

Just How Cooperative are Kibbutz Members? Field Experiments on Israeli Kibbutzim and in Israeli Cities

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Abstract

Unlike individuals living in capitalist economies, members of collective societies depend on mutual cooperation to achieve their economic goals. We study the cooperative behavior of one of the most successful and best-known modern collective societies, the Israeli kibbutz. The facts that kibbutz members have voluntarily chosen their lifestyle of cooperation and egalitarianism, the ease with which they could join the surrounding capitalist society, their disproportionate involvement in social and national causes and their revealed willingness to sacrifice for the benefit of Israeli society as a whole suggest that if ever there was a society of individuals whose cooperativeness extends equally to members and non-members, the kibbutz is it. Nonetheless, the findings from our field experiments indicate that kibbutz members display higher levels of cooperation when paired with other, anonymous kibbutz members than when paired with city residents. In fact, when paired with city residents, kibbutz members' observed levels of cooperation are identical to those displayed by the city residents. Moreover, we present evidence that kibbutz socialization actually damages the willingness of members to cooperate with one another.

keywords: cooperation, field experiment, kibbutz, in-group bias, self-selection, socialization

JEL classification codes: C72, C93, P32.

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1. Introduction

The Israeli kibbutz is among the most cooperative societies in the world. Kibbutz members live together, typically work and socialize together, and share equally all earned income, independent of an individual member's occupation, skills or work effort.

What is so striking about the egalitarian and cooperative practices of the kibbutz are their voluntary nature. Members of the kibbutz have freely chosen their lifestyle. They have intentionally removed themselves from mainstream capitalist society to pursue an ideology of socialism and cooperation. If they so desire, kibbutz members may freely abandon the way of life on the kibbutz to (re)join Israeli capitalist society. The fact that kibbutz members are ethnically, culturally, linguistically and visibly indistinguishable from other Israelis testifies to the ease with which they may (re)enter the surrounding capitalist culture. In other words, kibbutz members have very low barriers and costs to exiting the kibbutz. It follows that those who choose to join the kibbutz most likely do so out of a desire to live by the egalitarian and cooperative precepts of the kibbutz.

Moreover, the *raison d'être* and lifestyle of the kibbutz socialize individuals to cooperate not only with one another, but also with Israelis more generally. Ben-Rafael (1997) summarizes the three central components of kibbutz identity as a sense of community grounded in cooperation and egalitarianism, entrepreneurship, and social elitism. By social elitism Ben-Rafael means that kibbutz members perceive their involvement and leadership in social and national causes as their duty. Indeed, a recently formed organization of traditional kibbutzim known as "HaZerem HaShitufi" (The Cooperative Trend) publicizes as part of its stated goal that, "we have to dedicate ourselves to the building of a better society. The kibbutz must respond to the challenge and ... be the pioneer leading the crowd" (Ben-Rafael, 1997, p. 20; Frank et al.,

1988, p. 53). Kibbutz members have always perceived themselves and indeed portrayed themselves to outsiders as willing to sacrifice their own material well being for the benefit of Israeli society. The kibbutz was predicated on building Jewish settlements in Palestine with the eventual goal of founding a Jewish state (Near, 1992). Putting their lives at risk, early kibbutz members played a central role in the establishment and defense of modern Israel and in the determination of its borders. Although somewhat less dramatic, kibbutz members' continued sacrifice today can be seen by their keen involvement in various forms of voluntary social, national and military service. While kibbutz members represent only 2% of the Israeli population, they are disproportionately represented in the Israeli army's combat units, volunteer youth groups, community service projects such as the absorption of new immigrants, and in public service positions.

In short, kibbutz members' freely chosen lifestyle of egalitarianism and cooperation despite possibly more lucrative outside opportunities indicates a commitment to these ideals. Furthermore, the historical role of the kibbutz in founding the modern state of Israel and the continued service of kibbutz members to Israeli society constitute evidence that kibbutz members' cooperative philosophy extends to Israeli society at large. Together these observations suggest that if ever there was a society of individuals whose cooperativeness extends equally to members and non-members, the kibbutz is it. At the very least, we might expect kibbutz members to exhibit higher levels of cooperation toward non-members than non-members exhibit toward others. These are the hypotheses we wish to test.

To evaluate whether kibbutz members cooperate to the same degree with fellow kibbutz members and non-members, we design a common-pool resource dilemma game conceptually similar to the sorts of day-to-day problems confronted by kibbutz members. The game is

conducted in pairs. In one treatment, a kibbutz member is paired with a fellow, anonymous kibbutz member. In the second treatment, kibbutz members are paired with Israeli city residents. By comparing kibbutz members' willingness to cooperate in these two treatments we are able to determine if kibbutz members are indeed equally cooperative toward members and non-members, or if they behave less cooperatively toward non-members. In addition, data collected during a post-experiment interview will allow us to assess to what extent kibbutz socialization versus self-selection contribute to the cooperativeness of kibbutz members.

In the next section, we provide some background on the Israeli kibbutz. Section 3 discusses the samples of kibbutzim (the plural of kibbutz) and cities selected for our research. Section 4 details the experimental game, procedures, and hypotheses. The results are presented in section 5. The discussion in section 6 attempts to interpret and explain our findings. Section 7 concludes.

2. The Israeli Kibbutz

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. 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. 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. Guided by the dictum "from each according to his abilities, to each according to his

needs,” the traditional model of the kibbutz prescribes that each member receives food, shelter, clothing, education, health care, and an equal share of the income generated by the kibbutz. That all kibbutz members earn an equal income holds whether one is the dishwasher in the communal dining hall, the CEO of the computer chip plant, the kibbutz gardener or retired. In other words, income on the kibbutz is divided equally regardless of profession, skill or effort level. Moreover, a classic tragedy of the commons problem follows from kibbutz members’ equal and unrestricted access to non-renewable consumption goods on a kibbutz. For example, in the traditional kibbutz, the costs associated with an individual’s consumption of food, water, electricity and the use of communal cars are borne by the kibbutz, not the individual. As a result, kibbutz members constantly confront common-pool resource problems.¹ Cooperation and self-restraint are necessary to prevent the depletion of these goods and to ensure the continuity of the kibbutz.

Indeed, the continuation of the kibbutz should not be regarded as self-evident for several reasons. First, kibbutz members have very low costs to exiting the kibbutz and (re)entering mainstream Israeli society for two reasons. To see this, note that most kibbutzim bear a debt burden (Leviatan et al., 1998). An individual contemplating becoming a member (e.g., the child of a kibbutz member who has reached the age at which she must decide to join the kibbutz or leave) weighs assuming her equal share in the payback of the kibbutz’s debt versus starting at zero by choosing a non-kibbutz life.² Thus, a dissatisfied kibbutz member can freely leave the kibbutz. Many do.³ Moreover, Israeli kibbutz members are indistinguishable in language, dress,

¹ See Ostrom, Gardner and Walker (1994) for a thorough theoretical, experimental and empirical treatment of common-pool resources.

² Like a firm, a kibbutz in debt may very well have a positive net present value. The kibbutz’s land and its production capacity are among its assets. However, for the young person considering membership, the immediacy of the debt payments may loom larger than the promise of the kibbutz’s non-liquid assets.

³ In fact, the openness of the kibbutz and the free mobility and interaction between the kibbutz and the capitalist economy contrasts it with intentional cooperative societies in the U.S. like the Amish, Hutterites, and Mennonites (Janzen 1999).

culture and morphology (i.e. physical characteristics) from other Israelis. This last fact attests to the absence of any cultural barriers to entering the surrounding Israeli capitalist society.

Second, the decline of many kibbutzim in recent years and the breakdown of the overwhelming majority of U.S. communes established during the 1960s attest to the difficulty in sustaining cooperation over time and across generations. Beginning in the 1950s and 1960s, kibbutzim found themselves economically unable to survive by farming alone. Consequently, through banks loans, kibbutzim started to diversify their range of economic activities by developing manufacturing and service industries. Today, kibbutzim are modern cooperative societies engaged in the production of the entire gamut of goods and services in high technology, manufacturing, tourist and agricultural industries using the most modern production techniques. The decline of many kibbutzim began in the mid-1980s when the Israeli economy experienced hyperinflation, soaring interest rates and a sharp drop in exports. Those kibbutzim that took on large amounts of debt in the late 1970s and early 1980s (at a time when banks began to index loans to the rate of inflation and to the dollar exchange rate) were particularly hard hit.

Concerns for economic viability set in motion numerous structural changes on the kibbutz (see Ben-Rafael, 1997, for further details). The most significant change adopted by many kibbutzim involved the transfer of control of certain resources from the collective to the individual household. This process, referred to as “privatization”, consists of numerous measures including: the requirement that individual households, rather than the kibbutz, pay for their private consumption of goods like travel, electricity, telephone calls and clothing; the cancellation of dinner in the communal dining hall thereby requiring kibbutz members to eat in their own homes at their own expense; differential household budgets; and the encouragement of kibbutz members to seek work outside of the kibbutz. However, the most radical change – and

typically the last one implemented by a kibbutz that has decided to go all the way with privatization – is differential salaries according to which individual kibbutz members earn incomes that reflect, at least in part, their productivity.

For the purposes of this paper, our sample consists entirely of traditional, non-privatized, highly collectivized kibbutzim.⁴ It may nonetheless be that the cooperative spirit of even those kibbutzim that emerged seemingly unscathed from the mid-1980s crisis has eroded due to the influences of other privatized kibbutzim as well as the increasingly competitive Israeli economy.

3. Sample

Four traditional, non-privatized kibbutzim participated in this project. An agreement with the individual kibbutzim and with each of the three kibbutz federations forbids us from revealing the identity of the participating kibbutzim. We are able to say that we chose four kibbutzim established between 1943 and 1949, located in central and southern Israel, each with between 500 and 700 members, and all moderately to very successful.

Accordingly, we selected neighborhoods in seven towns and cities in central and southern Israel. These cities are Beer Sheva, Hadera, Maitar, Omer, Or Yehuda, Rehovot and Rishon Lezion. The neighborhoods in these cities were chosen to match the different standards of living among our four sample kibbutzim.

⁴ In another paper (Ruffle and Sosis, in progress), we examine the impact of privatization on intra-group cooperation.

4. Experimental Design, Procedures and Hypotheses

4.1 Experimental Design

The logistics of our field experiments and the nature of our subject pool raise several essential considerations in the choice of an experimental game. First, kibbutz members live together, and work and socialize with one another on a daily basis. Assuring subject anonymity is therefore of prime importance. For this reason, we chose to conduct these experiments in the privacy of the individual members' homes rather than in a communal space. Second, to allow for the comparison of kibbutz members' choices with those of city residents when the two groups are matched with one another, we require a symmetric game.

We select a one-shot game for two reasons. First, we want to capture participants' instinctive willingness to cooperate. Our question of interest is *not* whether kibbutz members are able to learn to cooperate with city residents to the same degree that they cooperate with members of their own kibbutz. A more obvious reason for the choice of a one-shot game is that a repeated game complicates considerably subjects' decision task by introducing additional strategic considerations. Given the diversity of the subject pool in terms of education, age and occupation, we sought a conceptually simple game.

As for the particular nature of the experimental game, issues of cooperation and self-restraint confront kibbutz members on a daily basis. As discussed in section 2, almost all consumption goods on a kibbutz are common-pool resources in the sense that they are exhaustible and freely and equally accessible to all kibbutz members. We therefore wanted a game that captures an element of the common-pool resource dilemmas familiar to kibbutz

members. Our objective is to determine if kibbutz members' belief in, and practice of, cooperative behavior is limited to their fellow members, or if they behave just as cooperatively toward outsiders.

The experimental game we use is conducted in pairs. There are 100 shekels available in a joint envelope to which each pair member has access.⁵ Each pair member independently decides how much of the available 100 shekels to remove from the envelope to keep for himself. A kibbutz member may remove any amount between 0 and 100 inclusive. If the sum of the amounts of money removed exceeds 100 shekels, then both players receive zero and the game is over. If the sum of the amounts removed is less than or equal to 100, then each player keeps the respective amount that he removed. In addition, whatever money is leftover in the envelope is multiplied by 1.5 and divided equally between the two players.⁶

We conducted two versions of this game. In one version, two kibbutz members from the same kibbutz were anonymously paired with one another (to be referred to as the kibbutz-kibbutz treatment). In another version, a kibbutz member was paired with a city resident (to be referred to as the kibbutz-city treatment). The kibbutz member and the city resident in the kibbutz-city treatment were given precisely the same information, namely, that the person with whom they

⁵ All of the experiments in this paper were conducted in April and May 2000. At the time, 4 Israeli shekels equaled approximately \$1 US. The average monthly salary of a kibbutz member in this four-kibbutz sample is approximately 700 NIS. Keep in mind, however, that the kibbutz covers many of its members' basic expenses (e.g., housing, food, utilities).

⁶ We considered an alternative design in which there are 100 shekels to be divided. However, each pair member may claim up to 50 shekels, that is, any amount between 0 and 50. The amounts that each player leaves in the envelope are summed together, multiplied by 1.5 and divided equally between the two players. Feedback from student subjects from pilot experiments indicated that they found this design considerably more difficult to understand than the one presented above. For this reason, we settled on our particular design.

were paired was from another settlement in Israel.⁷ Appendix B contains the instruction sheet as well as an introductory statement read aloud to each subject at the beginning of the experiment.⁸

Note that any pair of amounts that sum to 100 is a Nash equilibrium of this game. For any amount, x_j , that player j removes from the envelope, player i 's best response is to remove 100 minus x_j . However, the Nash equilibria of this game are socially inefficient. That is, the sum of the pairs' payoffs is higher if together they remove less than 100. The socially optimal outcome is achieved when both players remove 0.

The amount a player removes therefore provides a measure of his willingness to cooperate.⁹ For every shekel a player leaves in the envelope, he adds three-quarters of a shekel to his opponent's payoff and three-quarters of a shekel to his own payoff, provided their claims sum to less than 100.

4.2 Experimental Procedures

To the extent possible, subjects from the kibbutzim and from the cities were recruited using the same methods. A letter of introduction describing the nature of the research, the sources of funding and a request to participate was sent to every household on the four kibbutzim as well as to every household in the target areas within each of our seven cities. These letters were mailed out to all households on the kibbutz about a week before our planned visit to the

⁷ It was important for us not to specify more precisely the location of the paired partner. To see this, suppose we had told the city resident that he was paired with a kibbutz member. This knowledge may have led the city resident to remove less money because, for instance, he believes that kibbutz members are generally cooperative. Similarly, indicating to the kibbutz member that he is paired with a resident of Beer Sheva, for instance, would have introduced a role for existing stereotypes (about residents of Beer Sheva, a predominantly Sephardic, working class city) to play in the decision of the kibbutz member. Fershtman and Gneezy (2001) study the role ethnic stereotypes play in trust in the Israeli context using a clever variation of the trust game.

⁸ Both forms are translations from the original Hebrew versions, which are available from the authors upon request.

kibbutz. In the case of the city residents, because city telephone books are not organized by address, we distributed the letters by hand to households in the neighborhoods of the cities we intended to visit. One or two days before our visit, we telephoned kibbutz members inviting them to participate in the research and, for those that agreed, slotted them for a specific time. Omer, a suburb of Beer Sheva, was the one settlement in our sample with its own telephone book small enough to be able to follow up the letter drop-offs by searching through the telephone book for the addresses that received the letter of invitation. These residents were telephoned and invited to participate in the research. For the remaining six cities, the letters of introduction were made more specific to indicate that we would be visiting their homes on a given day within an indicated two to three-hour window.

Once an experimenter arrived at a subject's home (kibbutz member or city resident), he called the other experimenter by cellular phone to let him know that he had arrived. He then awaited the phone call of the other experimenter so that both experimenters could enter their respective subjects' home simultaneously. This ensured that the paired subjects began the experiment at the same time.

Upon entering the subject's home, the experimenter introduced himself 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 facts that the participant's identity and decisions will be used for research purposes only and will remain anonymous, the experiment will be followed by a questionnaire, and the participant will receive his experimental earnings in cash at the end of the questionnaire, and other details contained in

⁹ In fact, our game is closest to a continuous version of the prisoner's dilemma game in which to claim 100 is to defect, and to claim 0 is to cooperate. The difference is that in our game defect is only a weakly dominant strategy since if player j defects, player i 's payoff is zero, regardless of whether he cooperates or defects.

Appendix B). The subject 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 full comprehension of the game, two numerical 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 20 and 60 were drawn from the bag, the participant was shown step-by-step that the first player would receive 35 shekels and the second player would receive 75 shekels, since the 20 shekels left over would increase to 30 and be split evenly between them.

After any clarifying questions were answered, a decision was elicited regarding the amount the subject wished to remove from the envelope. The experimenter of the subject who decided first telephoned the other experimenter by cellular phone and informed him that a decision had been reached.¹⁰ 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 subject's decision might make him suspicious that his decision was being conveyed to the other subject who could then use this information to make a decision. After the second subject reached a decision, that subject's experimenter telephoned the first experimenter and the decisions were exchanged. Each experimenter then conveyed to his subject the other player's decision, the amount remaining in the envelope, and the amount that he will receive after the

¹⁰ Cellular phones were used instead of the kibbutz member's home phone to prevent the subject from discovering the identity of his paired partner from his phone bill or the call display feature, by dialing "*42" (a feature used to dial the number of the last person who called) or by dialing the operator and asking.

amount left over in the envelope (if anything) is multiplied by 1.5 and divided equally between both players.

4.3 Experimental Hypotheses

There are two very plausible, competing hypotheses. On the one hand, we might expect kibbutz members to cooperate equally with members and non-members. After all, kibbutz members have traditionally displayed a strong willingness to sacrifice for the benefit of Israeli society at large. And their choice to join the kibbutz suggests they are motivated by cooperative ideals. Research by Mann, Radford and Kanagawa (1985) indicates that the distinction between in-group and out-group is markedly less pronounced in collectivist societies than in individualist ones. The kibbutz is the definitive collectivist society.

On the other hand, the changes that the Israeli kibbutz underwent following the economic crisis of the mid-1980s altered the nature of the kibbutz, affecting even the most cooperative kibbutzim, like the ones that form our sample. Indeed, the kibbutz no longer plays the dominant role its once did in social causes and involvement in Israeli society. Perhaps this will translate into a reduced willingness to cooperate with Israelis outside of the kibbutz. Moreover, the very decision to join the kibbutz may reflect a distrust or disillusionment with the surrounding Israeli capitalist culture. The findings of a pioneering cross-cultural study by Roth et al. (1991) would seem not to fault such suspicions: they show that Israelis exhibit higher levels of self-regarding behavior than Americans, the Japanese and Yugoslavians. A comparison of kibbutz members' behavior in the kibbutz-kibbutz and kibbutz-city treatments will discern between these hypotheses.

Apart from whether kibbutz members cooperate to the same degree with non-members as they do with members, we might at the very least expect kibbutz members to cooperate more than city residents when they are paired with one another. This second hypothesis we are able to test by comparing kibbutz members' behavior in the kibbutz-city treatment with that of city residents.

5. Results

A total of 110 kibbutz members participated in the kibbutz-kibbutz treatment. An additional 61 kibbutz members participated in the kibbutz-city treatment against 61 city residents. The proportions of kibbutz members from each of the four kibbutzim were held constant across the two treatments. As a result, any possible fixed effects associated with the impact of a particular kibbutz are irrelevant for testing our hypotheses. Table 1 presents summary statistics for the amounts claimed and the amounts predicted the opponent would claim, as well as participants' ages and years of education for each of the above three population groups. Like the larger Israeli population, the subjects are on the whole well educated, namely, high school educated plus approximately two years of post-secondary education on average. The fact that the average participating kibbutz member is older than his city counterpart by about ten years reflects the aging kibbutz population.

[insert Table 1 here]

One cursory measure of the degree of cooperation exhibited in this game is the observation that there were no pairs in either treatment whose claims exceeded 100. Furthermore, in the kibbutz-kibbutz treatment, all 55 pairs chose amounts that sum to strictly less

than 100, the Nash equilibrium outcome. By contrast, five pairs of subjects in the kibbutz-city treatment played the Nash equilibrium; in all five cases, both pair members claimed 50 shekels.

The above observations along with the histograms in Figure 1 point clearly to the paper's first main result.

Result 1: Kibbutz members take out less when paired with other kibbutz members than when they are paired with city residents.

[insert Figure 1 here]

As indicated in the first column of Table 1, kibbutz members take out on average 29.56 shekels (median = 35) when paired against other kibbutz members compared to 35.20 shekels (median = 40) when paired against city residents (t-test of means=2.31, p=.02, df=147, equal variances not assumed here and hereafter). The OLS regression results presented in row 1 of Table 2 indicate that kibbutz members remove about 5.3 shekels more when paired against city residents than when paired against members of their own kibbutz, controlling for the amount they believe their opponent will claim ("predict"), the fraction of their lifetime they have lived on the kibbutz ("*frackib*") to be discussed below, and a number of other demographic variables.¹¹ An alternative regression specification in row 2 points to the same in-group-out-group bias displayed by kibbutz members. Both regression specifications fit the data well, explaining about 30% of the variation in the dependent variable. In addition, the regression results predict reasonable values for the amounts taken from the envelope: for observed realizations of the

¹¹ Variables for age, years of education, sex and other demographic variables are not significant and have therefore been omitted from the table.

independent variables, the results yield values that fall within the range of actual amounts claimed.

[insert Table 2 here]

One may argue that kibbutz members claim smaller amounts when paired with other kibbutz members due to risk aversion, and not because they choose to behave more cooperatively. Stated explicitly, kibbutz members in the kibbutz-kibbutz treatment are more fearful that the sum of the requests will exceed 100 than in the kibbutz-city treatment and therefore they choose to remove smaller amounts. In order to assess this alternative explanation for our finding, we asked participants, after they made their decision and before they were informed of their partner's decision, the amount they believed their partner would request from the envelope.¹² The "predict" variable in Table 1 allows us to reject the risk aversion hypothesis: kibbutz members actually predict that other kibbutz members will remove slightly, although not strongly significantly, less (mean=40.4, median=46.4) than city residents (mean=41.3, median=50), $t\text{-stat}=1.28$, $p=.10$, $df=140$. In fact, the positive and highly significant coefficient on the "predict" variable in rows 1 and 2 of Table 2 indicates that for every shekel a kibbutz member believes his partner will claim, he claims an additional 0.6 shekels. Together with Result 1 these observations suggest that kibbutz members' higher levels of cooperation toward one another than toward city residents may in part follow from an expectation of reciprocal cooperation. The less a kibbutz member believes his opponent will claim, the more he is willing to cooperate by claiming less. That individuals determine their willingness to cooperate as a function of their beliefs about others' likelihood of cooperation is among one of the most robust

¹² We elicited subjects' first-order beliefs with a simple hypothetical question. Since our focus is on the amounts subjects remove from the envelope, we preferred not to complicate their decision task with an incentive compatible mechanism.

and central findings in other social dilemma games (Ostrom, 2000, p. 140) and motivates Rabin's (1993) model of reciprocal fairness.

In summary, kibbutz members behave less cooperatively toward city residents than toward members of their own kibbutz. Still, how does their level of cooperative behavior compare with that of the city residents? Our second main result addresses this question.

Result 2: When kibbutz members are paired with city residents they exhibit levels of cooperation indistinguishable from city residents.

The histograms in Figure 2 reveal that the distributions of the amounts taken from the envelope for kibbutz members and city residents in the kibbutz-city treatment are strikingly similar.

[insert Figure 2 here]

Forty shekels is the modal claim in both population groups. City residents claimed an average of 35.63 shekels (median = 40) compared to an average of 35.20 shekels by kibbutz members (median = 40). A t-test of means confirms that this difference is not significant (t -stat=.160, p =.87, df =118). Furthermore, the regression results reported in row 3 of Table 2 indicate no difference in the decisions of kibbutz members and city residents: a dummy variable which takes on a value of "1" for kibbutz members and "0" for city residents is not statistically different from zero. The interpretation of this result is that outside of their communities, kibbutz members are no more cooperative than members of the surrounding, capitalist economy.

Taken together, Results 1 and 2 suggest that kibbutz members are not equally cooperative toward members and non-members alike, but rather they are conditional cooperators.¹³ One interpretation of this conclusion is that the kibbutz has not succeeded in creating universally cooperative individuals. Such an interpretation though may be premature since the majority of kibbutz members (131/171 in our sample) were born off the kibbutz. To understand the role kibbutz socialization plays in the cooperative behavior of its members, we examine individuals' cooperative behavior as a function of whether they were born on the kibbutz, or whether they joined the kibbutz as adults. It turns out that both groups are conditionally cooperative; however, there exists a difference in the levels of cooperation exhibited toward fellow kibbutz members as a function of the time a member has spent on the kibbutz. The next result makes more precise this remark.

Result 3: The larger the fraction of one's life spent on the kibbutz, the less cooperative one behaves toward fellow kibbutz members.

According to Result 3, the more time a kibbutz member has lived on the kibbutz (controlling for age), the less he can be expected to cooperate with his fellow kibbutz members. To demonstrate this result, we constructed a variable that measures the fraction of the kibbutz member's life spent on the kibbutz. This variable, to be called "*frac kib*", is calculated as the year the experiments were conducted (2000) minus the year the member arrived on the kibbutz,

¹³ Ostrom (2000) and Schram (2000), among others, use the term "conditional cooperation" to refer to a motivational state defined by the willingness to cooperate if and only if one perceives gains from cooperation. In our context, one's willingness to cooperate varies in accordance with whom one is matched. This variation, particularly in one-shot games (such as the one used in this paper), may stem from a pure preference rather than from any

divided by the member's age. The results of the OLS regression with the amount taken out of the envelope regressed on *frackib* and age, among other variables, appear in row 4 of Table 2.

The variable *frackib* is highly significant and positive (coefficient =10.22, $p=.03$); that is, controlling for age, for each additional 10% of one's life spent on the kibbutz, one can be expected to claim approximately an extra shekel from the envelope. Someone born on the kibbutz can be expected to remove 10 shekels more than a new arrival. More direct evidence that those born on the kibbutz are less cooperative toward fellow kibbutz members than members who arrived from the outside can be seen in the regression results in row 5 of Table 2: the coefficient on the dummy variable "born on kibbutz" indicates that kibbutz members born on the kibbutz claim about 6 shekels more than those born off the kibbutz ($p=.07$).¹⁴

The interpretation of Result 3 is that to the extent that kibbutz members are cooperative toward one another, self-selection accounts significantly for their cooperativeness.¹⁵ Those who have chosen or been recruited to join the kibbutz are more cooperative than those raised on the kibbutz. This finding does not bode well for the future of cooperation on kibbutzim who have found it increasingly difficult to attract new members from the outside in recent years.

The most plausible explanation for this provocative finding is that the conscious choice to leave capitalist society and join the kibbutz at a later age in life reflects a commitment and loyalty to the cooperative ideology of the kibbutz. Put differently, these kibbutz members have self-selected cooperation as a way of life as revealed by their decision to join the kibbutz. By

perceived benefits from cooperation. This distinction may be likened to that between a "taste for discrimination" (a preference) and "statistical discrimination" (based on expected gains) (Becker, 1957).

¹⁴ We use the number of years the member has lived on the kibbutz, rather than age, as a control. Because all four kibbutzim in our sample were founded no earlier than 1943, all of our subjects over the age of 57 (at the time this research was conducted) were necessarily born off the kibbutz. Thus, "born off the kibbutz" and age are collinear, as indicated by the Spearman correlation coefficient of .480 ($p<.001$).

comparison, kibbutz members born and raised on the kibbutz are more likely to have other, less ideological and more practical reasons for remaining on the kibbutz, such as familiarity with the environment, lower “startup” costs (e.g., no need to move or establish new networks of contacts), the feeling that the kibbutz is home, and the desire to live close to family members.¹⁶

A second, complementary explanation for this finding follows from the insight that new members may feel the need to prove themselves as loyal and worthy members. In this aim, new kibbutz members may display in abundance the most desirable characteristics of kibbutz members, not the least of which is cooperative behavior toward other members. Along similar lines, social psychologists have noted that in-group favoritism shown by new group members tends to wane over time as favorable stereotypes about in-group members are replaced with more realistic perceptions (see for example, Ryan and Bogart, 1997, and the references therein).

6. Discussion

The overwhelming body of experimental research in economics is conducted on (university) students. While student subjects offer numerous advantages,¹⁷ there are many research questions that are better addressed with non-student subjects. Recently, experimental economists have begun to undertake field experiments. From the growing list of field experiments, the most relevant studies for the purpose of this paper are the works by Barr (2001),

¹⁵ Result 3 is limited to cooperation toward other kibbutz members. Regression results (not shown here) reveal that, in separate regressions, neither *frackib* ($p=.61$) nor the “born on the kibbutz” dummy variable ($p=.56$) is a significant predictor of the amount claimed by kibbutz members when paired against city residents.

¹⁶ Indeed, regarding this last reason, in the post-experiment questionnaire, we asked kibbutz members for the number of other households on the kibbutz in which they or their spouse have family members. Those born on the kibbutz report on average 3.7 (median=3.0) other households with family members compared to only 2.1 (median=2.0) households for those not born on the kibbutz, $t\text{-stat}=3.22$, $p=.002$, $df=40$.

¹⁷ For example, students are on the whole intelligent, fast learners, computer literate (useful in the case of computerized experiments) and very accessible. Their accessibility to university researchers permits ease of

Ensminger (2002) and Henrich and his co-authors (2000, 2001) who conduct experimental games on foraging, horticultural, herding, and sedentary, small-scale agricultural societies. Henrich et al. (2001), for instance, report the results from ultimatum, dictator and public goods games conducted in 15 small-scale societies spanning 12 countries and four continents. Their results show considerable variation in the fairness norms that exist across these different societies. Nonetheless, none of the societies in any of the three games displayed behavior that approximated that of purely self-interested economic actors.

In this paper, we also conduct experiments in the field to examine the cooperative behavior of a non-student population. However, we have purposefully chosen a population noted for its cooperative behavior. The Israeli kibbutz is among the most cooperative societies in existence.

Several important features distinguish the kibbutz from the indigenous foraging, horticultural, herding, and sedentary, small-scale agricultural societies of the sort examined by Barr, Ensminger, and Henrich and his co-authors. To begin, the kibbutz is an “intentional society”: kibbutz members have intentionally opted out of mainstream society to pursue an ideology of egalitarianism and cooperation. Whereas the indigenous societies studied by the above authors differ in language, dress, culture and morphology from the surrounding majority culture, this need not be true of intentional societies, and indeed is not the case of Israeli kibbutzim and the American communes of the 1960s. Israeli kibbutz members are visibly and culturally indistinguishable from other Israelis. This distinction between kibbutzim and indigenous societies is important because it suggests that kibbutz members have much lower

replication by other researchers. They also constitute a diversified subject pool by some measures and have a relatively low outside wage making them affordable subjects.

barriers and costs to exiting their way of life and integrating into the surrounding capitalist culture than do members of indigenous, naturally occurring societies.

A further distinction between the kibbutz and indigenous societies is their modes of production. As discussed in section 2, kibbutzim use the most modern production techniques. Indigenous societies, by contrast, are subsistence economies that herd or grow, hunt or gather their food without the use of modern technology.

While the above distinctions differentiate the kibbutz from indigenous societies, they also draw attention to the similarity of kibbutz members and residents of the surrounding capitalist culture. As mentioned above, the two are identical in every visible and measurable way (e.g., language, morphology, dress, culture, education, technological advancement), except for their socio-economic views. Kibbutz members' commitment to partake in the egalitarian ideology of the kibbutz despite the ease with which they could join capitalist society suggests that they are promising candidates for universally cooperative individuals.

Strong theoretical foundations notwithstanding, we find that kibbutz members exhibit higher levels of cooperation when they are paired with one another than when paired with non-members. Perhaps even more surprising, kibbutz members are no more cooperative than city residents when the two are paired with one another. The question remains why?

There are at least three possible explanations. First, in the kibbutz-kibbutz treatment, subjects know their fellow kibbutz members, even though they don't know the specific member with whom they are paired. Thus, it may be that kibbutz members have learned from experience that cooperation tends to be reciprocated. Indeed, the finding that the "predict" variable is lowest in the kibbutz-kibbutz treatment supports this explanation. By contrast, in the kibbutz-city treatment, a kibbutz member knows nothing about his paired city resident. Worse yet, most

kibbutz members likely believe that outsiders are less cooperative than their fellow kibbutz members.¹⁸

Second, the economic and social crisis endured by kibbutzim in the mid-1980s damaged the universally cooperative and self-sacrificing fabric of even the most cooperative kibbutzim. Although many kibbutzim emerged seemingly unscathed from the crisis (including the four kibbutzim chosen for our sample), their interaction with other kibbutzim and with an increasingly competitive and individualistic Israeli society appears to have left its mark.

Third, in the kibbutz-kibbutz treatment, members may be behaving as if they are playing a supergame. In other words, kibbutz members may be concerned about the impact of their decisions on future interactions with their fellow kibbutz members. A kibbutz member may choose to remove a relatively modest amount so as not to pollute (further) the existing cooperative environment on the kibbutz. This concern does not exist when a kibbutz member is paired with a city resident.

There is room to interpret our results in a considerably more positive light. For instance, Carpenter (2000) develops a model that emphasizes the value of an in-group bias in dealing with collective action problems. Reciprocity, trust and the expectation that others will cooperate allow group members to select institutional rules to overcome social dilemmas. That kibbutz members display a greater willingness to cooperate with one another than with outsiders may account, in part, for the longevity of the kibbutz and its apparent success at managing common-pool resources.¹⁹ Broadly stated, kibbutz members appear able to tailor their cooperative behavior to

¹⁸ From her trust game experiments conducted on 24 tightly knit, Zimbabwean communities, Barr (2001) also observes that, “people [...] use information gleaned during their everyday lives to create expectations and guide their decisions in strategic situations” (p.5).

¹⁹ In future research on a larger and more varied sample of kibbutzim, we may wish to examine the relation between cooperation and economic success.

the situation: when paired with those with whom they share a common fate – a fate highly dependent on cooperation – levels of cooperation are higher than when paired with outsiders. Moreover, that kibbutz members are no more cooperative than city residents says that the kibbutz members are not blindly cooperative or “suckers”, but rather are able to adjust their cooperativeness to match that of their opponents.

7. Conclusions

Unlike individuals living in capitalist economies who rely on property rights, contracts and an advanced legal system to achieve economic efficiency, members of collective societies depend highly on mutual cooperation to achieve their economic goals. We have selected one of the most cooperative and enduring collective societies in existence, the Israeli kibbutz, to examine the cooperative behavior of its members. Kibbutz members have intentionally opted out of mainstream society to pursue an ideology of cooperation. Moreover, the history of the kibbutz is one of sacrifice for the overall benefit of Israeli society. Historically, kibbutz members played a central role in the establishment and defense of the State of Israel and they continue to be disproportionately involved in social and national causes. Does this mean that kibbutz members are more cooperative individuals than members of the surrounding culture who are identical in every other way to kibbutz members?

Our results suggest not. Kibbutz members behave more cooperatively toward members of their own kibbutz than toward city residents. Indeed, when paired with one another, kibbutz members and city residents exhibit identical levels of cooperation. In this sense, kibbutz members may be said to be conditionally cooperative individuals. Our findings attest to the strength of the psychological foundations of in-group-out-group biases, despite a society's efforts

to train its members otherwise. Even members of this once idyllic, voluntary, cooperative community do not treat all individuals alike. Instead, they appear to form expectations concerning others' degree of cooperation and reciprocate in kind.

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Appendix A – Presentation of Results

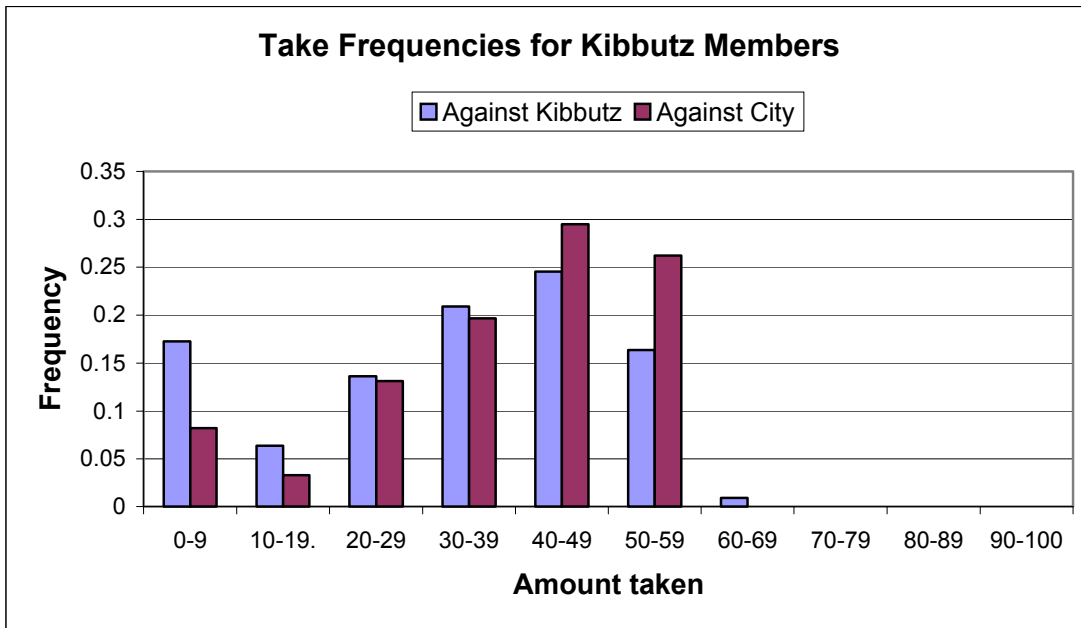


Figure 1: Histograms displaying the distributions of the amounts taken by kibbutz members when they are paired against other kibbutz members (n=110) and against city residents (n=61).

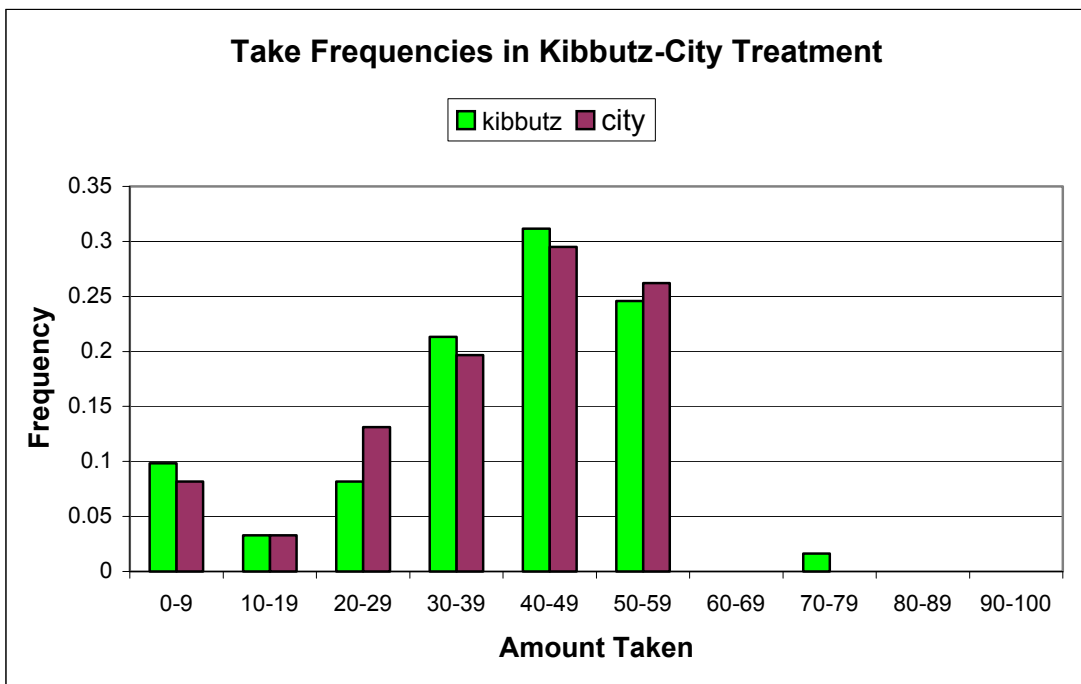


Figure 2: Histograms displaying the distributions of the amounts taken by kibbutz members when paired against city residents (n=61) and by city residents when paired against kibbutz members (n=61).

Population	amount taken	predict	education	age	n
kibbutz against kibbutz	29.56 (35)	40.4 (46.4)	13.8	49.9	110
kibbutz against city	35.20 (40)	41.3 (50)	13.6	51.7	61
city against kibbutz	35.63 (40)	43.2 (50)	13.9	40.7	61

Table 1: Summary statistics. Mean (median in parentheses where indicated) amounts taken from the envelope (in shekels), amounts the subject believes his opponent will take (“predict”) (in shekels), years of education and age for the three different groups in the experiments.

population/treatment	constant	kibbutz	predict	frackib	born on kibbutz	years on kibbutz	adjusted R ²	n
kibbutz members	8.05 (5.49)	-5.34** (2.22)	.599*** (.072)	7.41** (4.02)	_____	_____	.299	171
kibbutz members	5.77 (4.04)	-5.08** (2.21)	.593*** (.072)	_____	6.15** (2.58)	.115*** (.063)	.311	171
kibbutz-city	17.32 (8.25)	1.87 (2.48)	.579*** (.092)	_____	_____	_____	.288	122
kibbutz-kibbutz	4.43 (5.54)	_____	.549*** (.091)	10.22** (4.59)	_____	_____	.293	110
kibbutz-kibbutz	1.88 (4.91)	_____	.607*** (.091)	_____	5.87* (3.22)	.049 (.087)	.285	110

The dependent variable is the amount removed from the envelope by the subject.

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

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

* The coefficient is significant at the 10% level.

Table 2: OLS regression coefficients (standard errors in parentheses) from three different populations: all kibbutz members from both treatments (rows 1 and 2), kibbutz members and city residents who participated in the kibbutz-city treatment only (row 3) and kibbutz members who participated in the kibbutz-kibbutz treatment (rows 4 and 5). The amount removed from the envelope is regressed on, among other variables, a kibbutz dummy variable indicating whether the subject played against another kibbutz member (row 1) or whether the subject is a kibbutz member or city resident (row 2), the subject’s estimate of how much his opponent will remove (“predict”), the fraction of one’s life spent on the kibbutz

(“frackib”), a dummy variable for whether the kibbutz member was born on the kibbutz, and the number of years the kibbutz member has lived on the kibbutz.

Appendix B – Subjects’ Forms (translated from Hebrew)

Introduction (read aloud by the experimenter)

We thank you for willingness to participate in this research conducted by Ben-Gurion University. The exercise in which you have agreed to participate relates to decision-making and requires less than 30 minutes of your time. We assure you that during the exercise as well as after its completion and on the short questionnaire that follows the exercise, your identity will remain anonymous. The information collected by the researcher in your home will be used for research purposes only. Under no circumstance will your identity be revealed to anyone or published anywhere.

This exercise in decision-making will take place in pairs. The person with whom you are paired for the purpose of this exercise is from another settlement in Israel [another member from your kibbutz]. Another researcher from our team is currently at the home of this person. Under no circumstance will you learn the identity of the person with whom you are paired; nor will s/he learn your identity. During the decision-making exercise, you will be asked to make a number of decisions. At the end of the exercise, the researcher will pay you an amount of money. The precise amount of money to be paid to you will be determined by the decisions you make in the exercise as well as the decisions of the anonymous person with whom you have been paired. This research is funded by a number of grants from various research foundations.

Participants’ Instructions

(read first by the subject and then read aloud by the experimenter)

Exercise

In this exercise, you and the person with whom you are paired from another settlement²⁰ in Israel [member of your kibbutz with whom you are paired] have access to the same envelope that contains 100 shekels. You must decide an amount of money you wish to remove from the envelope to keep. You may choose any amount between 0 shekels and 100 shekels, inclusive. At the same time, the member of your kibbutz with whom you are paired for this exercise must decide an amount of money (between 0 and 100 shekels inclusive) that he or she wishes to remove from the same envelope. After you have decided how much to keep from the envelope, the researcher will convey your decision by cellular phone to the other researcher who is presently at the home of the person with whom you are paired. You and the person with whom you are paired will learn of the other’s decision only after each of you has made your decision.

If the sum of the amounts you and your paired partner choose to remove from the envelope (the total amount removed) exceeds 100 shekels, then you both receive no payment and the exercise ends. If you and the person whom you are paired choose to remove from the envelope an amount that together is less than 100 shekels, then you each keep the amount you removed from the envelope; in addition, the sum of money left over increases by 50% (in other words, is multiplied by 1.5) and is divided equally between you and your paired partner.

²⁰ The word “settlement” is more restrictive and more connotative than the original Hebrew word “yishuv”, which can be translated as settlement, population center or populated area.

This completes the instructions. Before you make a decision in the exercise, the researcher in front of you will read aloud the instructions an additional time and answer any questions you may have. Also, you will be shown two numerical examples in order to illustrate the exercise and to avoid any unintended loss in earnings.

Thank you – The Research Team.