NOT JUST LIKE STARTING OVER

LEADERSHIP AND REVIVIFICATION OF COOPERATION IN GROUPS

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ABSTRACT

We conduct a laboratory experiment to study how, after a history of decay in cooperation, organizations can revive cooperation in a repeated voluntary contribution game in an enduring way. Simply starting the repeated game over - a pure restart - leads to an initial increase of cooperation, but to a subsequent new decay to the previous level. Motivated by cooperation failure in organizations we study the potential of three interventions of triggering higher and sustained cooperation. We find that a change in leader and a detailed explanation of the causes of the decay in cooperation combined with a clearly formulated advice do not have an effect beyond that of just starting over. In contrast, a one-way free form communication message sent by the leader to the followers strongly revives cooperation. Repeated free form communication by the leader further strengthens the reviving effect on cooperation by eliminating the decline in contributions over time almost completely.

KEYWORDS: leadership, cooperation, communication

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1. INTRODUCTION

A general problem with cooperation in groups is that it may be high at times but then decay to a large extent. Once trapped in a low cooperation situation it is hard to escape from there. Even if the benefits of improved cooperation are self-evident, any process designed to bring about an improvement of the situation faces substantial obstacles. All individuals involved could be better off if all cooperated more, but any one individual who unilaterally starts doing so will feel taken advantage of if others do not do the same. Some exogenous changes in the circumstances of the groups, like the start of a new week or a new season, may create a sense of a new beginning and may lead to a revivification of cooperation. Moreover, companies, organizations and other human groups with leaders have access to instruments that can facilitate a turnaround. When cooperation failure has occurred it is one of leaders’ natural roles to take action to reinforce a new beginning. An additional challenge is to revive cooperation in an enduring way, that is, to trigger a cooperation increase that is not short-lived, but is sustained over time.

We use experiments to study how, after a history of decay in cooperation levels, cooperation in groups can be revived in an enduring way by using various managerial strategies. Our design builds on two important results of earlier experimental work. A common observation in experimental studies of public goods games with voluntary contributions is that in environments with a finite horizon cooperation levels are initially rather high but then decrease steadily over time.1 At the same it has been shown that in fixed groups the level of cooperation can be driven up again by simply restarting the game after the horizon has been reached. In the experiments reported in Andreoni (1988) participants play the voluntary contribution game in the finitely repeated form and, after the initially announced ten rounds are over, they are informed that there will be some additional rounds of the same game. Contributions go up again after the prolonged experiment is announced. In this

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experiment play was suspended after three additional rounds and during these rounds the cooperation level stayed up. This effect is called the “restart effect.”

Croson (1996) follows up on Andreoni (1988) with public goods experiments in which, after the initial ten rounds, ten additional rounds are announced. The results confirm that the restart leads to an initial increase of cooperation in fixed groups. However, after the initial increase in cooperation, the decline in cooperation begins again and play ends up at an even lower level than at the end of the first ten rounds. Cooperation can be revived by starting over, but the effect is short-lived. The restart effect works in the short-run, but not in the long run. This pattern of behavior is the starting point for our study.

The question we address in this paper is whether cooperation can, after having reached low levels, be revived in a way that is sustained over time. That is, are there ways to avoid that the positive short-run restart effect vanishes over time? We study this issue in the context of a public good game involving a leader. We choose a structure involving a leader, because we are mostly motivated by issues of successful teamwork in organizations. Almost all types of institutions, firms, departments and (sport) teams are organized in some kind of hierarchical structure and guided by a leader. Societies are lead by politicians or ideological leaders, companies by managers, departments by directors and sports teams by coaches.

In our set-up, leadership takes the leading-by-example structure used in the studies by Güth et al. (2007), Rivas and Sutter (2009), Gächter et al. (2010) and Potters et al. (2007) among others. The game is sequential and there is one leader and several followers. First, the leader decides on his contribution to the public good. The followers are informed about their leader’s decision and simultaneously choose their contribution levels. Both, leaders and followers of a group influence the group outcome through their contribution to the public good. Leading by example can be a conscious or subconscious form of leadership being present in a broad range of situations. The importance of leadership, and in particular of leading by example, becomes clear when thinking about outstanding business leaders like Steve Jobs or Jack Welch. But also in every-day situations, this kind of leadership is a key feature of the organization and coordination of a group of individuals.

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2 The work by Andreoni (1988) is aimed at distinguishing between the learning hypothesis, which suggests that subjects learn the incentives of the game throughout the experiment, and the strategies hypothesis, which suggests that participants play with the objective to influence the other group members' actions, i.e. they take into account the repeated play and use contributions as signals about future contributions.
If in an environment with leading by example cooperation decays after some time, there are several ways in which things can change. Here we study three interventions that a priori can be expected to lead to a stronger revivification of cooperation than that following a pure restart and that are interesting from a managerial point of view. All three interventions involve a restart, but add another element aimed at avoiding that the increase in cooperation is only short-lived. Importantly, our design involves two restarts to allow us to study to what extent the effect of different interventions becomes stronger over time.

We have four treatments. The first is the restart treatment, a control treatment in which the restart is pure, that is not accompanied by any other change in the environment. Our second treatment is the leader turnover treatment, a restart after the leader has been replaced by another one. The third treatment is the comprehension/advice treatment, a restart with the provision of a detailed explanation of the causes of the decrease in cooperation and of advice for future contributions. Our fourth treatment is the communication treatment, a restart with a one-way free form message sent by the group leader to the followers. All three interventions involve a restart in the sense that after a number of experimental rounds, additional rounds are played, but they all also involve an element that goes beyond pure restart.

We think that all three interventions are central for the issue at hand. Leader turnover is a common phenomenon in firms and teams. Leaders are replaced because they retire, because they resign voluntarily, or because they are fired. A turnover can take place internally, i.e. an employee from within the institution, firm, department or team substitutes the previous leader, or the leader is replaced externally, i.e. by a person from outside the organization. In this paper, we focus on external leadership turnover.³ Besides the replacement of managers and CEOs in firms, the perhaps most appealing and illustrative example of external leadership turnover is the turnover of coaches in (professional) sports.

³ Huson et al. (2001) find that relative performance improvements are greater when successor CEOs are hired from outside the firm than when they are insiders. Similarly, Borokovich et al. (1996) show that, for forced dismissal, abnormal stock returns are significantly positive for an external turnover announcement and significantly negative for an internal replacement.
teams. The pure fact of replacing a leader is often considered to be a good way of turning an ailing organization around.⁴

Our comprehension/advice treatment is inspired by the common practice in every-day business of obtaining expert analysis and advice from a consultancy firm for instance. McDonald and Westphal (2003) find that CEOs tend to seek advice when performance deteriorates, which in our context corresponds to decreasing cooperation. The effect of external consultancy and advice on performance is however rather inconclusive as a number of field experiments with micro-, small and large organizations in developing countries obtain different results.⁵ In our context we will give participants insights into the difficulties of cooperating over time based on the analysis of this problem contained in the influential paper by Fischbacher and Gächter (2010). Our design allows us to study whether a careful analysis of what goes wrong and constructive advice on how to improve team performance can cause a change in participants’ cooperation, beyond the one that comes from a pure restart. A priori, a better understanding of the causes behind the decay of cooperation appears to be a good basis for improvement. In this sense, we provide information on the nature of the problem and on how group members can contribute to an improvement (see McGuire, 1985). Our design allows us to shed light on the conjecture that receiving a rational explanation by outsiders can lead to an improvement.

Communication between manager and co-workers has been shown to be a crucial element of the successful performance of a firm. Brandts and Cooper (2007) show that in a coordination game communication between manager and employees is quite effective in improving performance of groups. In the experimental public goods literature, Koukoumelis, Levati, and Weisser (2012) show that one-way communication by one group member increases cooperation significantly in the simultaneously played game, where communication is possible from the outset and not just after cooperation has broken down. Our case is one in which cooperation levels end up at a low level and we ask whether communication at this

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⁴ The field literature on the consequences on performance of a manager or coach turnover is rather inconclusive. Whereas some studies on leader turnover find negative effects on different types of firm or team performance (see, e.g., Khanna and Poulsen, 1995; Khuran and Nohria, 2002; Audas et al., 1997; Bruinshoofd and Ter Weel, 2003; Ter Weel, 2005), others show significant improvements in performance (see, e.g., Bonnier and Bruner, 1989; Weisbach, 1988; Denis and Denis, 1995; Hotchkiss, 1995). The third type of findings is insignificant performance changes (see, e.g., Warner et al., 1988; Dedman and Lin, 2002; Danisevskia et al., 2006; Cools and van Praag, 2005; Ortín-Angel and Cannella, 2004; Brown, 1982; Maximiano, 2006).

⁵ See, e.g., Drexler et al., 2010; Karlan and Valdivia, 2011; Bruhn and Zia, 2011; Bruhn et al., 2012; Karlan et al., 2012; Bloom et al., 2013.
point makes it possible to escape from such a situation. Moreover, Olson and Zanna (1993) report evidence that information from in-group sources will have more impact than information from external sources.

We find that the effects of the pure restart, leader turnover and comprehension/advice do not differ significantly from each other in the long-run, suggesting that exogenous leader turnover and consultancy revive cooperation to the extent of a pure restart, but not beyond the effect of a pure restart. The informational content and therefore the understanding of the game are supposed to be highest in the comprehension/advice treatment and, in addition, participants receive advice on how to act. However, the message sent by the leader to the followers in the communication treatment revives cooperation significantly compared to the pure restart, the leader turnover and also compared to the comprehension/advice treatment. Moreover, repeated communication further reinforces the reviving effect on cooperation by eliminating the decline in contributions over time almost completely. Communication of the leader is the most effective managerial instrument in our experiment. The positive effect of repeated communication with limited frequency is in consonance with other research in the psychological literature (McGuire, 1985).

2. EXPERIMENTAL DESIGN
In section 2.1., we explain the sequential voluntary contribution game used in our experiment and the theoretical predictions assuming selfish players. We also provide some general information on the procedure of the experimental session is provided. In section 2.2., the control treatment and the intervention treatments are discussed in detail.

2.1. The game and general procedure
In the leading-by-example setting we study, a voluntary contribution game is played repeatedly by fixed groups of four participants. Group members are matched randomly at the beginning of the experiment. There are two roles: leader and follower. The role of the leader is assigned to one of the group members and the remaining group members are followers. The roles are assigned randomly at the beginning of the experiment and are the same throughout the entire experimental session.
The payoff function is the same for both, leaders and followers. The individual endowment is $E = 40$, the return rate of the private good is $r_p = 1$, and the return rate of the public good is $r_V = 0.5$ yielding the following payoff function of individual $i$ in round $t$:

$$\pi_{i,t} = (40 - h_{i,t}) + 0.5 \cdot \sum_{j=1}^{4} h_{j,t}$$

The game is played sequentially by the four players over a total of 36 rounds. All rounds have three stages. In the first stage of the game, the leader of each group decides how much of the endowment to contribute to the public good. In the second stage, followers are informed about their leader’s decision and decide how much of their individual endowment to contribute to the public good. In the third stage, all players are informed about the average contribution by the other group members, the sum of contributions by all group members and the individual payoff.

The equilibrium contribution of leaders and followers in the sequential structure of the game is the same as in the simultaneous game, i.e. zero. This holds for the stage game as well as for the finitely repeated game, which can be shown by backward induction. Therefore, the equilibrium contribution in the finitely repeated sequential voluntary contribution game is zero, too. The socially optimal solution is just the same as in the finitely repeated simultaneous game: Each group member $j = 1,\ldots,n$ contributes in each round the entire individual endowment $E$ to the public good leading to an individual round payoff of $r_V \cdot n \cdot E = 80$.

The general instructions are handed out to the participants on paper and read aloud by one of the experimenters at the beginning of the experiment. In the general instructions in the appendix A.1, the chronological order of an experimental session and the three stages of each round are represented. They are the same for the control treatment and the three treatments. Participants get the information about the total number of rounds as well as the structure of the rounds before the experiment starts. Also, they are informed that the 36 rounds of the repeatedly played voluntary contribution game are divided into three parts with 12 rounds each and that they would get part-specific instructions at the beginning of each part. Participants at the same time know about the overall horizon and the break-up into blocks of 12 rounds, which are meant to represent exogenous moments of re-start akin to week, seasons etc.
Additional part-specific instructions (see appendix) including the information that the group composition would remain the same over the 12 rounds of the subsequent part are shown on the computer screen just before the corresponding part starts and also announced aloud by one of the experimenters. The restart and the interventions take place at the beginning of part 2 (before round 13) and part 3 (before round 25). Thus, the part-specific instructions differ for the control treatment and the three intervention treatments. Having three parts of twelve rounds allows us to investigate the effects of the two restarts instead of just one. We discuss this in more detail in the results section. A twelve-round part can be seen as a work-period (week, month, quarter, year), a season, the time a particular project lasts or any other length of time after which there is a natural break in the interaction. After the experiment finishes, participants are required to fill out a questionnaire and are paid the earnings in private.

The experimental sessions were conducted at the Universitat Autònoma de Barcelona (UAB, Spain) and programmed with the experimental software z-Tree, Fischbacher (2007). Participants were mainly undergraduate students from the UAB and were recruited using the online recruitment system ORSEE, Greiner (2004). A total of 224 participants took part in twelve experimental sessions composed by 127 women and 97 men. The average earnings per person were 19.22 Euro (including a show-up fee of 5.00 Euro). The average duration of a session was 2 hours 30 minutes.

2.2. Treatments
In the control treatment with the pure restart, neither the group composition changes nor do participants get any additional information or have to take any new type of action. Both at the beginning of rounds 13 and 15 participants are informed in the part-specific instructions that they will continue playing in the same group composition as before during the subsequent twelve rounds. Note that the effects of a pure restart were studied by Andreoni (1988) and Croson (1996) in a simultaneous voluntary contribution game. Hence, our control treatment is an extension and not a pure replication of previous work. To our knowledge, the restart effect as such has not yet been studied in a sequential form of the game.

In the leader turnover treatment, leaders are replaced externally in rounds 13 and 15, that is from outside the group by a new leader who was the leader of another one of the groups of the experimental session in the preceding twelve rounds. Or, from the leader perspective, leaders move to a different group from the one(s) they have been the leader in the
previous twelve (24) rounds. Followers remain together in the same group. Participants in our experiment do not know in advance about the turnover. There is a variety of cases where a leader turnover does not take place on a regular basis and is not known in advance, for example when a manager is fired. More importantly, an unannounced leader turnover allows us to make a direct comparison of behavior to that of our control treatment with pure restart.6

In the comprehension/advice treatment, we explain to participants, before the start of part 2, how contributions usually evolve in related experiments and give an explanation of why they typically decline. Then we provide some advice on what to do to avoid the decline and to reach and maintain high earnings from the public good. The idea of this treatment is that of a working group receiving external expert analysis, explanation and advice. Following psychological research on attitude change and persuasion (McGuire, 1985) we provide participants with a rational analysis of the causes of cooperation decay and with an evidence-based advice on how the process of decay can be prevented.

The content of the information is the following: We first inform participants that we observed a decline in average contributions over part 1 in previous sessions driven by followers undercutting previous contributions on average. We then explain that a study showed that the decline in contributions in the repeated game occurs because participants are on average imperfect conditional contributors (Fischbacher and Gaechter, 2010). To reach and maintain high earnings from the public good it is therefore recommendable that followers contribute at least as much as the leader of their group. Before part 3, we give a short reminder of the explanation and the recommendation. The text of the comprehension/advice instructions for part 2 and part 3 can be found in the appendix. We wanted to make sure that participants understood well what was going on in the game and we wanted to give a clear comprehensive recommendation of what to do to avoid the decline. We thought carefully about the information we put in the explanation and advice and let non-economists proofread it for understandability. Also, we gave participants enough time to read the information again after we had read it out aloud and asked if anyone had a question before proceeding.

In the communication treatment, the leader of a group sends a one-way free form text message to the followers before part 2 and part 3 begin, respectively. Except for standard rules for free form communication in experiments, leaders are free to write whatever they want. Koukoumelis et al. (2012) show that one-way free form communication by one group

6 In Gueth et al. (2007), leaders are replaced from within the group and participants know about this form the very beginning of the session.
member increases contributions in the simultaneous voluntary contributions game significantly. We are interested in studying behavior in the sequentially played voluntary contribution game and after a decrease in contributions; our emphasis is on reviving cooperation after it has died down. Note that the informational content and understanding contained in the message participants get in the comprehension/advice treatment can be considered to be at least as precise and deep as in the communication treatment. The advice in the comprehension/advice treatment (although transmitted in a soft way to not be perceived as an order) is supposed to be very clear and comprehensive. In the comprehension/advice and in the communication treatments, the group composition does not change over the experimental session and participants learn this information in the part-specific instructions.

We have one control treatment and three intervention treatments. In the following, we will denote the restart control treatment by “treatment R,” the leader turnover intervention by “treatment LT,” the comprehension/advice intervention by “treatment CA” and the communication intervention by “treatment C.” Table 1 provides a summary of the characteristics and the amount of data for each treatment. We have a total of 15 (independent) group observations for treatment R, 16 group observations for treatment LT, 13 group observations for treatment CA, and 12 group observations for treatment C.

3. RESULTS
We start the presentation of our analysis with some preliminary results. In section 3.1, we confirm the expected contribution decline over time and a short-run restart effect in cooperation in our sequential form of the voluntary contribution game and in section 3.2, we confirm that overall contributions do not differ in part 1 and that leaders contribute significantly more than followers. We are particularly interested in the long-run effect of the three interventions that can be added to a pure restart and that are interesting from the managerial point of view. Section 3.3 shows that the leader’s communication with the followers outperforms the pure restart, leader turnover, and the comprehension/advice intervention both at the beginning and overall in part 2. Section 3.4 demonstrates the same for part 3 underlining the strong enduring effect of repeated communication.
3.1. Decline in contributions and restart

We start our data presentation by confirming that contributions decline over part 1 (rounds 1 through 12) and that there is a restart effect in round 13. In figure 1, the average contributions are depicted for rounds 1 through 13 and for control treatment R and treatments LT, CA, and C separately. In the upper panel of figure 1, the average contributions of all participants are shown. In the lower panels of figure 1, the average contributions of leaders only and followers only are presented on the left and right, respectively. Average contributions in all four treatments decrease in part 1, as expected, and evolve similarly. The average contributions and corresponding standard deviations of all participants, leaders and followers in part 1 are very similar as shown in table 2. We will get back to the part 1 average contributions in the next section.

The decline in cooperation is confirmed in pooled OLS regressions clustering for groups, see table 3. The observations are those of all 224 participants of control treatment R, and treatments LR, CA, and C. We cluster for group to control for the correlation of contributions within a group. In regression models (1a), (1b), (2a), (2b), (3a), and (3b), observations are those from part 1 (round 1 through 12), part 2 (round 13 through 24), and part 3 (round 25 through 36), respectively. In models (1a), (2a), and (3a), the individual contributions are regressed on a round variable taking values between 1 and 12, a dummy variable for each of the three interventional treatments LT, CA, and C, and a dummy variable, which takes the value one if the individual is leader and zero if the individual is follower. The reference treatment is thus treatment R. In models (1b), (2b), and (3b), an interaction term between the round variable and each of the three treatments LT, CA, and C is added to the corresponding model. In model (1b), the coefficient estimate for the round variable is negative and highly significant at the one percent level (just as in the other regression models) indicating that contributions in control treatment R decrease over the rounds of part 1 by 0.59 EMU per round on average.

In model (1b), the dummy variables for the three treatments LT, CA, and C are positive and not significant, though the coefficient estimate of the treatment C-dummy (4.4) has a p-value of 0.114. All three interaction terms of the treatment and the round variable are negative. For treatment C, the interaction term is significant at the five percent level in part 1. Compared to control treatment R, contributions start somewhat higher in treatment C in round 1 and the contribution decrease is steeper by 0.62 EMU per round in part 1. Since there are no treatment differences in part 1, there should be no differences in contributions between
treatments. Note that the coefficient estimates of the treatment dummy variables in model (1a) are all insignificant indicating that there are no treatment differences in part 1.\footnote{We don’t have an explanation for the difference in the slope, since there are no treatment differences in part 1.}

The contribution decline over rounds is also confirmed in regression models (4a) and (4b), where observations are those from round 1 through 36. In model (4a), the individual contributions are regressed on a round variable taking values between 1 and 36, a dummy variable for part 2 and part 3, respectively, a dummy variable for each of the three interventional treatments LT, CA, and C, and a dummy variable for the role “leader.” In model (4b), interaction terms between each part dummy and each interventional treatment dummy are added to model (4a). For the moment, note only that the round variable in both models is negative and highly significant meaning that contributions decrease on average over all four treatments by 0.9 EMU per round. We will get back to the remaining results of table 3 later.

Having confirmed the decline in contributions over the rounds of part 1, we now move to the short-run restart effect for the sequential voluntary contributions game, which was found in previous studies with the simultaneous voluntary contribution game, see Andreoni (1988) and Croson (1996). Therefore, we compare contributions in round 13 with contributions in round 12 (first restart). Contributions in round 1 through 13 are shown separately for each treatment in figure 1 (upper panel: all participants; lower panel: leaders on the left, followers on the right). We will analyze the contributions on the group level, for leaders only, and for followers only. For comparisons on the group level, we calculate the average over the contributions of the leader and the three followers of a group resulting in 15 (control treatment R), 16 (treatment LT), 13 (treatment CA), and 12 (treatment C) independent observations. For followers, one independent observation is given by the average over the contributions of the three followers of a group. The increase from round 12 to 13 is very clear for all four treatments and the increase is confirmed by non-parametric tests (p < 0.061 separately for each treatment and for average contributions, leaders’ contributions, and average followers’ contributions, two-sided Wilcoxon signed-rank test, N = 15 for control treatment R, N = 16 for treatment LT, N = 13 for treatment CA, N = 12 for treatment C). Also the highly significant positive coefficient estimate of the part 2-dummy in the regression model (4a) in table 3 confirms an average increase of 11.89 EMU from round 12 to round 13 (part 2-coefficient estimate: 12.82 EMU; marginal round change: -0.93 EMU).
3.2. Contributions in part 1 and leaders’ and followers’ contributions

Even though the slope of the contributions in the first part is somewhat steeper in treatment C than in control treatment R, the contributions in part 1 do not differ between the four treatments. In the summary statistics in table 2, the average contributions are summarized for each treatment and for each part. Average contributions of a part are the average over the group contributions in the twelve corresponding rounds resulting in 15 (control treatment R), 16 (treatment LT), 13 (treatment CA), and 12 (treatment C) independent observations. Average contributions (standard deviations) in part 1 are 19.28 (7.442) in treatment R, 17.58 (8.013) in treatment LT, 17.86 (7.086) in treatment CA, and 19.62 (6.068) in treatment C. As expected, the null hypothesis “no treatment differences in contributions in part 1” cannot be rejected ($\chi^2(3\text{df}) = 1.020$, $p = 0.796$, Kruskal-Wallis test). Also the pair-wise comparison of the part 1-contribution distributions does not reveal differences between treatments R, LT, CA, and C ($p > 0.384$, pair-wise two-sided Mann-Whitney U test).

Contributions in part 1 are also the same when analyzing leaders and followers separately. For leaders, the part contributions are calculated taking the average over the contributions in the twelve rounds of a part on the individual level. For followers, the average part contributions are calculated over the average of the three group followers in the twelve rounds of a part leading to 15 (control treatment R), 16 (treatment LT), 13 (treatment CA), and 12 (treatment C) independent observations. Neither for leaders ($\chi^2(3\text{df}) = 1.565$, $p = 0.667$, Kruskal-Wallis test; $p > 0.255$, pair-wise two-sided Mann-Whitney U test) nor for followers ($\chi^2(3\text{df}) = 0.903$, $p = 0.825$, Kruskal-Wallis test; $p > 0.394$, pair-wise two-sided Mann-Whitney U test), there are significant treatment differences in contributions in the first part of the experiment.

Comparing leaders’ and followers’ contributions, we find that leaders contribute significantly more than the followers of the corresponding group in each treatment and part ($p < 0.084$ for each treatment and part separately, two-sided Wilcoxon signed-rank tests, $N = 15$ for control treatment R, $N = 16$ for treatment LT, $N = 13$ for treatment CA, $N = 12$ for treatment C) with two (slight) exceptions: in part 2, the difference between the leaders’ and the followers’ contribution is not significant in treatment LT and C ($p = 0.109$ and $p = 0.170$, respectively, two-sided Wilcoxon signed-rank tests). For the statistical tests, we compare a leader’s average contribution with the average contribution of all followers of the same group in a part. We will get back to the exceptions in the next section. The higher contributions of
leaders are confirmed in all regression models in table 3. On average, leaders contribute 5.066 EMU more than followers with the coefficient estimate being statistically significantly different from zero at the one percent level. This replicates an earlier finding by Güth et al. (2007) among others.

3.3. The reviving effect of communication in part 2

Up to now we have documented that in all treatments there is a restart effect in round 13. Now we ask whether there are treatment differences in the restart as such. The increase in group contributions from round 12 to round 13 is on average (with the corresponding standard deviation) 7.02 EMU (10.8), 12.67 EMU (10.8), 18.13 EMU (9.8), and 18.81 EMU (15.0) in treatment R, LT, CA, and C, respectively. The increase is significantly larger in the treatments CA and C than in the control treatment R (p = 0.015 and p = 0.038, respectively, two-sided Mann-Whitney U test). For leaders, this is only the case when we compare the contribution increase in treatment CA (19.15 EMU) with the rise in control treatment R (8.73 EMU) (p = 0.074, two-sided Mann-Whitney U test). For followers only, contributions in treatments CA (17.79 EMU) and C (18.92 EMU) rise more than in control treatment R (6.44 EMU) (p = 0.020 and p = 0.043, respectively, two-sided Mann-Whitney U test).

What happens in the rest of part 2 (rounds 13 through 24)? We find that contributions in part 2 are highest when the leader communicates with the followers, whereas they are similar between the pure restart, the leader turnover, and the comprehension/advice intervention, see figure 2 and table 2. Average contributions by all participants, leaders, and followers are summarized in table 2 for treatment R, LT, CA, and C and part 1, 2, and 3 separately. In part 2, there are no significant differences in the distribution of group contributions between control treatment R (18.20 EMU), treatment LT (18.67 EMU), and treatment CA (18.51 EMU) (p > 0.695, pair-wise Mann-Whitney U test). However, contributions in part 2 are significantly higher than in treatment R, LT, and CA if the leader communicates with the followers (26.56 EMU) (p<0.044, pair-wise two-sided Mann-Whitney U test).

Separate analyses for leaders and followers draw a similar picture; see also figure 3, figure 4, and table 2. There are no differences between control treatment R, treatment LT, and treatment CA for leaders only (p > 0.843, pair-wise two-sided Mann-Whitney U test) and for followers only (p > 0.729, pair-wise two-sided Mann-Whitney U test). For leaders, contributions in treatment C in part 2 are somewhat larger, but not significantly (0.143 < p <
0.236, pair-wise two-sided Mann-Whitney U test). Followers contribute significantly more after receiving a message from their group leader at the beginning of part 2 than in (control) treatments R, LT, and CA (p < 0.018; pair-wise two-sided Mann-Whitney U test).

Another way to look at the long-run effect of the restart and the three interventions on cooperation is to compare part 2-contributions with part 1-contributions within each treatment. We do the analysis again for average contributions (leaders and followers), leaders only, and followers only, see table 2 for the respective average contributions and standard deviations. The rise in cooperation from part 1 (19.62 EMU) to part 2 (26.56 EMU) is only significant with communication (p = 0.050, two-sided Wilcoxon signed-ranks test) and constitutes an increase in contributions of around 35%. The increase in contributions from part 1 to part 2 in treatment C is also significant for leaders and followers separately (p = 0.071 and p = 0.050, two-sided Wilcoxon signed-ranks test). All other contribution changes from part 1 to part 2 are not significant, neither on the group level nor for leaders and followers separately (p > 0.256 for each treatment separately, two-sided Wilcoxon signed-ranks test). This is particularly interesting because the informational content and understanding is supposed to be higher with the external explanation and advice (treatment CA) than with communication (treatment C).

Yet another way of analyzing treatment differences is the comparison of the contribution changes between treatments (Diff-in-Diff analysis). Here, the question is whether there is a long-run reaction to a particular treatment controlling for initial contribution levels in part 1. The rise in cooperation from part 1 to part 2 is significantly larger in treatment C compared to control treatment R (p=0.032, two-sided Mann-Whitney U test). The boosting effect of communication compared to the other two interventions leader turnover and comprehension/advice is (slightly) insignificant (p = 0.178 and p = 0.115, respectively, two-sided Mann-Whitney U test). Looking at leaders only, there are no significant differences in the long-run contribution reaction to any of the three interventions or to the pure restart (p > 0.231, pair-wise two-sided Mann-Whitney U test). The change in cooperation is significantly larger among followers who receive a message from the leader compared to the pure restart and compared to the leader turnover and the comprehension/advice intervention (p = 0.015 for treatment R, p = 0.070 for treatment LT, p = 0.082 for treatment CA; two-sided Mann-Whitney U test). There are no significant differences for the other treatment comparisons among followers (p > 0.461, pair-wise two-sided Mann-Whitney U test). The long-run cooperation reaction is particularly strong among followers. Remember that leaders’
contributions are in general significantly larger except for treatment C in part 2 (p = 0.170, two-sided Wilcoxon signed-rank tests), see section 3.1. The average contribution gap is cut to more than half from 4.93 EMU in part 1 to 2.06 EMU in part 2 (table 2) meaning that, with communication, leaders manage to make followers go more after them.

The regression models (2a), (2b), (4a) and (4b) in table 3 confirm the effect of communication beyond the restart effect. The dummy variables for treatment C are highly significant at the five and one percent level and show that contributions in the communication treatment in part 2 are on average 8 EMU larger than in the control treatment with the pure restart, see models (2a) and (4b). The coefficient estimates of the dummy variables for the other two interventional treatments are insignificant. Note that, in model (2b), the coefficient estimates of the three interaction terms are insignificant. This means that cooperation declines over time similarly in all four treatments in part 2. Communication by the leader revives cooperation in part 2 effectively, but does not prevent a similar decline over time as with the pure restart, an external leader turnover, or the external comprehension/advice intervention.

3.4. The reinforcing effect of repeated communication in part 3

We start the cooperation analysis in part 3 by comparing contributions in round 25 with contributions in round 24 (second restart). The increase from round 24 to 25 can be clearly seen for all four treatments in figures 2, 3, and 4 and the augmentation is confirmed by non-parametric tests (p < 0.084 separately for each treatment and for average contributions, leaders’ contributions, and average followers’ contributions, two-sided Wilcoxon signed-rank test). In the control treatment R, the increase is not significant for non-parametric tests (p > 0.132 separately for average contributions, leaders’ contributions, and followers’ contributions, two-sided Wilcoxon signed-rank test). However, the highly significant positive coefficient estimate of the part 3 dummy in the regression models (4a) and (4b) in table 3 underline a significant increase in contributions in part 3 in all four treatments including the restart control treatment.

At the second restart, the leader turnover and the comprehension/advice intervention lead to a new short-run restart effect, while communication does not boost cooperation significantly, in contrast to what happened at the first restart. The increase in group contributions from round 24 to round 25 is on average (with the corresponding standard deviation) 5.87 EMU (12.9), 11.92 EMU (11.7), 13.54 EMU (12.3), and 12.5 EMU (16.9) in treatment R, LT, CA, and C, respectively. The increase is significantly larger in the treatments
LT and CA, but not in the C treatment, than in the control treatment R (p = 0.078 and p = 0.065, two-sided Mann-Whitney U test). For leaders, the short-run reaction is not significantly different in the four treatments. Among followers, contributions in treatments LT (11.81 EMU) and CA (14.36 EMU) rise more than in control treatment R (5.67 EMU) (p = 0.093 and p = 0.029, respectively, two-sided Mann-Whitney U test).

Concerning the effects throughout part 3, the average contributions in part 3 (rounds 25 through 36) are again highest if the leader sends a communication message to the followers, whereas they are very similar with the pure restart, the leader turnover, and the comprehension/advice intervention, see figure 2. For part 3, there are no significant differences in contributions between the control treatment R (16.03 EMU), the treatment with leader turnover (15.44 EMU), and the comprehension/advice intervention (17.12 EMU) (p > 0.775 pair-wise Mann-Whitney U test). However, with communication (29.31 EMU) contributions are significantly larger than in control treatment R and also compared to the other two interventions (p < 0.009; pair-wise two-sided Mann-Whitney U test). The regression models (3a) and (4b) in table 3 confirm the effect of communication beyond the restart effect. The dummy variable for treatment C is highly significant and shows that contributions are on average 13 EMU higher than in the control treatment with the pure restart. Separate analyses for leaders and followers draw a similar picture, see also figure 3 and figure 4. There are no significant contribution differences in part 3 between the control treatment R, the treatment LT, and the treatment CA for leaders (p > 0.621, pair-wise two-sided Mann-Whitney U test) and for followers (p > 0.725, pair-wise two-sided Mann-Whitney U test). Contributions of leaders (p < 0.074, pair-wise two-sided Mann-Whitney U test) and followers (p < 0.005, pair-wise two-sided Mann-Whitney U test) are significantly higher with communication than in any other treatment.

Comparing part 3 contributions with part 2 contributions within each treatment, we find that contributions decrease in all treatments except for the treatment where the leader communicates with the followers, see table 2. The decrease is only significant for the treatment with the pure restart for all participants (p = 0.094, two-sided Wilcoxon signed-ranks test) and for followers only (p = 0.038, two-sided Wilcoxon signed-ranks test), but not for leaders only. Note that contributions decrease strongly towards the end of the experiment in treatments R, LT, and CA leading to low average contributions in part 3, see figures 2, 3, and 4 and table 2. This so-called last round effect is often observed in repeatedly played voluntary contribution games towards the end of the experimental session. On the contrary,
contributions in treatment C do not decrease over the rounds of the last part except for the last two rounds. The average contributions with one-way free form communication increase from 26.56 EMU in part 2 to 29.31 EMU in part 3. This is particularly surprising because it means that the repeated communication at the beginning of part 3 improves cooperation such that it compensates for more than the last round effect. However, the rise in contributions from part 2 to part 3 is significant neither for average contributions nor for leaders and followers separately.

Comparing the long-run reaction to the interventions and the restart after the repeated restart and interventions (difference between contributions in part 3 and in part 2), we find significant differences only for treatment C compared to the restart. Compared to control treatment R (LT, and CA), the change in contributions is (slightly) larger in treatment C (p = 0.083 for treatment R, p = 0.125 and p = 0.157 for treatment LT and CA, respectively, two-sided Mann-Whitney U test). Leaders who communicate with the followers contribute slightly more than leaders in treatments LT and CA (p = 0.164 and p = 0.103, respectively, two-sided Mann-Whitney U test). Followers react significantly (slightly) more positively to the text message by the leader than to the pure restart (the leader turnover and comprehension/advice intervention) (p=0.054 for treatment R, p=0.109 for treatment LT, p=0.157 for treatment CA, two-sided Mann-Whitney U test).

The lasting effect of the leaders’ (repeated) communication with the followers on cooperation is also confirmed in regression models (3a) and (4b) where the coefficient estimate of the communication dummy and the interaction term between communication and part 3 is significant at the one percent level, respectively. The repeated communication at the beginning of part 3 does not only maintain the previous reviving effect of the text message by the leader, but reinforces it: compared to the pure restart, contributions in treatment C are on average 8 EMU higher in part 2, model (2a), and 13 EMU higher in part 3, model (3a) in table 3. Looking at the contribution evolution over time in part 3 in model (3b), we find that the interaction terms between treatment LT (CA) and the round variable are significantly negative with a value of -0.731 (-0.646). Contributions start somewhat higher, but the decay is stronger after two leader turnovers and two “expert” explanation and advice interventions than after two pure restarts. This could be due to disappointed higher expectations about the others’ contributions. The most surprising effect of repeated communication can be also seen in regression model (3b). The coefficient estimate of the interaction term of the treatment C dummy and the part round variable is positive and significant at the ten percent level.
Repeated communication prevents the decrease in contributions over time in part 3 to a large extent: the coefficient estimates of the part round variable and of the interaction term are -0.673 and +0.521 in model (3b), respectively. *Repeated* communication seems to *reinforce* the reviving effect of communication on cooperation. While the leaders’ first text message shifts contributions upwards, the second communication with the followers results not only in the preservation of the contribution shift, but also in a hardly decreasing cooperation slope over time.

4. **Conclusion**

Cooperation in teams is an important component of successful performance of companies and other organizations. It is a common observation that cooperation decreases over time due to different reasons and we analyzed in this study how a group leader can revive cooperation effectively. A pure restart has been shown to be a powerful mechanism in voluntary contribution games, but only has a short-run effect. We analyzed and compared three wide-spread managerial strategies that organizations may realistically have available and that could create an effect beyond that of a restart.

The results show that leader communication with the followers is by far the most effective intervention for increasing cooperation in the long-run. The effect on cooperation is significantly larger than the effect of a simple restart driven mainly by an increased contribution of followers, i.e. followers pursue the leader better. The effect is also larger compared to an external leader turnover and an external expert explanation and advice even though the informational content and understanding of the decline in cooperation and a counter-action is supposed to be at least as high with the expert intervention.

In addition, *repeated communication reinforces* the reviving effect of communication on cooperation. After the leader sends a second text message to the followers, contributions go hardly down over time and significantly less than with the pure restart.

It is important to note that we do not show that communication by the leader alone has an impact on cooperation. An important feature of our design is the sequential form of the voluntary contribution game, or in other words, the leading-by-example structure meaning that leaders choose the contribution first. The key of cooperation revival in our design is that communication with the followers and an exemplary contribution behavior by the leader go hand in hand.
The external leader turnover and the expert consultancy do not show an effect that goes significantly beyond that of a restart in our experiment. We believe that these negative results are as important as the positive one mentioned above. A priori, changing the leader and providing members of failing organizations with analysis and advice would seem as promising ways to strongly revive cooperation. What our results show is that the effect is short-lived and that even the short-run effect does not go beyond that of a pure restart. It is perhaps most surprising that the comprehension/advice treatment has no additional effect, since it would seem that an analysis of the causes of cooperation decline and a clearly formulated advice are the best starting point for not running into the same problem as before.

As to the content of the communication from leader to followers, we do not have enough observations to do a thorough analysis (nor is it the purpose in this study). However, the most commonly mentioned categories are the monetary benefit from cooperation, requesting conditional contribution and threatening to decrease contribution (to zero) if the followers do not cooperate at the same level. Some leaders also mention the previous decrease in cooperation and create a feeling of relationship closeness. The communication content is thus partly quite similar to the external “expert” explanation and advice we give to the participants. It could make a big difference whether the information is transmitted from within the group or from outside the group. Also, the content of the “expert” explanation and advice is purely informative while the leaders can evoke feelings and emotions such as identity, solidarity, or guilt for letting others down. Another possibility could be that too much information is not good for changing individuals’ behavior. Also communication by the leader is targeted on the previous cooperation in a particular group, while the comprehension/advice text is a general statement. It would be interesting to analyze in the future what kind of communication leaders could use to restore cooperation in organizations.
REFERENCES


Dedman, E. and S. Lin (2002), Shareholder wealth effects of CEO departures: evidence from the UK, *Journal of Corporate Finance*, 1, 84-104.


**FIGURES**

**Figure 1:** Average contributions in control treatment R and treatment LT, CA, and C (round 1 through 13) for all participants (upper panel), leaders only (lower left panel), and followers only (lower right panel).

**Figure 2:** Average contributions in control treatment R and treatment LT, CA, and C (round 1 through 36).
Figure 3: Average contributions of leaders in control treatment R and treatment LT, CA, and C (round 1 through 36).

Figure 4: Average contributions of followers in control treatment R and treatment LT, CA, and C (round 1 through 36).
### TABLES

<table>
<thead>
<tr>
<th>Treatment</th>
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<th>Observations</th>
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**Table 1**: Overview treatments

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**Table 2**: Descriptive statistics of contributions by treatment and on the group, leader and follower level.
### Table 3: Pooled OLS regression (Data: control treatment R, treatment LT, CA, and C).

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R-squared 0.067 0.070 0.105 0.107 0.173 0.184 0.103 0.120

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Pooled OLS (clustering for groups) of contribution (round 1 to 12 of each part).
Dependent variable takes values between 0 and 40.
APPENDIX

Instructions

A.1. Instructions at the beginning of the experiment

General information

Thank you for coming to the experiment. You will receive 5 Euro for the participation in the experiment. You will be assigned to a group and depending on your and your group members’ decisions you can earn additional money during the experiment. It is important that you do not talk to any of the other participants until the experiment is over. You can ask questions at any time. If you have a question, please raise your hand and one of us will come to your place to answer.

Role and group matching

You will be randomly assigned to one of two roles: (1) director or (2) employee. This role will be the same throughout the entire experiment. Participants will be randomly split in groups with 4 members, each composed by 1 director and 3 employees. At no time during the experiment you will know whom you are matched with and your decisions will be anonymous.

Task and stages of each of the 36 rounds

There will be 36 separate rounds. In each round, each group works on a joint project whose payoff will depend on the hours dedicated by all group members. In each round, every participant has an endowment of 40 hours and decides how many of the 40 hours to dedicate to the project. The remaining hours will be automatically dedicated to a private activity.

Each round is independent from the others and develops in the following way:

Stage 1:
Directors: The director of each group decides how many of the 40 hours to dedicate to the project. The rest will be automatically dedicated to the private activity. There will be a simulation area on the lower part of the screen where directors can calculate earnings choosing different hours dedicated to the project by themselves and by the other group members on average (see “Decision screen director”). The calculations are absolutely private. In the upper part of the screen, directors enter the hours that they want to dedicate to the project in the corresponding round.
Employees: The employees do not have anything to do in this stage and wait until the director of their group have taken a decision.

Stage 2:
Directors: The directors do not have anything to do in this stage and wait until the employees of their group have taken a decision.
Employees: The employees of each group are informed about the hours that the director of their group decided to dedicate to the project and decide how many of their own 40 hours to dedicate to the project. The rest will be automatically dedicated to the private activity. There will be a simulation area on the lower part of the screen where employees can calculate earnings choosing different hours dedicated to the project by themselves and by the other group members on average (see “Decision screen employee”). The calculations are absolutely private. In the upper part of the screen, employees enter the hours that they want to dedicate to the project in the corresponding round.

Stage 3:
Directors and employees: All participants are informed about the average hours dedicated to the project by the other group members, the sum of hours dedicated to the project by all group members and about their own earnings. Summaries of previous rounds will also be listed.
After stage 3, a new round starts which develops in the same way.

**Additional information**

The experiment is split in 3 parts and each part consists of 12 rounds. The specific instructions for each part will be shown on the screen before the corresponding part starts.

**Payoff**

Your earnings in Experimental Currency Units (ECU) for each round are given by the following function, which is the same for directors and employees:

\[
Earnings_{\text{Round}} = \left(40 - Hours_{\text{Project}}\right) + 0.5 \cdot \sum_{\text{Group}} \text{Hours}_{\text{Project}}
\]

The earnings in ECU are composed by the earnings from the *hours* dedicated to the *private activity* by that person and the earnings from the *sum of hours* dedicated by *all group members* to the *joint project*. That means that each hour that you decide to dedicate to the project gives *each* of the group members (i.e. you and all other group members) an earning of 0.5 ECU. Analogously, each hour that another group member decides to dedicate to the project gives *each* of the group members (i.e. you and all other group members) an earning of 0.5 ECU. Each hour that you decide *not* to dedicate to the project (i.e. to dedicate to the private activity) gives you and only you an earning of 1 ECU.

150 ECU are worth 1.00 Euro. At the end of the session you will receive 5 Euro plus the sum of what you will have earned in all 36 rounds of the experiment. After the experiment finishes we will pay you the earnings in private.

**Example and test question**

So that everyone understands how decisions translate into earnings we provide an example and a test question. (The number of hours used for the example and test are simply for illustrative purposes. In the experiment the allocations will depend on the actual decisions of the participants.)

**Example:**  Suppose that you decide to dedicate 31 hours to the project and the other group members decide to dedicate on average 33 hours to the project in one of the 36 rounds.

The sum of hours dedicated to the project by all group members is:

\[31 + 3 \times 33 = 31 + 99 = 130 \text{ (hours)}\]

Your earnings in that round are:

\[(40 - 31) + 0.5 \times 130 = 9 + 65 = 74 \text{ (ECU)}\]

**Test:**  Suppose that you decide to dedicate 28 hours to the project and the other group members decide to dedicate on average 24 hours to the project in another of the 36 rounds.

The sum of hours dedicated to the project by all group members is:

\[\text{______________________________}\]

Your earnings in that round are:

\[\text{______________________________}\]
Graphical representation of the chronological order of the experiment

Instruction for each part

Payment and questionnaire
Screenshots

Decision screen director

Decision screen employee

(The number of hours used for the example and test are simply for illustrative purposes. In the experiment the allocations will depend on the actual decisions of the participants.)
A.2. Instructions at the beginning of part 1 (all four treatments R, LT, CA, and C)

A.3. Instructions at the beginning of part 2 (treatments R, CA, and C)
A.4. Instructions at the beginning of part 2 (treatment LT)

Ahora comienza la parte 2.
La parte 2 consta de 12 rondas idénticas.

No ha cambiado nada. El director de tu grupo es el mismo que en la parte anterior.
Los otros empleados de tu grupo son todos los mismos que en la parte anterior.

Tu grupo se compone de 4 miembros en total (1 director y 3 empleados).
La composición de tu grupo no cambiará a lo largo de las 12 rondas de la parte 2.

Las reglas del juego y de los ingresos son idénticas a las reglas de la parte anterior.

Ahora comienza la parte 2.
La parte 2 consta de 12 rondas idénticas.

Tu has cambiado de grupo. Eres ahora director de otro grupo que en la parte anterior.
Todos los empleados de tu nuevo grupo estuvieron en este mismo grupo pero con otro director en la parte anterior.

Tu grupo se compone de 4 miembros en total (1 director y 3 empleados).
La composición de tu grupo no cambiará a lo largo de las 12 rondas de la parte 2.

Las reglas del juego y de los ingresos son idénticas a las reglas de la parte anterior.

Ahora comienza la parte 2.
La parte 2 consta de 12 rondas idénticas.

El director de tu grupo ha cambiado. Fue director de otro grupo en la parte anterior.
Los otros empleados de tu grupo son todos los mismos que en la parte anterior.

Tu grupo se compone de 4 miembros en total (1 director y 3 empleados).
La composición de tu grupo no cambiará a lo largo de las 12 rondas de la parte 2.

Las reglas del juego y de los ingresos son idénticas a las reglas de la parte anterior.
A.5. Additional instructions at the beginning of part 2 and part 3 (treatment CA)

Text at the beginning of part 2

Please read the following text carefully. It gives you some explanation about the game that you are playing in this experiment and some advice.

We observed in previous sessions of this experiment in which you are participating today that the hours dedicated to the common project decrease on average over rounds in this part. You also might have observed that the hours dedicated to the common project in your group decreased over the previous 12 rounds.

We were wondering why contributions decrease and realized that the director’s and the workers’ hours dedicated to the common project follow similar patterns. That means that directors react to the workers’ previous contributions and workers on their turn react to the other workers’ and the director’s previous contributions.

Workers contribute on average fewer hours to the common project than the other workers of the same group in the previous round and less hours than the director in the same round. Even though the directors dedicate on average more hours to the common project than the workers in the previous round, they also tend to decrease their contributions compared to the previous round. Therefore, the hours of the directors also decrease over time.

You might have observed this contribution behavior in your group.

A recent study of an experiment similar to ours analyzes more in detail the behavior of the workers only in the experiment (if you want, we can provide you with the reference of the study at the end of the experiment). In that study, the workers are not only asked about how much to contribute, but also about what they believe the other workers will contribute. The study concludes, that "contributions decline because, on average, people […] match others’ contributions only partly.” That means that, on average, the workers are willing to contribute slightly less than what they believe the other workers will contribute. This leads to contributions being initially lower than expected. Once workers see this the beliefs about the others’ contributions will be lower than before. Since the workers contribute on average slightly less than what they believe that the others contribute, this reinforces the process by which average contributions decrease over rounds.
In other words, if the workers start with the idea of undercutting others then others will follow and the contributions to the common project will fall over time.

If you wish to reach and maintain a high earnings level from the common project it is recommendable that all workers dedicate at least the same number of hours to the common project as the director of the group does.

If you have a question, raise your hand and someone of us will come to your place to answer the question.

Text at the beginning of part 3

We do not know how hours dedicated to the common project evolved in your group over the previous part. However, we would like to remind you of the explanation for the decline of contributions to the common project over time and the advice that we gave you previously:

We observed in previous sessions of this experiment that the director’s and the workers’ hours dedicated to the common project follow similar patterns. Workers contribute on average fewer hours to the common project than the other workers of the same group in the previous round and less hours than the director in the same round. Even though the directors dedicate on average more hours to the common project than the workers in the previous round, they also tend to decrease their contributions compared to the previous round. Therefore, the hours of the directors also decrease over time.

A recent study of an experiment similar to ours concludes that, on average, workers are willing to contribute slightly less than what they believe the other workers will contribute. If the workers start with the idea of undercutting others, this will lead to the decrease of contributions over time.

If you wish to reach and maintain a high earnings level from the common project it is recommendable that all workers dedicate at least the same number of hours to the common project as the director of the group does.

If you have a question, raise your hand and someone of us will come to your table to answer the question.
In the box on their screen, the directors have now/again the opportunity to write a message, which will be sent to the employees of their group. After entering the message, you - the director - need to press the Enter key. The written text will appear in the upper part of the box the way it will be sent to the employees and you won't be able to change the entered text once you press the Enter key (just like in chats in Skype or WhatsApp). When you have finished writing the text and are ready to send the message to the employees you may raise your hand and one of us will come to your table to give you the code to get to the next screen. The
employees will receive the message of the director of their group and, after that, the second/third part of the experiment (rounds 13/25 through 24/36) will start.

You – the director - are free to send the message you like, including what you think is the best approach to the experiment, what you plan to do, and/or what you would like the others to do and/or why. However, there are two restrictions on the kind of messages that you can send:

1. First, you are not allowed to identify yourself to the others. Thus, you cannot reveal your real name, nicknames, or any other identifying feature such as gender, hair, or where you are seated.
2. Second, there must be neither threats nor promises pertaining to anything that is to occur after the experiment.

The minimum entry of characters is 10. Please, try to finish your message within seven minutes. The remaining time in seconds is shown on the upper right corner of the screen.

If you have a question, raise your hand and someone of us will come to your table to answer the question.