Courant Research Centre

'Poverty, Equity and Growth in Developing and Transition Countries: Statistical Methods and Empirical Analysis'

Georg-August-Universität Göttingen
(founded in 1737)

Discussion Papers

No. 149

The Effect of Outside Leaders on the Performance of the Organization: An Experiment

Marcela Ibanez, Elke Schaffland

September 2013

Wilhelm-Weber-Str. 2 · 37073 Goettingen · Germany
Phone: +49-(0)551-3914066 · Fax: +49-(0)551-3914059

Email: crc-peg@uni-goettingen.de Web: http://www.uni-goettingen.de/crc-peg

The Effect of Outside Leaders on the Performance of the Organization: An Experiment

Abstract

In order to deal with crises, organizations often bring expert leaders from outside. However, relying in an outside leader can result in decreased performance of the organization. In this paper, we use an experiment to investigate the role of identity and skills of the outside leader on the performance of the organization. Our results indicate that outside leaders are less committed than inside leaders and that group members cooperate less with an outsider than an inside leader.

Keywords: Social Identity, Leadership, Public Good Game, Lab Experiment.

1. Introduction

Leaders affect the performance of organizations in various ways. For example, they help to overcome problems of asymmetric information by signaling the advantages of cooperation (Hermalin 1998, 2007). In organizations that maintain hierarchical institutions, leaders can discipline followers by imposing sanctions or providing rewards. In situations where there are multiple equilibria, leaders can help to coordinate actions (Van Huyck, et al. 1992; Weber et al. 2001). Leaders can also motivate group members or help shape their institutional cultures (Schein 2004). Most of all, leaders are productive assets and can affect the performance of their organizations though their dedication, efforts and skills (Rosen 1982; Smith et al. 1984; Connelly et al. 2000). At the same time, leaders are highly mobile and are often replaced. For instance, political leaders are re-elected every four to six years; CEOs move to different posts, retire or are dismissed; and sport teams hire new coaches or change team captains. The replacement of leaders can rejuvenate an organization by bringing new ideas. Alternatively, replacement can help to discipline leaders to decreasing power abuse (Datta and Rajagopalan 1998; Ocasio 1994). However, leader replacement could be damaging for an organization. The lack of identification of the leader and members of an organization could lead to a decrease in performance. The leader might feel as though they are a stranger to the organization, being less committed to work for it, while members of the organization might lack trust in the outside leader and therefore, be less willing to cooperate with the outside leader. These two effects could result in decreased organizational performance.

Identity, or the process of self-categorization in which individuals subscribe emotional value to the group to which they feel identified with (Tajfel, 1974 and Turner, 1982), has been found to promote in-group favoritism and out-group discrimination (e.g. Akerlof and Kranton 2000; Bernhard et al., 2006; Goette et al., 2006; McLeish and Oxoby 2007; Li et al.,2011; Eckel and Grossman 2005; Tremewan 2010). Favoritism for in-group leaders has also been reported. For instance, Platow et al. (1997), Platow and van Knippenberg (2001) and Haslam and Platow (2001) show that in-group leaders receive more support and are perceived to be fairer than out-group leaders. Yet the effect of the leader's identity on the performance of the organization has seldom been considered. Few studies use observational data to study the effect of an outside leader on firm performance (e.g. Huson et al. 2004; Lauterbach et al. 1999; Shen and Canella 2002; Zhang and Rajagopalan 2004). The main problem of those studies is that it is difficult to disentangle the effects of identity as the replacement of leaders is not random. Moreover, with this type of data, it is not possible to understand the channels by which identity affects performance. Laboratory experiments can overcome those limitations and provide valuable insights.

This paper uses a highly simplified controlled experiment to explore the effect of identity and skills of the leader on the organization's performance. We consider a scenario common to most organizations in which the dedication and efforts of the leader affect the success of the organization. For instance, the success of politicians in passing laws (or attract funding) depends on how hard they lobby the reforms among parliamentarians (donors). Similarly, the success of companies and producer groups depends on the ability of the leader to open new markets. Hence, in our

experiment, we consider a modified public good game in which the marginal return from contributing to the public good depends on the productivity of the leaders in a real effort task. In our experiment, we vary exogenously the identity of the leader allowing for the leader to be either part of the organization (in-group) or an outsider (out-group). Furthermore, to account for the fact that in-group leaders might be less qualified that out-group leaders, we vary the skill level of the leader. Hence, we compare the performance of the organization with randomly selected leaders versus leaders selected according to highest skill level. In other words, we ask: Is it better to have a leader who identifies with the group he/she represents but who does not have the best qualification for the job, or a leader who is qualified for the job but is a stranger to the organization? Our hypothesis is that outside leaders who lacks identification with the members of the organization, have lower inner motivation to work. In turn, group members anticipate this and decrease support towards the outside leader. These two forces lead to a decrease in the performance of the organization compared with an organization led by an inside leader.

Experimental studies have examined how leaders affect group performance. For instance, it has been shown that the decision of the first player (leader) affects the decisions of the followers, inducing higher cooperation levels (Potters 2001; Clark and Sefton 2001; Potters, Sefton, and Vesterlund 2007; Moxnes and van der Heijden 2003; Meidinger and Villeval 2002). Furthermore, Gächter et al. (2010) and De Cremer and Knippenberg (2005) show that more cooperative leaders or leaders that incur larger sacrifices can lead the group to achieve more cooperative outcomes. Additional studies have shown that leaders can increase group cooperation by imposing sanctions on or offering rewards to group members (van der Heijden,

Potters, and Sefton 2009; Güth et al. 2007; Gürerk et al., 2009; Rivas and Sutter 2009; Levati et al. 2007; Glöckner et al. 2011). In the framework of a coordination game as the weak link game, Brandts and Cooper (2007) and Brandts, et al. (2007) show that coordination traps can be avoided when someone acts as a leader and sets an example that pulls laggards after them. In a different framework, Kuang, et al. (2007) show that the effectiveness of a leader to solve coordination problems depends on the leader's motives. We make contributions to this area of research by focusing on a type of leader that has not been studied before: the productive leader.

To the best of our knowledge, only two papers study the effect of identity on group performance. De Cremer Van Vugt and (1999) and De Cremer and Van Vugt (2002) consider the question on how salience of group identity affects cooperation in a public good game and the effectiveness of leaders. However, these papers do not address the question of how the identity of a leader affects cooperation. Moreover, besides being highly deceptive, these studies are non-consequential as participants are either unpaid or payments are un-related with actual decisions. Unlike previous papers that use fictional leaders, in our experiment, the leader plays an active role so that we can track two forms of discrimination: discrimination from group members against the out-group leader and discrimination from the out-group leader against group members.

Experimental methods have previously been used to study organizational change. For instance, Weber and Camerer (2003) and Weber et. al. (2001) investigate a merger failure. While they focus on differences in communication style (which are erroneously attributed to failure by the leader), we focus on a more general aspect of culture as is identity or the feeling of being part of the organization.

2. Experimental Design

The experimental design is structured in three stages[1]. In the first stage, we induce identity. At the beginning of the experiment, participants were randomly divided into groups of four. The groups could be one of two colors: green or blue. While participants know their color, they do not know who is in their group as there is more than one group with the same color. Participants were presented a picture and on the side the list of hidden objects within the picture. Their task was to find the hidden objects and to type the number of row and column where the object was found. While solving this task, participants were able to chat with other member of their group using a chat box. In order to induce participants to cooperate, we explained that answers will be valid only if all four members of the group typed the correct answer. Moreover, to make identity more salient, the task was played as a tournament where groups of different colors competed against each other. In order to avoid income effects, participants did not receive monetary incentives in this task. Instead, winning groups received a congratulation message at the end of the session once the payout was announced. Participants were given 10 minutes to solve the task. By having a task in which participants solve a joint task, communicate and compete with others, we expect to generate a strong form of identity (See Eckel and Grossman, 2005 and Chen and Li, 2009).

The second stage is instrumental and is used to classify participants according to the performance in a real effort task. However, participants do not know this until the next stage once their task is over. Using Gill and Prowse (2010) real effort tasks, participants had 60 seconds to position up to 48 slides. Slides were positioned at zero

[1] Instructions can be provided upon request

and could be moved as far as 100. The task was to position the slide exactly at 50. While solving the task, participants knew the exact location of each slide, how many slides they positioned correctly and how much time remained. To avoid potential income effects, we did not use economic incentives in this task.

In the third stage, participants played a modified public good game. In the modified public good game, participants were assigned one of two roles: leader or group members. Leadership roles were assigned either randomly or according to the performance in the second stage real effort task. The roles remained constant over the experiment. Leaders were presented the Gill and Prowse real effort task again and had 60 seconds to position slides. Moreover, we explicitly provided them an outside option as all participants received a second picture with hidden objects. For each round, leaders received a fix payment of 25 points independently of the number of slides correctly positioned or the number of objects found in the picture (which is not recorded)[2].

On the other hand, group members participated in a repeated modified public good game with random ending points between 10 and 15 periods. For each period, participants received 20 points of endowment, and their task was to distribute the endowment between a private and group account. Points invested in the private account returned 1 point, while points invested in the group account returned $a<1$ to all group members. The value of the multiplier, a, was determined according to the number of slides correctly positioned by the leader. Table 1 shows the distribution of the correctly positioned slides by the leader and the corresponding value of the

[2] Experimental points were transformed to Euros at an exchange rate of 100 points = 2.5 Euros.

multiplier. While participants knew the return of the slides positioned by the leader, during the game, they did not know the exact number of slides correctly positioned.[3] Participants were paid according to the points earned over all periods.

>>>TABLE 1 <<<

Between each round, we elicited expectations from participants on the performance of the leader and from the leader on the expected contribution of group members. Answers to expectations were incentivized.

Our experiment uses a 2x2 design that combines two different identities of the leader and two different selection mechanisms of the leader (see Table 2). In treatments one and three, leaders and group members share the same identity (belonging to the same group during the group identity induction stage), while in treatments two and four, leaders have a different identity than the group members (they did not belong to the same group in the group identity induction stage). In the first two treatments, leaders are randomly selected while in treatments three and four, the best participant in the second stage real effort task from each group is selected as a leader.[4]

>>>TABLE 2 <<<

The individual payoff function (Π) for the group member, i, and leader, L, and period, t, is given by:

[3] Participants could have determined the value of the multiplier given that they received information on group contributions.
[4] To avoid strategic bias, participants did not know it.

$$\Pi_{ti} = (20 - c_{it}) + a(f_{Lt})\,\Sigma c_{it}\ ,$$

$$\Pi_{tL} = 25$$

Where, c_i is the amount invested in the group account, f_L is the number of slides correctly positioned by the leader and Σc_i is the total amount invested in group account by all group members. If the leader positions 6 slides or more, we have a social dilemma in which individually it is better to invest in the private account ($a<1$) but socially better to invest in the group account ($an>1$), where $n=3$. If less than 6 slides are correctly positioned, the individual and socially optimal solution is to invest zero in the group account.

Given that solving the real effort task is costly for participants–they need to concentrate and work under time pressure–and that there is no reward associated to performance, leaders would have no incentive to position slides correctly. Hence, $an<1$ and the optimal private and social decision is to contribute zero to the public good in each round. Optimal contribution decisions do not change over treatments.

3. Experimental procedures

We implemented a lab experiment with 348 students from different disciplines at the Georg-August University of Göttingen (Germany) within the period of November 2010 to October 2011. About half of the participants were male. Recruitment was conducted by email through the Online Recruitment System for Economic Experiments - ORSEE (Greiner, 2004) Participants received a show up fee of 2 EUR plus earnings from all rounds in the experiment. The average earning was 17.86 EUR. In total, we conducted 29 sessions. Table 3 shows an overview of the treatments, sessions, and number of participants.

>>>TABLE 3 <<<

To ensure that the tasks were fully understood, we provided examples. Also, in the case of the second stage real effort task, we allowed participants a practice round. Pay-out of the public good game was explained by using examples. Additionally, we implemented control questions before participants solved their task.

4. Results

4.1. Descriptive Statistics

We start the analysis by comparing group performance in the identity task to see if group induction was homogeneous over treatments. Figure 1 shows Kernel densities of the number of objects found in the identity task. The distribution of the number of found objects was very similar throughout treatments with the exception of the treatment out-group leader. On average, participants in this treatment found 3.42 objects, while in other treatments, they found between 4.91 and 5.16 objects. We find significant differences in the distribution of objects found in treatment skilled out-group compared with other treatments (Wilcoxon ranksum test, p-value <0.001). In the coming analysis, we control for the mean number of objects found.

>>>FIGURE 1 <<<

Our second analysis attempts to establish whether leaders are comparable across treatments. Figure 2 presents the Kernel distributions of slides correctly possitioned in the second task (before participants were assigned the role of leaders) by participants selected as leaders. On average, participants selected as leaders in the out-group treament managed to position more slides correctly than in-group leaders. In treatments where leaders where selected randomly, out-group leaders

outperformed in-group leaders possitioning 4.17 slides more during the second taks (Wilcoxon rank sum test p-value: 0.0057), while in treatments where leaders were selected according to skills, , this value was 2.51 (Wilcoxon rank sum test p-value: 0.0099). This result suggest that comparisons by treatment need to controll for differences in initial ability of the leaders.

>>>FIGURE 2 <<<

In the third task, participants selected as leaders worked on a real effort task while participants selected as group members had to decide on contributions to the public good game. Descriptive analysis allows us to observe the effects of identity on leader productivity and member cooperation. Given that we observed differences in productivity during the second stage (number of slides correctly possitioned by the leader) by treatment, we construct a measure that takes this difference into account. Hence, we look at the additional productivity of the leader or the number of slides correctly positioned by the leader in each period (once they knew they were selected as leaders), minus the number of slides correctly possitioned in the second stage (before they knew they would be selected as leaders). Figure 3 presents the additional productivy of the leaders in each of the treatments.[5] Panel A compares additional productivity for randomly selected in-group and out-group leaders, while panel B presents the results for leaders that are selected according to skills. We find that the change in productivity is significantly higher for in-group leaders than out-group leaders independent of whether the leader is selected randomly or by skills (Wilcoxon rank sum test p-value <0.001).

[5] Approaching the effect of identity on additional number of slides correctly positioned might bias the results in the case where skilled out-group leaders approach the maximum number of slides that is possible to position within 60 seconds.

>>>FIGURE 3 <<<

Figure 4 presents the level of cooperation by treatment. We find that over all periods, members with randomly selected leaders contributed significantly more when the leader shared identity with the group members than when led by out-group leaders (Wilcoxon ranksum test, p=0.004). On overage, participants invested 1.063 points more when led by a random in-group leader. This finding also holds for treatments where the leader is selected according to skills. In this case, we find that in in-group treatment members cooperated on average 1.065 points more (Wilcoxon ranksum test p-value:0.01) than in the treatment with out-group leaders. Interestingly, we find that the cooperation pattern changes for groups with skilled leaders compared with groups with random leaders. While the cooperation pattern among groups with random leaders presents the traditional downward slope, groups with skilled leaders sustain higher cooperation levels over time.

>>>FIGURE 4 <<<

4.2. Regression analysis

While the preliminary descriptive analysis hints at significant effects due to identity on leader productivity and group member contributions, in this section, we use panel data analysis to check the robustness of the results. Table 4 presents the results of the regression analysis. The first four columns present a Random Effect Panel Regression on the number of slides correctly positioned (Productivity). Standard errors are clustered by id. Columns 5 to 8 present regression results on a Tobit Random Effects Model on number of points invested in the group account (Contribution). We use observed information (OIM) standard errors. We present separate models for random and skilled leaders. In the regressions, we control for

leader productivity in the second stage (before leadership assignment), group performance in the identity task (identity control) and session specific effects *(*session dummies). In addition, columns 2, 4, 6 and 8 add a set of controls and interaction terms with the identity variable (out-group).

We find that leaders discriminate in favor of their own group. Outside leaders perform relatively worse than inside leaders. However, this effect is only significant when leaders are randomly selected. For skillful leaders, there are no significant effects of identity on performance in the real effort task. This could indicate that skilled participants have an internal motivation to work in the task (i.e. they enjoyed it more than others, or wanted to increase performance) so their behavior was not affected by the treatment. Although we expected that leaders productivity would depend on group member cooperation—as they would feel that their effort may payoff only when participants contribute to the public good — we find no significant effects to member contributions. Not surprisingly, we found that positive learning effects and leader performance increased over time.

>>>TABLE 4 <<<

Regression results of the Tobit Random Effects Model support the findings of a negative effect of out-group leader on cooperation. Cooperation is significantly lower when participants are led by an out-group leader compared with an in-group leader independently of whether the leader is selected randomly or based on skills. As expected, contributions increase with contributions of other group members. Contribution also increases with the lag value of the multiplier, *a*. Member contributions increase between 0.51 and 0.63 points if the multiplier increases by 0.1 point. However, we find a difference in the contribution patterns between random

and skilled leaders. While we observe a decreasing level of contributions over periods for random leaders, for skillful leaders, contributions do not decrease significantly over time. This indicates that skilled leaders are able to sustain higher cooperation levels.

We consider the independent marginal effects for treatments with in-group and out-group leaders and present the results in Table 4. Interestingly, we find that groups with in-group leaders reciprocate cooperation of other group members to a greater extent than groups with an out-group leader. While in random treatments contributions increase by 0.16 if other contribution increases by 1 point in in-group treatments, it increases only 0.07 in treatments with an out-group leader. The lower sensitivity to group member contributions in groups with out-group leader could be related with the "treat of identity". In this case, group members might attach a value to keep a positive image in front of the external leader so members cooperate despite observing a decrease in contributions by other group members. We also find that group members are more sensitive to the return of the public good (multiplier) when led by an in-group leader compared to an out-group leader. This effect, however, is not significant.

Given that the multiplier is not constant over treatments, differences in contributions could be attributed to differences in the return to the public good. Controlling for the leader's initial level of ability, and the lagged multiplier should be enough to control for these differences. Yet, as an additional robustness check, we compare groups with the same multiplier. We run the same regression analysis considering groups which have the same multiplier (0.5) in 8 or more periods and in 9 or more periods. We find that the results are robust although as expected the significance is lower.

Turning back to the question: what is best for cooperation: a skilled out-group leader or a random in-group leader? Are gains in productivity that skilled out-group leaders bring able to outweigh the loss in cooperation due to their lack of identification with the group? Figure 4 presents average cooperation levels for the four treatments included in our design. The green-line in Panel A refers to contribution levels for a randomly selected in-group leader, while the blue line in Panel B refers to contributions for a skillful out-group leader. Using the Wilcoxon rank sum test, we find that the contribution level is not significantly different for random in-group leaders or skilled out-group leaders (Wilcoxon ranksum test p value 0.1094). To test the robustness of this result, we estimate the models in Table 4 taking into account the interaction effect of identity and skills. Table 5 presents the results of the linear combination of coefficients and marginal effects. As expected, we find that the lack of identity decreases leader productivity while leader skills increase it. The net effect of identity and skills imply a slightly negative effect on productivity, yet this effect is not significant once we control for contribution of group members and period. Consistent with our previous results, we find that even though cooperation decreases for out-side leaders, the positive effect of skilled leaders is just enough to compensate for this effect. Hence, we conclude that having a skillful out-group leader is similar to having a random in-group leader except that skillful leaders are able to sustain higher cooperation levels over time. This effect might be associated with confidence in the leader as this effect remains even when we control for the value of the multiplier, and contribution of others in the group.

>>> TABLE 5 <<<

5. Conclusion

Using an experimental approach, we find evidence that supports the intuition that out-group leaders can have a negative impact on organizations. Our results indicate that when out-group leaders are not highly skilled, they are less willing to work for the group than in-group leaders. Group members seem to anticipate this and cooperate less with an out-group than with an in-group leader. However, the negative effect of identity is compensated by leader skills. Skilled leaders do their best for the organization independently of their identity. Nonetheless, group members fail to recognize this and cooperate less when they have a skilled out-group leader than when they have a skilled in-group leader. Despite being less productive, random in-group leaders bring about the same levels of cooperation as skilled out-group leaders. In other words, the gains of higher skills from the out-group leader are just enough to compensate the lack of identity. These results indicate that if organizations are to select a leader, it is best to select skilled leaders from inside. In many cases, organizations might lack human capacity among their members. Hence, training members within the organization to assume leadership roles seems to payoff. This is, however, a long term task. Therefore, having an skilled outside leader could be an alternative.

References

Akerlof, G. A., and R. E. Kranton. 2000. "Economics and Identity." *The Quarterly Journal of Economics* 115 (3): 715–753.

Bernhard, H., E. Fehr, and U. Fischbacher. 2006. "Group Affiliation and Altruistic Norm Enforcement." *The American Economic Review* 96 (2): 217–221.

Brandts, J., and D. J. Cooper. 2007. "It's What You Say, Not What You Pay: An Expermental Study of Manager-Employee Relationship In Overacoming

Coordination Failure." *Journal of the European Economic Association* 5 (6): 1223–1268.

Brandts, J., D. J. Cooper, and E. Fatas. 2007. "Leadership and Overcoming Coordination Failure with Asymmetric Costs." *Experimental Economics* 10 (3): 269–284.

Chen, Y., and Li S.X.. 2009. "Group Identity and Social Preferences." *American Economic Review* 99 (1) (February): 431–457.

Clark, K., and Sefton, M. 2001. "Repetition and Signalling: Experimental Evidence from Games with Efficient Equilibria." *Economics Letters* 70: 357–362.

De Cremer, D, and van Knippenberg, D.. 2005. "Cooperation as a Function of Leader Self-sacrifice, Trust, and Identification." *Leadership & Organization Development Journal* 26 (5): 355–369.

De Cremer, D., and Van Vugt, M.. 2002. "Intergroup and Intragroup Aspects of Leadership in Social Dilemmas: A Relational Model of Cooperation." *Journal of Experimental Social Psychology* 38 (2) (March): 126–136.

De Cremer,. de, and M. Van Vugt. 1999. "Social identification effects in Social Dilemmas: a Transformation of Motives." *European Journal of Social Psychology* 29: 871–893.

Eckel, C. C., and Grossman, P. J.. 2005. "Managing Diversity by Creating Team Identity." *Journal of Economic Behavior & Organization* 58 (3) (November): 371–392.

Gächter, S., Nosenzo, D. Renner, E. and Sefton, M.. 2010. "Who Makes a Good Leader? Cooperativeness, Optimism, And Leading-By-Example." *Economic Inquiry* (June 20):

Gill, D., and V. Prowse. 2010. “A Novel Computerized Real Effort Task Based on Sliders.”

Glöckner, A., Irlenbusch,B. Kube,S. Nicklisch,A. and Normann, H.T. 2011. “Leading With(Out) Sacrifice? A Public-Goods Experiment with a Priviledged Player.” *Economic Inquiry* 49 (2) (April): 591–597.

Goette, L., D. Huffman, and S. Meier. 2006. “The Impact of Group Membership on Cooperation and Norm Enforcement: Evidence Using Random Assignment to Real Social Groups.” *The American Economic Review* 96 (2): 212–216.

Greiner, B.. 2004. “An Online Recruitment System for Economic Experiments.” In *In: Kurt Kremer, Volker Macho (Eds.):Forschung Und Wissenschaftliches Rechnen 2003. GWDG Bericht 63,*. Göttingen: Ges. für Wiss. Datenverarbeitung, 79-93, 2004.

Gürerk, Ö, B. Irlenbusch, and B. Rockenbach. 2009. “Motivating Teammates: The Leader’s Choice Between Positive and Negative Incentives.” *Journal of Economic Psychology* 30 (4): 591–607.

Güth, W., M. Levati, V. Sutter, M., and van der Heijden, E.. 2007. “Leading by Example with and Without Exclusion Power in Voluntary Contribution Experiments.” *Journal of Public Economics* 91 (5-6) (June): 1023–1042.

Haslam, S. A., and M. J. Platow. 2001. “The Link Between Leadership and Followership: How Affirming Social Identity Translates Vision into Action.” *Personality and Social Psychology Bulletin* 27 (11) (November 1): 1469–1479.

Hermalin, B. E. 2007. “Chapter on Leadership and Corporate Culture.” *Unpublished MS. University of California, Berkeley*.

Hermalin, Benjamin E. 1998. " Towards an Economic Theory of Leadership: Leading by example" *The American Economic Review* 88 (5): 1188–1206.

Huson, M. R., P. H. Malatesta, and R. Parrino. 2004. "Managerial Succession and Firm Performance." *Journal of Financial Economics* 74 (2): 237–275.

Kuang, X., Weber,R. and Dana, J.. 2007. "How Effective Is Advice from Interested Parties?" *Journal of Economic Behavior & Organization* 62 (4) (April): 591–604.

Lauterbach, B., J. Vu, and J. Weisberg. 1999. "Internal Vs. External Successions and Their Effect on Firm Performance." *Human Relations* 52 (12): 1485–1505.

Levati, M. V., M. Sutter, and E. van der Heijden. 2007. "Leading by Example in a Public Goods Experiment with Heterogeneity and Incomplete Information." *Journal of Conflict Resolution* 51 (5) (October 1): 793–818.

Li, S. X., K. Dogan, and E. Haruvy. 2011. "Group Identity in Markets." *International Journal of Industrial Organization* 29 (1): 104–115.

McLeish, K. N., and R. J. Oxoby. 2007. *Identity, Cooperation, and Punishment*. IZA.

Meidinger, C., and M. C. Villeval. 2002. "Leadership in Teams: Signaling or Reciprocating?"

Moxnes, E., and E. van der Heijden. 2003. "The Effect of Leadership in a Public Bad Experiment." *Journal of Conflict Resolution* 47 (6) (December 1): 773–795.

Platow, M. J., and D. van Knippenberg. 2001. "A Social Identity Analysis of Leadership Endorsement: The Effects of Leader Ingroup Prototypicality and Distributive Intergroup Fairness." *Personality and Social Psychology Bulletin* 27 (11) (November 1): 1508–1519.

Platow, M. J., S. Hoar, Scott Reid, Keryn Harley, and Dianne Morrison. 1997. "Endorsement of Distributively Fair and Unfair Leaders in Interpersonal and Intergroup Situations." *European Journal of Social Psychology* 27: 465–494.

Potters, J., Sefton, M. and Vesterlund, L.. 2007. "Leading-by-example and Signaling in Voluntary Contribution Games: An Experimental Study." *Economic Theory* 33 (1) (January 11): 169–182.

Rivas, M. F., and M. Sutter. 2009. "Leadership in Public Goods experiments-On the Role of Reward, Punishment and Endogenous Leadership." *Unpublished Manuscript*.

Rosen, Sherwin. 1982. "Authority, control, and the distribution of earnings." *The Bell Journal of Economics*: 311-323.

Schein, Edgar H. 2004. *Organizational Culture and Leadership*. 3rd ed. Jossey-Bass.

Shen, W., and A.A. Cannella Jr. 2002. "Revising the Performance Consequences of CEO Succession: The Impacts of Successor Type, Postsuccession Senior Executive Turnover, and Departing CEO Tenure." *Academy of Management Journal* 45 (4): 717–733.

Smith, J. E., Carson, K. P. and Alexander R. A.. 1984. "Leadership: It can make a difference." *Academy of Management Journal* 27: 765-776.

Tajfel, H., Billig, M., Bundy, R. and Flament, C.L. (1971). Social Categorization and Inter-Group Behavior. *European Journal of Social Psychology* 1 (2), 149–178.

Tremewan, J. 2010. "Experiments in Group Identity and Coalition Formation." In *ESA World Meeting Copenhagen*.

Turner, J. C. (1982) Towards a cognitive redefinition of the social group. In H. Tajfel (Ed.), Social identity and inter- group relations (pp. 15-40). Cambridge, England: Cambridge University Press.

van der Heijden, E. Potters,J. and Sefton, M.. 2009. “Hierarchy and Opportunism in Teams.” *Journal of Economic Behavior & Organization* 69 (1) (January): 39–50.

Van Huyck, J. B, Gillette A.B., and Battalio, R.C. 1992. “Credible Assignments in Coordination Games.” *Games and Economic Behavior* 4 (4) (October): 606–626.

Weber, R., Camerer, C. Rottenstreich, Y., and Knez, M.. 2001. “The Illusion of Leadership Misattribution of Cause in Coordination Games.” *Organization Science* 12 (5): 582–598.

Zhang, Y., and N. Rajagopalan. 2004. “When the Known Devil Is Better Than an Unknown God: An Empirical Study of the Antecedents and Consequences of Relay CEO Successions.” *The Academy of Management Journal*: 483–500.

Table 1 Multiplier

Number of sliders correctly positioned by the leader	Multiplier to each group member
Less than 6	0.3
Between 6 and 8	0.4
Between 9 and 16	0.5
Between 17 and 20	0.6
More than 20	0.8

Table 2: Treatments

Leaders' Selection	Leader's Identity: In-group	Leader's Identity: Out-group
Random	Random In-group	Random Out-group
Skilled	Skilled In-group	Skilled Out-group

Table 3: Number of observations by treatment

Treatment	Sessions	subjects	groups	observations (period<11)	%
Random in-group	8	100	25	1,000	28.74
Random out-group	8	92	23	920	26.44
Skilled in-group	7	80	20	800	22.98
Skilled out-group	6	76	19	760	21.84
Total	29	348	87	3.480	100.00

Table 4 Regression Analysis: Random vs. Skilful leaders

	Number of slides correctly positioned: Random Effects panel regression					Number of points contributed: Tobit random effects panel regression - marginal effects reported (dy/dx)			
	Random leader Coeff.		Skilful leader Coeff.			Random leader dy/dx		Skilful leader dy/dx	
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)
out-group	-9.054**	-7.430*	-0.456	0.792	out-group	-7.810***	-5.468***	-6.100**	-4.962**
	(3.975)	(4.336)	(0.999)	(1.333)		(2.409)	(1.911)	(2.597)	(2.243)
Contribution (t-1)		0.0414		0.00806	Contribution (t-1)		0.114***		0.141***
		(0.0275)		(0.0148)			(0.0190)		(0.0207)
Period		0.303***		0.214*	Period		-0.299***		-0.0738
		(0.0931)		(0.116)			(0.0432)		(0.0488)
Out-group* Contribution(t-1)		-0.0561		0.0212	Multiplier (t-1)		6.345***		5.067***
		(0.0398)		(0.0438)			(1.851)		(1.778)
Out-group* Period		-0.0521		-0.294					
		(0.121)		(0.273)					
					Marginal Effects by InGroup and OutGroup Leader				
					Contribution (t-1)				
					In-Group		0.161***		0.148***
							(0.0289)		(0.0326)
					Out-Group		0.067**		0.141***
							(0.0278)		(0.0314)
					Multiplier (t-1)				
					In-Group		8.002***		7.156***
							(2.5098)		(2.5896)
					Out-Group		4.729*		2.917
							(2.8104)		(2.5158)
					Period				
					In-Group		-0.332***		-0.109
							(0.6497)		(0.0678)
					Out-Group		-0.266***		-0.037
							(0.0618)		(0.0737)
Leaders' Ability	YES	YES	YES	YES		YES	YES	YES	YES
Identity control	YES	YES	YES	YES		YES	YES	YES	YES
Session dummies	YES	YES	YES	YES		YES	YES	YES	YES
constant	6.285	3.142	-0.162	-2.256					
	-4.956	-5.386	-4.874	-5.187					
N	480	432	390	351		1440	1296	1170	1053

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 5: Identity vs. Skills – Pooled data

	Productivity: RE panel regession		Contribution: Tobit random effects panel regression - marginal effects reported		
	(1)	(2)		(3)	(4)
	Linear Combination			*Marginal effects*	
Effect of Identity	-10.70**	-11.12**	Effect of Identity	-7.406***	-5.231*
(β_1)	(4.586)	(4.908)	(β_1)	(2.556)	(2.690)
Effect of Skills for Out-group	3.673	4.483	Effect of Skills for Out-group	5.090	3.746
$\beta_2+\beta_3$	(2.889)	(3.130)	$\beta_2+\beta_3$	(2.646)	(2.717)
Net Effect Identity and Skills	-7.027***	-6.527	Net Effect Identity and Skills	-2.312	-1.484
$\beta_1+\beta_2+\beta_3$	(4.586)	(4.026)	$\beta_1+\beta_2+\beta_3$	(2.558)	(2.690)
N	870	783		2610	2349

Standard errors in parentheses

* p<0.1 ** p<0.05 *** p<0.01"

Figure 1: Kernel density on number of objects found in the identity task

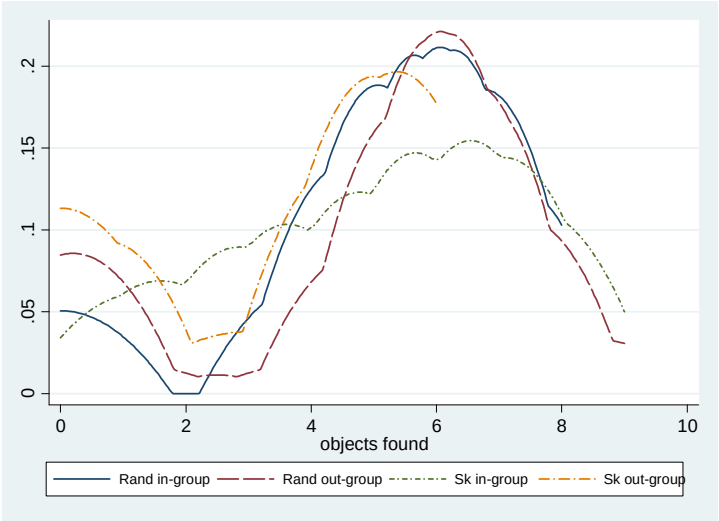
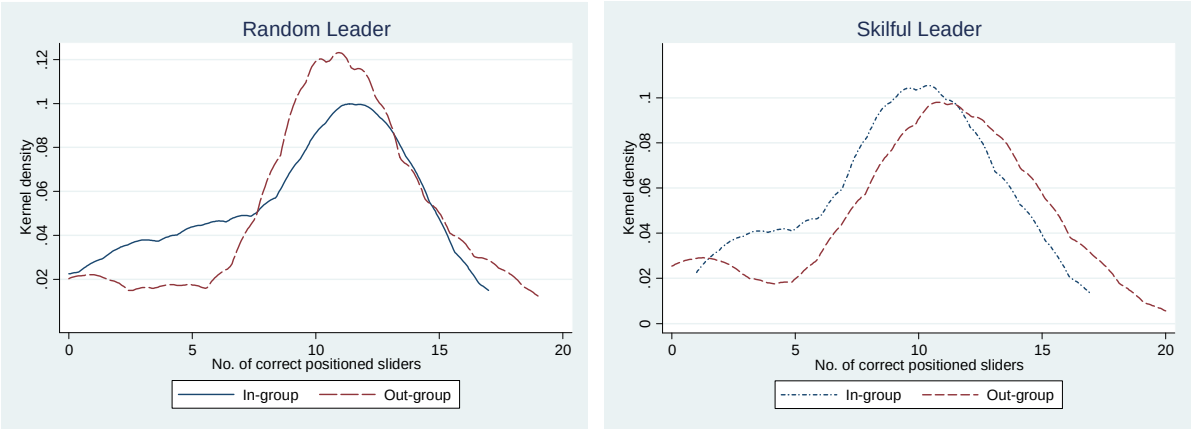
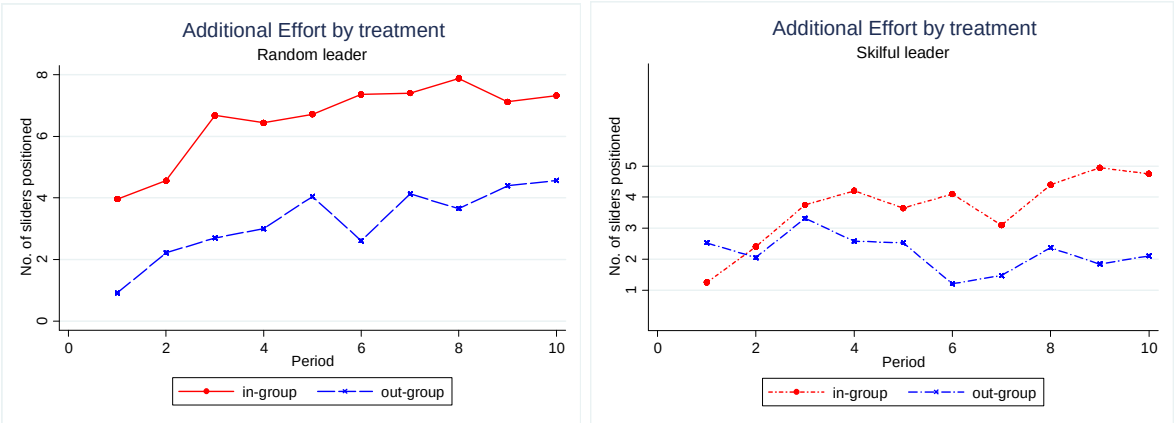


Figure 2: Number of slides correctly possitioned by leader and by treatment in second stage.



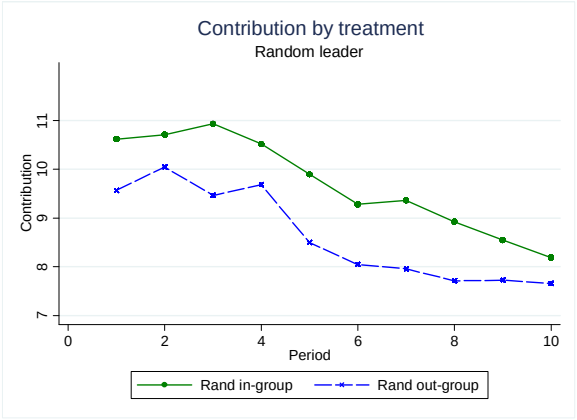
Panel A Panel B

Figure 3: Effect of identity on productivity in the real-effort task

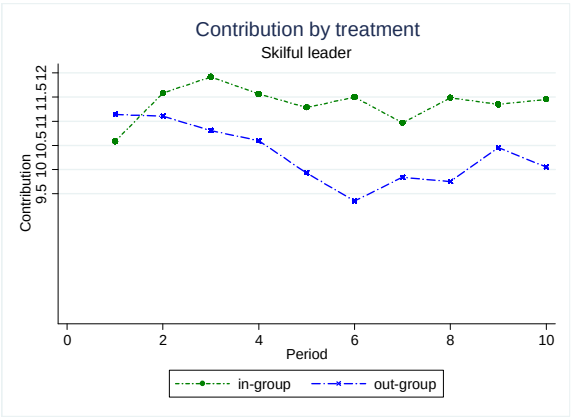


A. Random leader B. Skilled leader

Figure 4 Effect of leaders identity on contribution



A. Random leader



B. Skilled leader