Cooperation and the In-Group-Out-Group Bias: A Field Test on Israeli Kibbutz Members and City Residents

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Abstract

The in-group-out-group bias is among the most well documented and widely observed phenomenon in the social sciences. Despite its role in hiring decisions and job discrimination, negotiations, and conflict and competition between groups, economists have heretofore ignored the in-group-out-group bias. We question the universality of the bias by designing field experiments to test whether it extends to 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 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, in-group-out-group bias, field experiment, self-selection, socialization, kibbutz.

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1. Introduction

The in-group-out-group bias is among the most well documented and widely observed phenomenon in the social sciences. Alternatively known as the intergroup bias, in-group favoritism and the minimal groups paradigm, the in-group-out-group bias refers to the tendency to evaluate one's own group or its members (the in-group) more favorably than groups to which one does not belong and its members (the out-group). Literally hundreds of in-group-out-group bias studies fill psychology and sociology journals (see Hewstone et al., 2002, for a recent survey and Rabbie and Horowitz, 1969, Tajfel et al., 1971, and Brewer and Campbell, 1976, for a few of the classic references). This vast literature has demonstrated, among other findings, the ease with which group identity may be called upon or created, the robustness of the bias to different cultures and societies, motivational and cognitive explanations for its existence, and methods to moderate the bias. By contrast, economists have paid little attention to the bias, despite its obvious economic implications for negotiations, conflict resolution, competition between groups, international trade agreements, hiring decisions and job discrimination, and a spate of issues related to fairness, cooperation and trust.

In this paper, we question the universality of the intergroup bias. We design controlled field experiments to test whether the bias extends to the cooperative behavior of members of one of the most successful communal movements in history, the Israeli kibbutz. 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'etre* 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. 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 (see e.g., Kahane, 1983).

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. Such a finding would constitute a counterexample to the universality of the in-group-out-group bias.

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 consumption 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' cooperative behavior 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. Moreover, our second treatment allows us to determine whether kibbutz members are more cooperative individuals than city residents. 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 a socialist egalitarian ideology as well as the pragmatism of group living by Eastern European Jews during the years leading up to the establishment of the modern State of Israel. 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. Income on the kibbutz is thus divided equally regardless of profession, skill or effort level. In this sense, the generation of income or production is a public good problem. Consumption on the kibbutz, by comparison, represents a classic tragedy of the commons problem: kibbutz members enjoy equal and unrestricted access to non-renewable consumption goods. 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. Cooperation and self-restraint are necessary to prevent the depletion of these common-pool resources and to ensure the continuity of the kibbutz.[1]

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

Indeed, the continuation of the kibbutz should not be regarded as self-evident for several reasons. First, as discussed above, kibbutz members have very low costs to exiting the kibbutz and (re)entering mainstream Israeli society (Leviatan, 1975).[2] Most kibbutzim bear a debt burden (Leviatan et al., 1998). Thus, 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.[3]

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 (Sosis, 2000). 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

[2] In fact, the openness of the kibbutz and the free mobility and interaction between the kibbutz and the capitalist economy contrasts it with some intentional cooperative societies in the U.S. like the Amish and Hutterite colonies (Janzen 1999).

[3] 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.

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 implement privatization fully – is differential salaries according to which individual kibbutz members earn incomes that reflect, at least in part, their productivity.

3. Sample

For the purposes of this paper, our sample consists of four traditional, non-privatized, highly collectivized kibbutzim.[4] An agreement with the individual kibbutzim forbids us from revealing the identity of the participating kibbutzim. The four kibbutzim were established between 1943 and 1949, are located in central and southern Israel, each with between 500 and 700 members, and all moderately to very economically successful.

We also 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 in-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 selected a one-shot game for two reasons. First, we wanted to capture participants' initial 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 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.

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 were paired was from another place.[7] It was important for us not to specify more precisely the location of the paired partners to control for possible stereotypes about kibbutz members or residents of certain cities.[8] Given the demographics of Israel (only 2% of the population are kibbutz members), it is most probable that kibbutz members (correctly) believed they were

[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 shekels. Keep in mind, however, that the kibbutz covers most 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.

[7] In the original Hebrew, the word "yishuv" was used, which can be translated as city, town or populated area in Israel.

paired with city residents and that city residents believed they were paired with residents from different cities. Appendix B contains the instruction sheet as well as an introductory statement read aloud to each subject at the beginning of the experiment.[9]

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.[10]

The amount a player removes therefore provides a measure of his cooperativeness. 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. That the subject fears his partner will claim a large amount (i.e., that the sum of the amounts will exceed 100) is an alternative explanation for a small amount removed from the envelope. To help identify the motivation behind a subject's claim, we asked each participant to indicate the amount he believes his partner will remove and the reason why the participant chose to claim the amount that he did.

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

[8] 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.

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

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 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 location 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.

To facilitate data collection and to minimize the chances that kibbutz members who completed the experiment could contact others who may be scheduled to participate, 20 Ben-Gurion University graduate and undergraduate students (who had completed a class in experimental economics) were trained and employed. Between 8 and 14 subjects (i.e., between 4 and 7 pairs) participated simultaneously at any given time.

Upon arrival at the kibbutz, each experimenter searched for the home of his first subject. 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

[10] Our game resembles the Nash demand game (Nash, 1953). The difference is that whatever money is leftover in our game gets multiplied by 1.5 (rather than disappears) and divided equally between the two players. This distinction encourages players to remove less money so that more is available for the pair. In the Nash demand game, the Nash equilibria and socially optimal outcomes coincide.

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

4.3 Experimental Hypotheses

Our two experimental treatments allow us to test two main hypotheses. First, given the values and lifestyle promoted by the kibbutz, we expect kibbutz members to cooperate more with outsiders than outsiders cooperate with others. Second, we 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 or remain on 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.

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

[11] 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

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 sample population. 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

dial the number of the last person who called) or by dialing the operator and asking.

variances not assumed here and hereafter). The left-censored Tobit regression results presented in row 1 of Table 2 indicate that kibbutz members remove about 5.8 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.[12] An alternative regression specification in row 2 (in which a dummy variable indicating whether the member was born on the kibbutz and a control for the number of years the member has lived on the kibbutz replace the variable *frackib*) points to the same in-group-out-group bias displayed by kibbutz members. Both regression specifications fit the data well, explaining nearly 30% of the variation in the dependent variable.

[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 may be 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.[13] 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 less (mean=40.4, median=46.4) than city residents (mean=41.3, median=50), t-stat=1.28, p=.10, df=140. In fact, the positive and highly significant coefficient on the "predict" variable in rows 1

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

and 2 of Table 2 indicates that for every shekel a kibbutz member believes his partner will claim, he claims an additional 0.67 shekels. Together with Result 1 these observations suggest that kibbutz members' higher levels of cooperation toward one another than toward city residents follow in part 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 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 claimed 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 Tobit regression reported in row 3 of Table 2 indicates no difference in the decisions of kibbutz members and city residents: a dummy variable

[13] 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.

"kibbutz", 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.[14] 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.

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, "*frackib*", is calculated as the year the experiments were conducted (2000) minus the year the member arrived on the kibbutz, divided

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

The variable *frackib* is highly significant and positive (coefficient =10.44, p=.033); 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 row 5 of Table 2: the coefficient on the dummy variable "born on kibbutz" indicates that kibbutz members born on the kibbutz claim 7 shekels more than those born off the kibbutz (p=.044).[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 kibbutz" dummy variable (p=.56) is a significant predictor of the amount claimed by kibbutz members when paired against city residents.

The interpretation of Result 3 is that self-selection accounts significantly for the extent to which kibbutz members cooperate with one another. 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

[14] 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 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).

loyalty to the cooperative ideology of the kibbutz. These kibbutz members have self-selected cooperation as a way of life as revealed by their decision to join the kibbutz. By comparison, kibbutz members born and raised on the kibbutz likely 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 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-students. In this paper, we design an incentivized field experiment to test the in-group-out-group bias in cooperative behavior. The population we chose,

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[15] 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 ($p<.001$).

[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-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

Israeli kibbutz members, depend on mutual cooperation to survive as a group. The experiment we designed resembles the environment in which kibbutz members are used to cooperating with one another.

Several reasons led us to believe that kibbutz members would be equally cooperative toward outsiders. First, the kibbutz socializes its members to sacrifice for the overall benefit of Israeli society. Second, the kibbutz is an "intentional society": kibbutz members are visibly and culturally indistinguishable from other Israelis and have intentionally opted out of mainstream society to pursue an ideology of egalitarianism and cooperation. Kibbutz members' commitment to partake in the cooperative ideology of the kibbutz despite the ease with which they could join capitalist society suggests that they are promising candidates for universally cooperative individuals.

Plausible reasons notwithstanding, our results show that even in a community where in-born members are raised to sacrifice for the good of society and later-joining members are highly idealistic, individuals demonstrate a strong in-group favoritism in cooperation. Perhaps even more surprising, kibbutz members are no more cooperative than city residents when the two are paired with one another.

There is room to interpret kibbutz members' selective cooperation in a more favorable light. Carpenter (2000) develops a model that emphasizes the value of an in-group-out-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. Broadly stated, kibbutz members appear able to tailor their

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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.

cooperative behavior to 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 kibbutz members are not blindly cooperative or "suckers", but rather are able to adjust their cooperativeness to match that of those with whom they interact.

Selective cooperation and its accompanying rewards are clearly not restricted to members of communal societies. Families, sports teams and business organizations benefit from levels of mutual cooperation their members would be unwilling to display toward outsiders with whom they share no common goal. The business dealings of Ultra-Orthodox Jews in New York's diamond district are oft cited, classic example of highly effective in-group trust and cooperation (e.g. Putnam, 2000). On the success of Jewish diamond dealers, Shield (2002, p. 1) writes, "handshakes, Yiddish, and trust still close multi-million dollar deals."

There are at least three possible sources for the selective cooperation displayed by kibbutz members in our game. 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. 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. In fact, 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.

Second, the changes that the Israeli kibbutz underwent following the economic crisis of the mid-1980s damaged the universally cooperative and self-sacrificing fabric of even the most cooperative kibbutzim. Indeed, the kibbutz no longer plays the dominant role its once did in social causes and involvement in Israeli society. 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.

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 may be viewed as 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.

Despite the promise of a universally cooperative group, kibbutz members cooperate more with members of their own kibbutz than with city residents. What is more, 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, in spite of 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

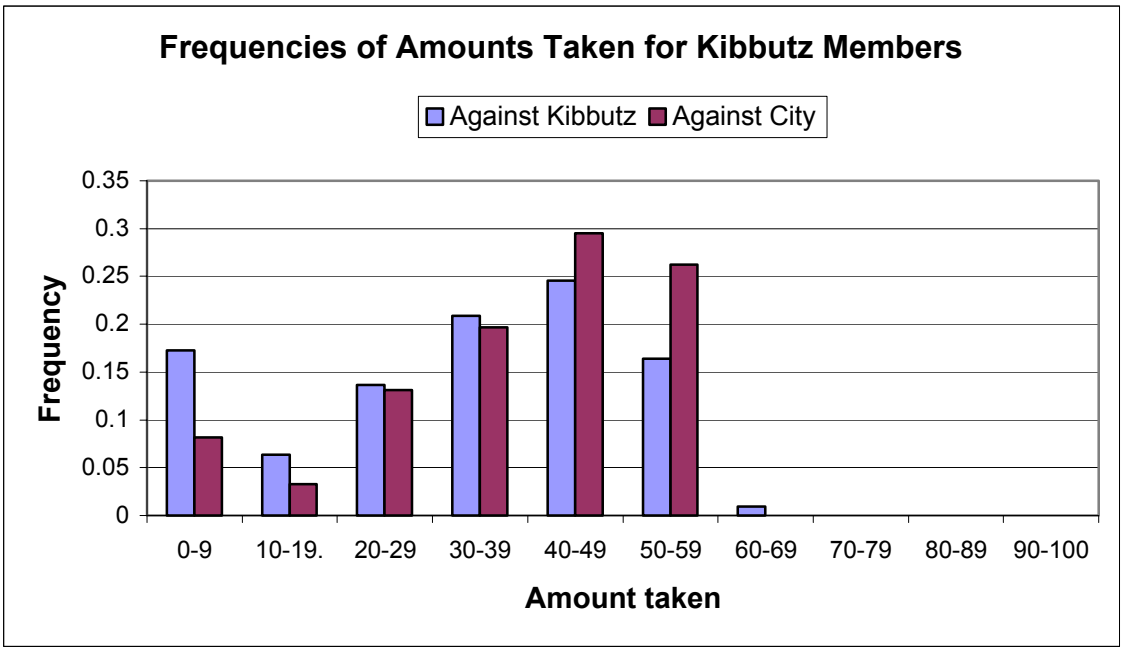

Figure 1: Histograms displaying the distributions of the amounts taken by kibbutz members when they are paired against other kibbutz members (n=110) and against city residents (n=61).

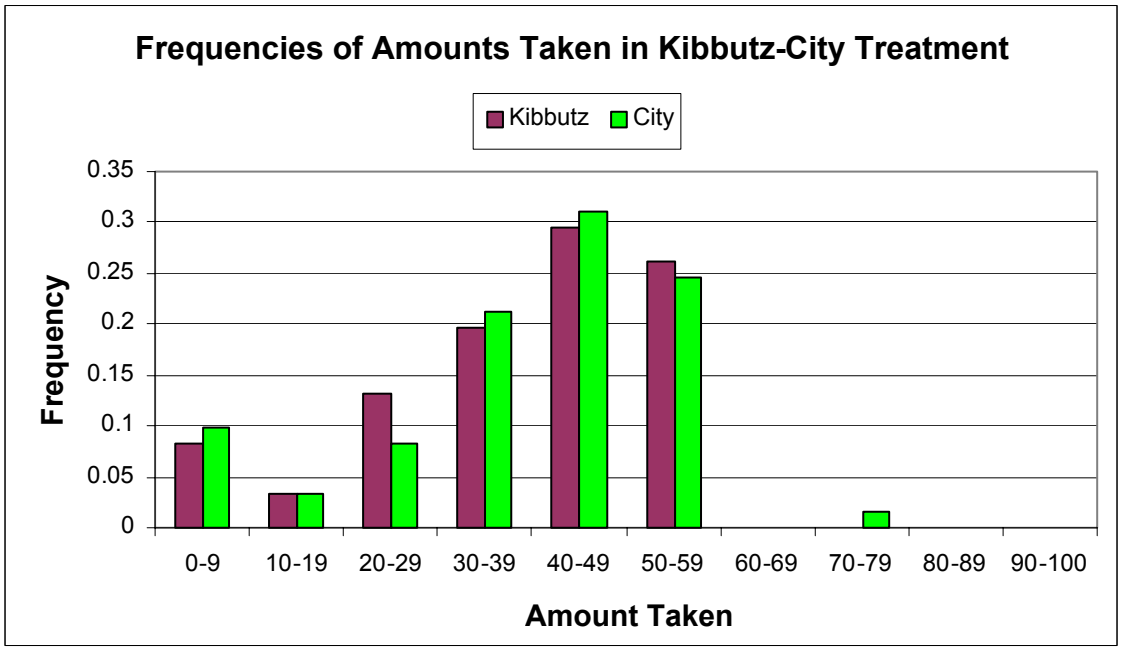

Figure 2: Histograms displaying the distributions of the amounts taken by kibbutz members when paired against city residents (n=61) and by city residents when paired against kibbutz members (n=61).

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	1.39 (4.69)	-5.76*** (2.23)	.670*** (.086)	9.02** (4.31)			.284	170
kibbutz members	2.16 (4.10)	-5.52** (2.22)	.664*** (.086)		6.84** (2.50)	.122* (.070)	.296	170
kibbutz-city	6.42 (4.86)	0.92 (2.51)	.665*** (.100)				.239	121
kibbutz-kibbutz	-2.61 (4.21)		.631*** (.116)	10.44** (5.33)			.274	110
kibbutz-kibbutz	-3.15 (4.98)		.698*** (.108)		6.99** (3.22)	.053 (.105)	.263	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: Left-censored Tobit regression coefficients (White heteroskedasticity-consistent 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 (rows 1 and 2) or whether the subject is a kibbutz member or city resident (row 3), 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 your 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 place 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 [other person / 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.

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.