 1978), empirical hypothesis testing is completely absent from this area of research.

With this in mind, we designed a project aimed at examining the relationship between religious ritual and cooperation. Our research was conducted on Israeli religious kibbutzim,¹ which are an ideal population to evaluate the impact of religious ritual observance on intra-group cooperation. For one, as a communal society, kibbutzim regularly face the challenge of promoting and maintaining cooperation among their members; thus how group-ritual affects social cohesion is pertinent to their collective existence. In addition, thenaturally occurring variation in ritual performance on religious kibbutzim, especially along gender lines, offers an opportunity to explore whether differences in individual cooperativeness can be explained by variation in ritual performance. Furthermore, secular kibbutzim, whose members' lives are not structured by religious ritual, provide a natural comparative population to assess the analysis of ritual performance on religious kibbutzim. If group-ritual is the mechanism that enables religion to enhance collective action, then we should observe a greater willingness to cooperate among those segments of the population that are most active in their performance of group-ritual. To test this hypothesis we conducted controlled experiments on Israeli kibbutzim. The experiments

involved an economic game designed to capture the features of cooperation that exist in these communal societies.

Israeli Kibbutzim

The kibbutz was originally conceived as a small collective farming settlement in which members based their social and cultural lives on the collective ownership of property and wealth. Guided by the dictum “from each according to his abilities, to each according to his needs,” kibbutz members received food, shelter, clothing, education, health care, and a small stipend for their work. The first kibbutz, Degania, was established in the Galilee in 1909. Since then, the kibbutz movement has grown to over 270 settlements located in every region in Israel. Three federations represent the kibbutzim: TAKAM (60%), Kibbutz Artzi (32%), and Kibbutz Dati (6%).² Kibbutzim range in population size from less than 50 to over 2,000. The approximately 124,000 individuals currently living on kibbutzim comprise around 2% of the Israeli population (Central Bureau of Statistics, Government of Israel).

The kibbutz developed out of an egalitarian ideology rooted in Socialist-Zionism as well as the pragmatism of group-living during the early colonization of Palestine by Eastern European Jews. The early kibbutzim were fiercely committed to socialist and secular ideologies. One of the goals of the kibbutz movement was to establish a Jewish farm class in Palestine that would ensure Jewish control of the means of production (Near 1992; Rayman 1981). Although originally agriculturally based, kibbutzim were unable to survive economically through farming alone. Over the past several decades the kibbutzim have accepted the challenge and diversified their economic activities (Maron 1994). Today enterprises such as tourism, health spas, and

factories manufacturing the entire gamut of imaginable products provide the majority of kibbutzim's income.

The history of the religious kibbutzim begins several decades after the establishment of the original kibbutzim. Religious Jewish pioneers who wanted to live within a kibbutz framework began immigrating to Palestine in the late 1920s. The first religious kibbutz was established by the Rodges Group in 1931 and ultimately named Yavne in 1941. Since then, the Religious Kibbutz Movement (Kibbutz Dati), formally established in 1935, has grown to represent over 8,000 members in 16 kibbutzim. The religious kibbutzim were not anticipated by the formulation of an explicit and detailed ideology (Katz 1995). Religious kibbutzim integrated the secular kibbutz culture grounded in socialist ideology and a religious culture rooted in traditional or *halachic* Judaism. In contrast to the secular kibbutzim, it was the commitment of the religious kibbutzim to traditional Judaism that fostered their socialist perspective. Despite their religious motivations, they modeled their communal lifestyle and economic structures after the secular kibbutzim that preceded them (Fishman 1983, 1987, 1992).

Religious kibbutz members practice a form of Judaism known as Modern Orthodoxy, which means that they do not shun modernity (e.g., in contrast to the Ultra-Orthodox, they actively participate in Israel's military) yet they adhere to *halacha*, or traditional Jewish law. As Modern Orthodox Jews, ritual plays a central role in how religious kibbutz members organize their lives. Although a variety of requirements are imposed equally on males and females, such as keeping kosher and not working on the Sabbath, Modern Orthodoxy is not sexually egalitarian with respect to ritual obligations. Male ritual requirements are largely publicly oriented whereas female requirements are generally pursued privately or in the home. Indeed, of the three major requirements imposed on women, two are private (namely, the laws of family purity such as

attending a *mikveh* or ritual bath, and separating a portion of dough when baking bread) and the third is a family ritual (lighting Sabbath candles). Males on the other hand regularly engage in a variety of collective rituals, most notably public prayer, which occurs three times daily. These gender differences in ritual practice will provide an opportunity to compare directly how group and private ritual performance impacts cooperative behavior.

HYPOTHESES

Although there is not agreement on the details, most anthropological theories on the social function of religion maintain that collective rituals promote solidarity and cooperation (see citations above). In contrast, no theory proposes a similar functional role for privately performed rituals. Private ritual appears to serve an alternative purpose, such as communicating with oneself (e.g., Rappaport 1999; Sosis submitted). Thus, we expect that religious males will exhibit higher levels of cooperation than religious females, because of their greater participation in collective ritual, especially daily prayer. We also expect the frequency of participation in collective ritual to impact positively an individual's willingness to cooperate. Therefore we predict that men who participate in communal prayer most frequently will exhibit the highest levels of cooperation.

METHODOLOGY

Experimental Design

During the past few years, anthropologists have extended their methodological tool kit to include experimental games developed in economics. For example, over a dozen anthropologists recently conducted economic experiments among hunter-gatherers, nomadic herders, horticulturalists, and agriculturalists to explore cross-cultural variation in notions of fairness

(Henrich et al. 2001). Here we describe an experimental bargaining game that we developed to test the hypothesis that collective ritual performance enhances intra-group cooperation.

The game involves two members from the same kibbutz who remain anonymous to each other during and after the experiment. Each kibbutz member is told that there are 100 shekels³ in a joint envelope to which they each have access. Each participant simultaneously decides how much of the 100 shekels to take from the envelope and keep. If the sum of the requests to keep money exceeds 100 shekels, then both kibbutz members receive no money and the game is over. If the total requests are less than or equal to 100 shekels, then each kibbutz member keeps the amount he or she requested. In addition, the amount that remains in the envelope increases by 50% (i.e., is multiplied by 1.5) and this amount is divided in half and given to each participant.

This game falls under a class of experiments commonly known as common-pool resource dilemmas (Ostrom et al. 1994). Two features characterize common-pool resources: non-excludability and divisibility. In other words, common-pool resources are publicly accessible goods that once consumed by an individual are no longer available for consumption, such as fish stocks from a lake or ocean. Since common-pool resources are unregulated and accessible to multiple individuals who can consume the goods to depletion, maintaining these resources is problematic unless individuals exhibit self-restraint. Kibbutz members regularly face common-pool resource problems, such as the consumption of communal food, water, electricity, and the use of communal cars.⁴

Our experimental design captures the notion of cooperation relevant to their social conditions. In the experimental game, the amount of money taken out of the envelope measures a player's willingness to cooperate. If players do not cooperate, their total requests will exceed the amount of money available in the envelope and neither player will receive any payment. The

more one is willing to cooperate by exhibiting self-restraint in one's request, the greater the level of total resources available to be divided. Our hypotheses suggest two main predictions: 1) male religious kibbutz members will take out less money from the envelope than their female counterparts, and 2) male synagogue attendance will be negatively correlated with the amount taken out of the envelope. In addition, support for the position that collective ritual can promote cooperation will be strengthened if we find no sex differences in the amount taken out of the envelope on secular kibbutzim. In other words, if we do find a difference in the amount taken out of the envelope between religious males and females, we want to be able to attribute it to a difference in social environment, and not an inherent difference in how males and females play the economic game.

Sample

To test our hypotheses, we constructed samples of religious kibbutzim and secular kibbutzim that are very similar along various dimensions that were assumed to affect cooperation. Seven religious kibbutzim⁵ were matched with eleven secular kibbutzim according to their population size, year of establishment, degree of economic success, and degree of privatization.⁶ Five of the seven religious kibbutzim were matched with two or more secular counterparts. The other two religious kibbutzim were either too small or too young to find more than one suitable secular match. It should be noted that on average religious kibbutzim are economically more successful (Fishman and Goldshmidt 1990) and much less privatized (i.e., they are more communal) than secular kibbutzim. Thus, our sample of secular kibbutzim is not representative of the secular kibbutz movement. To match the religious kibbutzim in our sample, our secular sample consists of some of the most successful and least privatized secular kibbutzim

in a movement that is otherwise economically struggling and becoming much less communal (Barkai 1999; Helman 1994; Leviatan et al. 1998).

About a week before we planned to conduct experiments at a kibbutz, we sent a letter of introduction to every household in the kibbutz describing the nature of the research.⁷ The letter informed kibbutz members that we would be calling them a day or two before our visit to invite them to participate in the research. For those who agreed to participate,⁸ we arranged a specific time to meet at the participant's home. At each kibbutz visited we sampled between 24 to 56 observations, depending on the size of the kibbutz.

Data Collection

All of our data collection procedures were refined during extensive pilot studies conducted at Ben-Gurion University and three secular kibbutzim not in our sample. To facilitate data collection and to reduce the chances that participants who completed the experiment could contact others who may be scheduled to participate, 20 Ben-Gurion University graduate and undergraduate students were employed to collect data so that multiple experiments could be conducted simultaneously. Typically, about 12 researchers visited a kibbutz.

Experimenters were paired before their arrival at a kibbutz. Paired experimenters maintained contact with each other via cellular phone throughout the stay on the kibbutz. Upon arrival at the kibbutz, each experimenter searched for the home of her first participant. Before entering, she telephoned the other experimenter with whom she was paired to let him know that she had found the participant's residence. Experimenters entered the houses of their respective participants simultaneously, so that paired kibbutz members began the experiment at the same time.

Upon entering the participant's home, the experimenter introduced herself and requested a quiet place where they could sit undisturbed for the next 30 minutes. Once seated, the experimenter conveyed some preliminary details concerning the experiment (e.g. the participant's identity and decisions are to be used for research purposes only and will remain anonymous, the decision-making task will be followed by an interview and the participant will be paid in cash at the end of the experiment according to the decisions made). The kibbutz member was then given the instruction sheet and told to take his time and read the instructions carefully. Once finished, the experimenter read the instructions aloud. To ensure complete comprehension of the game, two random examples were performed. In each example, a pair of numbers was randomly drawn from a bag containing numerical values between 0 and 100. The numbers were meant to be the amounts chosen by two hypothetical participants in the experimental game. Thus, for instance, if the numbers 10 and 70 were drawn from the bag, the participant was shown that the first player would receive 25 shekels and the second player would receive 85 shekels, since the 20 shekels left over would increase to 30 shekels and be split between them.

After any clarifying questions were answered, a decision was elicited regarding the amount the participant wished to remove from the envelope. The experimenter of the participant who decided first telephoned the other experimenter by cellular phone and informed the other experimenter that a decision had been reached. The experimenter did not convey the amount of the decision in this conversation in order to avoid any reaction or facial expression on the part of the second experimenter, which could influence the second participant's decision. Further, immediately revealing the participant's decision might make him suspicious that his decision was being conveyed to the other participant who would then use this information to make a

decision. After the second participant reached a decision, the other experimenter was phoned and the decisions were exchanged. Each experimenter then conveyed to the participant the other member's decision, the amount remaining in the envelope, and the amount that he will receive after the amount left over in the envelope (if anything) is increased by 50% and divided between both players.

Following the experiment, structured interviews were conducted to collect data on a variety of demographic and behavioral variables relevant to the research hypotheses. At the conclusion of the interview, participants were paid their earnings from the experiment in cash.

RESULTS

Between February and May 2000, we conducted experiments with 216 religious kibbutz members. Potential demographic and kibbutz-level predictors of the amount of money a participant chose to remove from the envelope are described in Table 1. Table 2 presents the results of multiple linear regression analyses, where the amount removed from the envelope is the dependent variable. As hypothesized, sex is a significant predictor of the amount of money removed from the envelope: males take out significantly less than females. On average males removed 29.9 shekels ($n = 108$) and females removed 33.7 shekels ($n = 108$). The only other variable in the model significant at .05 is whether or not the participant was born on the kibbutz. Those born on the kibbutz take out more than those who moved to the kibbutz. This makes intuitive sense: those who move to a kibbutz are typically motivated by a strong ideological commitment to socialism and communal life. This result suggests that individuals who believe passionately enough in the values of communal life to move to a kibbutz are more willing to cooperate than those who have spent their lives on the kibbutz.

Although the kibbutz-level variables (kibbutz age, membership size, economic strength, and degree of privatization) are not significant in the model presented in Table 2, it should be stressed that we know from other research in progress that some of these kibbutz-level variables *are* significant predictors of the amount taken (Ruffle and Sosis n.d.). However, there are only seven kibbutzim in this sample, and they do not vary widely along these dimensions, thus it is not surprising that they are not significant predictors in *this* sample. It should also be noted that we found no significant effects by experimenter, including whether the experimenter dressed religiously. We also found no evidence that the examples used during the explanatory phase of the experiment had any impact on participants' decisions (analyses not presented here).

To assess whether our results could be interpreted as a consequence of inherent differences in the way males and females respond in this experimental game, we conducted similar regression analyses on data collected among a sample of secular kibbutzim. Recall that the particular secular kibbutzim were chosen to match the religious kibbutzim in our sample along all dimensions believed to affect cooperation (see above). We conducted experiments with 342 secular kibbutz members, also between February and May 2000. The results in Table 3 indicate that among secular kibbutz members sex is not a significant predictor of the amount removed from the envelope; indeed, on average males removed 30.1 shekels ($n = 170$) and females removed 30.5 shekels ($n = 172$). The only marginally significant variable in the regression model is whether an individual worked outside the kibbutz. Individuals who work outside the kibbutz take out less money from the envelope suggesting a greater willingness to cooperate among these members. To understand this result, note that those individuals who work outside the kibbutz typically earn above average salaries. As kibbutz members they are required to contribute these high salaries to the kibbutz. Their choice to remain on the kibbutz rather than

join mainstream Israeli society therefore reflects their commitment to the kibbutz values of community and cooperation.

Data on synagogue attendance were collected during the post-experiment interviews. Participants from religious kibbutzim were asked to indicate their synagogue attendance on a six-point scale with the following categories: daily (6), several times per week (5), Sabbath and holidays (4), holidays only (3), seldom (2), and never (1). The average male response was 5.5 (between several days per week and daily) and the average female response was 3.7 (between Sabbath and holidays and holidays only). This difference is significant ($n = 203$, $t = 16.23$; $p < .0001$). The first regression in Table 4 shows that synagogue attendance is a significant predictor of the amount taken from the envelope: the more frequently one attends synagogue, the less money they remove from the envelope. Furthermore, as expected, synagogue attendance influences males' decisions only. The second regression in Table 4 shows that if we partition the effects of synagogue attendance by sex, synagogue attendance is a significant predictor of the amount taken by males but not females, and sex is no longer a significant predictor.

Religious males who attended synagogue daily, on average took out 27.2 shekels ($n = 68$). These males took out less than any other subpopulation in the sample: religious males that did not attend synagogue daily (mean = 33.1; $n = 33$; $p = .06$), religious females (mean = 33.7; $n = 108$; $p = .007$), and secular kibbutzniks (mean = 30.3; $n = 342$; $p = .09$).

DISCUSSION AND CONCLUSIONS

The analyses presented here provide support for the thesis that collective ritual can promote cooperation. Our results indicate that religious males exhibit a greater willingness to cooperate than religious female kibbutz members. These differences are not likely to be a result

of inherent differences in the way males and females play this game, because there were no observed sex differences exhibited among secular kibbutz members. On secular kibbutzim, there are no collective rituals (secular or religious) that occur as consistently and frequently as the thrice-daily prayer of religious male kibbutz members. Data collected on the number of communal events that participants attended per month indicate that secular kibbutz members on average only attend roughly two communal events per month, with no evidence of any difference between the sexes ($t = 1.65$; $df = 258$; $p = .23$).⁹ Thus, we suggest that the observed difference between secular and religious kibbutzim (namely, that religious males exhibit a greater willingness to cooperate than religious females, whereas secular kibbutz members show no gender difference), is a consequence of differing social environments. We suspect that the variation in ritual performance between religious males and females is responsible for the difference in their decisions concerning how much money to take out. Indeed, the data on synagogue attendance show that male synagogue attendance is a significant predictor of the amount taken, but female synagogue attendance is not. In Modern Orthodoxy there is no obligation for women to pray as a group, thus attending synagogue is not a collective ritual for females. Accordingly, synagogue attendance has no impact on female responses in the experiment.

It may be argued that males who regularly participate in collective ritual take out less from the envelope because they are risk-averse, and not because they are more willing to cooperate with their fellow kibbutz members. In other words, these men claim more modest sums of money because they fear that the combined requests will exceed 100 shekels, resulting in no payment. In order to assess this interpretation, we asked participants, after they made their decision and before they were told their partner's decision, the amount they believed their

partner would request from the envelope. If males who regularly engage in collective ritual are taking out less because of a fear that the joint requests will exceed 100 shekels, then ritual participation should be positively correlated with predictions of the amount that partners will remove from the envelope. However, linear regression analyses of the amount that kibbutz members predict their partners will remove from the envelope do not support this hypothesis. On the contrary, the results indicate that the amount that religious males predict their partners will remove is negatively correlated with synagogue attendance ($F = 6.08$; $df = 1$; $p = .015$), whereas synagogue attendance is not a predictor of the amount religious females expect their partners to remove from the envelope ($F = 1.47$; $df = 1$; $p = .228$). These results are interesting and support the thesis that collective ritual promotes cooperation and solidarity.

The amount a participant expects his partner to remove from the envelope can be interpreted as a measure of trust. The less one expects his partner to remove from the communal envelope the more he trusts that his partner will cooperate and exhibit self-restraint. Thus, our results suggest that the more frequently religious males engage in ritual, the more cooperative they expect others to be, that is, the more trusting they are. This is important because trust is the foundation from which successful cooperative action can develop (e.g., Frank 1988; Schelling 1960), and it has been argued that ritual's ability to promote cooperation may be mediated by trust (Irons 2002; Sosis 2000).

Further support for the finding that those who engage regularly in collective ritual perceive others to be more cooperative and therefore are themselves more willing to cooperate comes from data collected during post-experiment interviews. Participants were asked to rate the level of cooperation on their kibbutz on a five-point scale with "very high" equaling five points, and "very low" equaling one point. Linear regression analyses indicate that male synagogue

attendance is positively correlated with members' ratings ($F = 3.78$; $df = 1$; $p = .054$), whereas female synagogue attendance is not ($F = .94$; $df = 1$; $p = .334$). In other words, consistent with our expectations, males who attend synagogue more regularly perceive a greater level of cooperation and solidarity on the kibbutz than those who attend less frequently, whereas synagogue attendance has no impact on females' perception of cooperation on the kibbutz. Of course, these data, as well as the experimental game data, are unable to distinguish the causal direction of this relationship. We assume that collective ritual participation influences beliefs (perceived levels of cooperation) and behavior (experimental decisions). It is also possible that those who perceive greater levels of cooperation on the kibbutz are more likely to participate regularly in collective ritual, although if true, we have no explanation why this would be the case. It seems more plausible, as numerous theorists following Durkheim have claimed, that ritual participation enhances the social bonds that connect its participants.

Our results raise a number of questions that need to be addressed in future work. First, how do secular kibbutz members maintain solidarity and cooperation? Although many of the secular kibbutzim are experiencing a genuine social and economic crisis (Ben-Rafael 1997; Leviatan et al. 1998), as was noted above, the secular kibbutzim in our sample are relatively successful and stable. What mechanisms other than collective ritual contribute to the observed solidarity and cooperation on secular kibbutzim? Second, what is the mechanism through which ritual impacts individual willingness to cooperate? Some work has begun to examine this question, especially evaluating Irons's theory of ritual as a commitment mechanism (Sosis 2000; Sosis and Bressler submitted). Third, how do collective rituals vary in their ability to impact group solidarity? What are the critical features of collective ritual that promote cooperation? Future research in the anthropology of religion must explore these questions. There are an

abundance of theories that attempt to explain the relationship between religion and group solidarity; our immediate problem is not a lack of ideas but a paucity of data that could be used to evaluate these theories systematically. This is where our future efforts must lie.

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¹ The word “kibbutzim” is the Hebrew plural for the word kibbutz, an Israeli commune in which all income is divided equally between members and consumption is according to need.

² The two secular kibbutz federations, TAKAM and Kibbutz Artzi, are currently in the process of uniting to form one federation.

³ 1 U.S. dollar equaled approximately 4 shekels at the time these experiments were conducted.

⁴ During structured interviews, many kibbutzniks complained about the over consumption of common-pool resources. Moreover, for those kibbutzniks who wished to see the kibbutz become more privatized, this was cited as the number one reason.

⁵ The choice of religious kibbutzim is obviously the limiting factor in determining the sample population. There are only 16 religious kibbutzim and many of these are located in the West Bank and Gaza. Although kibbutzim located in these areas undoubtedly have unique characteristics worth studying, for a variety of reasons they were eliminated from our sample.

⁶ These data were obtained from the respective kibbutz federations. We measured privatization as the number of practices (21 total) that were no longer communal. For example: Are kibbutz members required to pay for their vacations abroad? Do the members have to pay for meals in the communal dining hall? Is the ownership of private cars permitted? Does the kibbutz have a differential pay scale?

⁷ Prior to sending the letters, we obtained permission to conduct the research from the secretary of each kibbutz in our sample.

⁸ More than 75% of the kibbutz members called agreed to participate in the project and most who chose not to participate did not do so out of a lack of interest, but due to prior commitments during the time of our scheduled visit to their kibbutz.

⁹ Even though practice has not entirely matched idealism (e.g., Tiger and Shepher 1975), secular kibbutzim have always aimed to be highly sexually egalitarian (Gavron 2000; Spiro 1956, 1979).

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Table 1: Independent variables in multiple regression analyses (variables without explicit coding schemes were coded directly as the value of the variable)

<i>independent variable / coding schema</i>	religious kibbutz (n = 216)		secular kibbutz (n = 342)	
	<i>mean</i>	<i>standard deviation</i>	<i>mean</i>	<i>standard deviation</i>
1 sex 0 = female 1 = male	0.50	0.50	0.50	0.50
2 age	49.96	18.07	47.32	15.86
3 birthplace 0 = not born on kibbutz 1 = born on kibbutz	0.23	0.42	0.30	0.46
4 years of education	13.89	3.03	14.06	2.64
5 childhood religious status 0 = did not grow up religious 1 = did grow up religious	0.91	0.28	-----	-----
6 marital status 0 = not currently married 1 = currently married	0.86	0.34	0.67	0.47
7 number of offspring	3.79	1.95	2.52	1.67
8 number of residents in household	3.59	1.95	2.57	1.49
9 number of households on kibbutz with kin	2.73	2.97	2.39	2.37
10 employment location 0 = work on kibbutz 1 = work outside of kibbutz	0.21	0.41	0.23	0.42
11 kibbutz age (years)	53.09	7.65	62.92	14.75
12 population size	658.26	209.30	652.78	185.12
13 economic strength 1 = very strong 2 = strong 3 = fair 4 = weak 5 = very weak	2.21	0.74	1.84	0.86
14 number of privatization changes adopted by kibbutz	2.10	1.56	2.11	1.42
15 movement 1 = TAKAM 2 = Kibbutz Artzi	-----	-----	1.43	0.50
16 synagogue attendance 1 = never 2 = seldom 3 = holidays only 4 = Shabbat and holidays 5 = several times per week 6 = daily	4.59	1.20	-----	-----

Table 2: Multiple regression model of the amount removed from envelope by members of religious kibbutzim

<i>Independent variable</i>	<i>parameter estimate</i>	<i>standard error</i>	<i>p value</i>
Intercept	34.260	13.910	
Sex	-6.011	2.465	0.016
Age	-0.060	0.114	0.599
Birthplace	7.529	3.362	0.026
Education	-0.774	0.419	0.066
Childhood religious status	-7.948	4.398	0.072
Marital status	3.688	3.934	0.350
Number of offspring	0.086	0.889	0.923
Number of residents	0.129	1.023	0.900
Number of kin households	-0.397	0.442	0.369
Employment location	2.089	3.107	0.502
Kibbutz age	-0.193	0.286	0.500
Population size	0.020	0.015	0.189
Economic strength	6.651	3.689	0.073
Degree of privatization	-0.680	1.606	0.672

Table 3: Multiple regression model of the amount removed from envelope by members of secular kibbutzim

<i>independent variable</i>	<i>parameter estimate</i>	<i>standard error</i>	<i>p value</i>
intercept	38.942	9.619	
sex	-0.443	1.924	0.818
age	-0.034	0.102	0.739
birthplace	1.056	2.410	0.662
education	-0.056	0.383	0.884
marital status	-0.123	2.979	0.967
number of offspring	1.269	0.976	0.195
number of residents	-1.192	0.999	0.234
number of kin households	0.263	0.452	0.560
employment location	-4.532	2.339	0.054
kibbutz age	0.222	0.165	0.181
population size	-0.020	0.018	0.267
economic strength	-0.755	1.578	0.633
degree of privatization	-0.259	0.814	0.750
movement	-3.650	3.236	0.260

Table 4: Linear regression analyses of amount removed from envelope by members of religious kibbutzim

<i>independent variable</i>	<i>parameter estimate</i>	<i>standard error</i>	<i>p value</i>
intercept	40.755	4.643	
synagogue attendance	-2.040	0.977	0.038
intercept	30.171	7.676	
sex	22.071	14.278	0.124
synagogue attendance * male	0.930	2.028	0.050
synagogue attendance * female	-4.200	2.166	0.647