



**It Pays to Be a Man:
Rewards for Leaders in a Coordination Game**

Philip J. Grossman*, Catherine Eckel, Mana Komai & Wei Zhan

Abstract:

We address followers' gender-based perception of leader's effectiveness. Our experiment's design removes factors that might affect leadership success, such as risk-taking and competitiveness. We employ a repeated weakest-link coordination game; 10 periods without a leader and 10 periods after the leader makes a short, "scripted" speech advising followers on how to maximize earnings. Followers then choose a costly bonus for the leader. The leader's gender is the only variable that changes across sessions. Followers are more likely to heed the advice of the male leaders, are less likely to ascribe success to female leaders, and reward male leaders more.

Keywords: Leadership, Gender, Coordination Game

JEL codes: C92, J71, J16

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It Pays to Be a Man

1. Introduction

Women have made great strides in labor markets over the past few decades.¹ In both the United States and the European Union, women now constitute approximately 50% of the labor force. Academically, women now receive the majority of undergraduate degrees and approximately 50% of PhDs and law, medical, and MBA degrees (Warner 2014; European Commission 2013). While these advances suggest that women have the intelligence and training to succeed in leadership positions, women are still underrepresented in the higher-echelon, leadership roles of government and business.² In 2015 only 19.3% (20%) of the members of the U.S. House of Representatives (Senate) were female and less than 30% of members of the single or lower houses of parliaments in EU states were women. Women represent only 4% of CEOs, hold only 19.2% of board seats (21% in the EU), and account for only 25% of executive/senior level officials and managers in S&P 500 companies (Catalyst 2016).³ Women who do make it to the upper ranks of the corporate world tend not to be promoted or compensated in the same manner as men (Bertrand and Hallock 2001; Bell 2005; Keloharju et al. 2016; Souther and Yore 2016).

Many theories have been proposed to explain why women are less likely to be in leadership positions and women are paid less on average, even at the top. Studies have shown that men are perceived as more effective leaders. Eagly et al. (1995) argues that this is because "...gender role expectations spill over into leadership roles ... and produce important consequences for the effectiveness of leaders" (p. 140). Indeed, evidence shows that women with identical qualifications are perceived as less qualified than male candidates, even among highly-educated applicants. Both male and female employers exhibit this bias in a recent study of applicants for a lab manager position (Moss-Racusin et al. 2012). Men are found to exert more influence than women in mixed groups, their contributions receive more attention from other group members than the same contributions by women, they resist female influence more than women do, and attempts by women to exert influence are more likely to be ignored (Carli 2001; Asiedu and Ibanez, 2014; Gangadharan et al. 2016). Competence in women does not always translate into influence (Propp 1995). The resistance to female influence may be due to perceived status differentials. The role of leader is a high-status position and women are

¹ Goldin (2006) called the changes of the past few decades a "Quiet Revolution."

² According to a study by the Pew Research Center, more than half of all countries have never had a female head of state (Kent 2015).

³ http://ec.europa.eu/justice/gender-equality/gender-decision-making/index_en.htm

generally assigned lower status by society than men. Followers are likely to ignore, dismiss, or treat as suspect, signals or actions of female leaders because they view the woman as an illegitimate leader (Ridgeway et al., 1994; Ridgeway, 2001).⁴ Even when there are no inherent differences among leaders by design, differences in outcomes occur (Reuben et al. 2012; Grossman et al. 2015).

Other studies have tended to focus on underlying gender differences in preferences and characteristics.⁵ Evidence suggests that women are deficient in the characteristics often associated with leadership, making them less willing to take on leadership roles. These include competitiveness (Gneezy et al. 2003; Niederle and Vesterlund 2007) and the willingness to take risk (Eckel and Grossman 2002, 2008; Croson and Gneezy 2009; Ertac and Gurdal 2012). Leadership roles require aspirants to compete in tournaments and to make risky decisions both for themselves and for their groups.⁶

Disentangling the causal relationships among these factors is difficult or impossible using observational data. Our study focuses on gender-based perceptions of leaders and on the role such perceptions play in determining leader effectiveness and compensation. What is unique about our design is that it removes most of the factors that might affect leadership success, such as risk-taking, competitiveness or ability, and because leaders are randomly selected, it also removes any selection-based differences between male and female leaders. The only factor differentiating our leaders from their followers is that they occupy the “leadership” position. Our leaders have no special information; all relevant information is equally available to their followers. In addition, there is no agency problem: Our leader’s interests are perfectly aligned with the interests of their followers.

Followers play 20 periods of a five-person, weakest-link coordination game. The first 10 periods are without a leader. After the 10th period, the leader makes a short, semi-scripted speech providing advice on how to play the game to maximize group earnings. Groups are then re-formed and play 10 more periods of the coordination game. Followers then choose a bonus for their leader. The leader’s gender is the only variable that changes across sessions. The setting is one where group success and failure are theoretically independent of the leader’s effort. The design enables us to examine how followers differentially, based on

⁴ This stream of literature uses unincentivized surveys. We use an incentivized game.

⁵ The most prominent recent example is the international bestseller *Lean in: Women, work, and the will to lead* by Sandberg (2013).

⁶ Vesterlund (2015) argues that women’s failure to advance at the same pace as men in organizations may be due to their greater willingness to undertake “non-promotable” tasks. Consistent with this argument, she finds that women, relative to men, volunteer, are asked to volunteer, and accept requests to volunteer more frequently.

gender, respond to, evaluate, and reward their leaders, controlling for the performance of the groups.

We find evidence that men are more effective leaders, are perceived as even more effective, and receive higher rewards. Male leaders produce a larger increase in earnings than female leaders (by about 20%), but even after controlling for leader effectiveness we find a more positive assessment of male leaders primarily by female followers. We also find evidence that male leaders earn a higher bonus, even after controlling for changes in followers' earnings, the followers' assessment of their leader's leadership attributes, and leader attractiveness.

Our results suggest that women are still assessed less positively and rewarded less generously than equally effective men. The words and actions of men are afforded greater attention and respect than words and actions of women. Even women who are as competitive and risk loving as men may find it difficult to attain positions and succeed at the upper levels of business and government. Our result may not fully explain why women of intelligence, character and training are underrepresented in higher echelons of the society but it sheds light on a piece of this puzzle.

2. Design and Procedures

Our game is a modification of the Weber et al. (2001) weakest-link coordination game with leaders. The coordination game is conducted with groups of five players. We decided to use five-player groups because in smaller groups coordination can be too high, leaving little room for a leader to have much impact. In five-player groups with no leader, and even in games with cheap talk coordinating signals, complete coordination is much less likely.⁷ This leaves considerable opportunity for a leader to have a positive impact on group coordination. The experiment consists, in order, of 10 periods of the leaderless coordination game; the leader' speech, 10 more periods of the coordination game with re-formed groups, a bonus phase where followers determine their leader's bonus, and finally a post-experiment survey. The survey includes demographic questions, as well as debriefing questions, ratings of the leader's attributes, and an open-ended question asking subjects their beliefs about the influence their leader had on their earnings. Instructions and survey questions are included in Appendix A.

⁷ Groups of this size achieve coordination only about 20 percent of the time (see Feltovich and Grossman, 2015). Groups much larger than five rarely achieve coordination, even with leaders (Weber et al. 2001).

Subjects were recruited in multiples of five, plus one extra subject who served as the session leader. Session sizes, not including the leader, ranged from 15 to 25 subjects. A session was predetermined as a male or as a female leader session (MLS or FLS hereafter). The third person of the chosen gender signing in was selected as the session leader.⁸ When subjects were directed to enter the lab, the selected person was discreetly pulled aside and asked to remain outside the lab.

2.1 Non-Leader Game, periods 1 – 10

Upon entering the lab, subjects are seated at individual workstations. They are assigned ID numbers and are anonymously assigned to groups of five. Instructions are provided on their monitors and are read aloud by an experimenter. Subjects are informed that they will play multiple periods of a five-person, weakest-link coordination game with fixed groups and feedback after every period. In each period, a subject selects a personal fee of \$0.00, \$1.00, \$2.00, or \$3.00.⁹ The smallest personal fee selected by any member of the group determines the per-group-member reward (see Table 1). A subject's earnings for the period are equal to the per-group-member reward minus the personal fee selected by the subject. For example, if a subject selected a fee of \$3.00, but the lowest fee selected by the other members of his group is \$0.00, all members of the group would receive a reward of \$1.00 and the subject selecting the \$3.00 fee would earn -\$2.00 (= \$1.00 - \$3.00). There is one payoff-dominant pure-strategy Nash equilibrium (where all players choose \$3.00) and one risk-dominant pure-strategy Nash equilibrium (where all players choose \$0.00). At the end of the 10th period, subjects are told their earnings and informed that additional periods of the game will be played.

2.2 Session Leader

While the non-leader subjects are escorted into the lab, the leader is taken into a separate room and is provided a copy of the experimental instructions. The leader reads the instructions and his/her questions are answered by an attending proctor. The leader is informed that he/she will give a short message to the other subjects about how to play the game so as to maximize earnings. Following Weber et al. (2001), a list of talking points is provided. The leader is instructed to not just read the talking points but to present them in his/her own words. The talking points are:

⁸ To minimize variability in leader characteristics, we restricted our leaders to being Caucasian. If the third person was not Caucasian, we took the next person of the appropriate gender meeting this criteria. One subject declined to be leader, and again we selected the next person meeting our criteria.

⁹ We use the same terminology as Weber et al. (2001).

- *We need to coordinate on a fee of \$3.*
- *If everyone picks \$3 we will all earn twice as much as if you all pick \$0.*
- *If you pick \$3 the reward is \$5, and each person earns two bucks per round. If you pick \$0 you each earn \$1.*
- *Everybody should pick \$3. If you pick less everyone earns less, including you.*

At the end of the first ten periods of the game, the leader enters the lab. From a podium at the front of the room, the leader relays his/her message (once) to all subjects.¹⁰ Afterwards the leader sits at the front of the room while subjects play the final 10 periods of the coordination game. To ensure that the leader is the highest paid player in a session, consistent with leaders in real life earning more than their followers, the leader earns 120% of average period earnings over all 20 periods plus \$1.00. In addition, the leader may earn a bonus, which is determined by individual group-member decisions. We explain the bonus below.

2.3 Leader Game, Periods 11 - 20

After the leader has made his/her speech, groups are randomly re-formed and subjects are informed of this. Ten more periods of the coordination game are played. Followers' earnings are their cumulative earnings for all 20 periods. In addition, after the last period, followers choose whether or not to provide the leader a bonus and how much the bonus will be. Subjects can select a bonus of 0%, 5%, 10%, or 15% at a personal cost of \$0.00, \$0.50, \$1.00, and \$1.50, respectively (see Table 2). One group is selected at random to determine the outcome. The leader receives a bonus equal to the sum of the bonuses selected by the members of the chosen group. For example, if each of the five group members selects 5%, then the leader will receive a bonus of 25%. Non-leader subjects are paid their earnings for all 20 rounds of the game, minus the cost of the bonus awarded to the leader (if their group is selected to determine the leader's bonus).

2.4. Hypotheses

While the introduction of a leader is expected to improve group performance, the gender of the leader should be irrelevant. A leader, regardless of gender, is conveying the same cheap-talk message. We test three null hypotheses:

H1: Followers do not differentiate between the advice of male and female leaders.

H1Alt: Followers prefer the advice of male leaders over that of female leaders.

¹⁰ The non-leader subjects are told that "...[T]he leader has received a handout outlining techniques useful in organizing these types of group decisions."

The existing literature suggests that male leaders exert more influence than female leaders and that followers tend to ignore, dismiss, or treat as suspect messages of female leaders (Ridgeway et al., 1994; Ridgeway, 2001; Carli 2001; Asiedu and Ibanez, 2014; Gangadharan et al. 2016). If so, then we expect to observe more coordination (i.e., \$3 personal fees) in MLS than FLS.

H2: Followers do not differentiate between male and female leaders when crediting their leaders with group success.

H2Alt: Followers give greater credit for group success to male leaders than female leaders.

The existing literature also suggests that contributions of male leaders receive more attention than the same contributions by female leaders. Viewed as illegitimate leaders, female leaders will be less likely to be credited with group success. If so, then we expect to male leaders to be more highly rated in the post experiment survey.

H3: Followers do not differentiate between male and female leaders when rewarding their leaders for their group's success.

H3Alt: Followers more generously reward male leaders.

Prior evidence suggests that contributions by male leaders receive more attention than the same contributions by women. Women leaders are not compensated the same as men (Bertrand and Hallock 2001; Bell 2005; Keloharju et al. 2016; Souther and Yore 2016). If so, then we expect to observe more generous bonuses awarded to male leaders than female leaders.

Our design offers a conservative test of the hypotheses. The design minimizes the likelihood that our leaders will have an impact on the performance of group members in the subsequent periods, that group members will credit their leaders with group success, that group members will be disposed to award their leaders a bonus, and that any impact will deviate by leader gender. First, a leader's message is already common knowledge; the instructions include an example of subjects earning the maximum possible. Second, the information relayed by a leader is not original to the leader. Group members are told "...[T]he leader has received a handout outlining techniques useful in organizing these types of group decisions." Finally, leaders are already generously rewarded relative to group members. There should be little incentive to further reward, at a cost to the group member, a leader even more. This would be especially true if our first two points are true.

3. Results

All sessions were conducted at the Economics Research Laboratory at Texas A&M University. Subjects were recruited using ORSEE (Greiner 2015). The experiments were

computerized using zTree (Fischbacher 2007). There were four sessions each with a male or female leader. A total of 183 subjects (8 leaders and 175 non-leaders – 90 in MLS and 85 in FLS) participated. In Table 3, we report subject characteristics by leader’s gender. None of the six subject characteristics significantly differs between male and female leader sessions. The gender mix of groups during the last 10 periods is not significantly different between treatments ($p = 0.66$). The sessions lasted between 60 and 90 minutes. Followers had average earnings of \$23.83 while leaders earned an average of \$39.25, not including the \$5 show up fee.

In the first 10 periods, the leaders have not been introduced and have not made their guided speeches. Followers’ behavior, as such, should not significantly differ by treatment. Figure 1 reports the choice of personal fees by followers. In both the MLS and the FLS treatments, the \$0 personal fee is selected approximately 50 percent of the time; the \$3 personal fee is selected less than 20 percent of the time (see Figure 1). We regress the *Personal fee* chosen on to *Male Leader*, $Earnings_{it-1}$, and *Period* (and with *Male leader* interacted with $Earnings_{it-1}$, and *Period*). The variables are defined as:

$Personal\ Fee_{it}$ = fee selected by subject i in period t

Male leader = 1 if male leader session

$Earnings_{it-1}$ = subject i ’s earnings in period $t-1$

Period = period.¹¹

Table 4 reports random effects results with clustering at the group level. We find no significant difference in cooperation between our MLS and FLS treatments.

This lack of difference is also reflected in earnings. Average earnings per period are: MLS: \$0.66; FLS: \$0.60. Table 5 reports average earnings per period by session. A permutation test cannot reject the null hypothesis that the average earnings over periods 1 – 10 are the same in the two treatments ($p = 0.21$).¹²

3.1 Tests of hypotheses

At the end of period 10, the session leader enters the room and makes his/her guided speech. Groups are re-formed and 10 more periods of the coordination game are played. Introducing

¹¹ We also tested if there was a treatment effect with respect to $Earnings_{it-1}$, and *Period* by interacting these two variables with *Male Leader*. We do not find a significant treatment effect.

¹² In contrast to the Wilcoxon rank-sum test, the permutation test also takes into account the magnitude of differences between the data for the two treatments. For a discussion of the use of permutation tests in experimental economics (see Davis and Holt 1993, Shobe et al. 2014, Holt et al. 2015). For Tables 4 and 6, the STATA “permute” command was used and 100 random permutations were performed.

a leader has a very strong effect.¹³ In both the male and female leader treatments, the \$0 personal fee is selected approximately 10 percent of the time; the \$3 personal fee is selected more than 80 percent of the time (see Figure 1). In all of the discussions below, we conservatively report results for two-tailed tests even though our alternative hypotheses are one-sided.

H1: Followers do not differentiate between the advice of male and female leaders.

Result: H1 can be rejected ($p < 0.10$). The evidence supports the conclusion that followers more consistently heed the advice of male leaders than female leaders.

Support: We again regress the *Personal fee* chosen on to *Male Leader*, $Earnings_{it-1}$, and *Period* (and with *Male leader* interacted with $Earnings_{it-1}$, and *Period*). Table 6 reports random effects with clustering at the group level results. In our naïve model (column 2), we find that subjects in MLS are not significantly more cooperative. However, in column 3, when we interact our variables $Earnings_{it-1}$, and *Period* with *Male Leader* we find a significant gender difference. First, the personal fee choices of MLS subjects are significantly less responsive to prior period earnings. This suggests that the advice received from male leaders partially offsets the adverse effects of lower earnings in the prior period. Second, the decline in cooperation, as measured by the choice of lower personal fees, is significantly slower in MLS than FLS. This suggests that the advice received from male leaders has a longer lasting impact on followers.

These differences translate into a significant difference in earnings between periods 1 – 10 and 11 – 20. Average earnings per period for periods 11 – 20 are higher in MLS than FLS (\$1.87 vs. \$1.63, respectively, $p = 0.05$). Average per period earnings also increase more in the MLS than in the FLS (\$1.21 vs. \$1.03, respectively, $p = 0.09$). Table 7 reports average earnings per period by session and the average increase in per period earnings. Permutation tests reject the null hypotheses that the average earnings over periods 11 – 20 are the same in the two treatments ($p = 0.05$), and that the average increase in per period earnings is the same in the two treatments ($p = 0.09$).

H2: Followers do not differentiate between male and female leaders when crediting their leaders with group success.

¹³ It is well documented that leaders can have a significant impact on group performance in incentivized lab experiments using public goods and coordination games (Cooper et al., 1989; Cooper et al., 1992; Charness, 2000; Duffy and Feltovich, 2002; Charness and Grosskopf, 2004; Weber et al., 2001; Potters et al., 2007; Komai et al., 2011, Feltovich and Grossman 2015; Sahin et al., 2015).

Result: H2 is rejected. In open-ended assessments of their leaders, followers consistently rated male leaders more highly than female leaders with respect to their impact on the followers' earnings.

Support: In the post-experiment survey, subjects responded to the following open-ended prompt: "What impact do you believe the leader had on your earnings?" We then analyzed their responses using two graduate-student raters who are native English speakers unfamiliar with the research question. Before the responses were presented to the evaluators, gender specific pronouns were replaced by gender-neutral wording (i.e., "the leader" or "the leader's"). The evaluators were asked to rate the responses on a scale of from -5 to +5 with -5 being very negative, 0 neutral, and +5 being very positive. The Pearson correlation coefficient for the ratings of the two evaluators is 0.87; the Cohen's kappa statistic is 0.26. We averaged the two ratings to give us the variable *Impact* (see Figure 2 for the distribution of *Impact* by treatment). For illustrative purposes, ten randomly selected responses for each leader gender are reported in Appendix Table B.

Male leaders were evaluated more favorably than their female counterparts. The average rating for the male leaders was significantly higher than that for female leaders (3.81 versus 3.03: t -statistic = 2.58, two-tailed $p = 0.01$). A Mann-Whitney test supports this conclusion ($Z = 2.12$, two-tailed $p = 0.03$). One male leader and eight female leaders had an average rating less than 0: two male and six females had an average rating of 0, and 87 male and 71 females had an average rating greater than 0.

This result could be explained by factors other than the leader's gender. Our leaders could differ on attributes that define a good leader, such as being more honest or having better communication skills, or they might differ in appearance by being more attractive. These factors might make the followers more inclined to listen and to heed a male leader's advice. To address this possibility, we had followers rate their leader on six qualities that good leaders should possess (based on Prive, 2012). Followers are asked to rate their leader on a scale from 1 (low) to 5 (High) for six attributes: Effective communication, Honesty, Competence, Confidence, Ability to Inspire, and Positive Attitude. We also asked followers to rate their leader on attractiveness, using the same scale.¹⁴ As can be seen in Table 8, Wilcoxon rank sum tests indicate no significant difference in followers' assessments of their

¹⁴ Studies have shown that attractive individuals earn more (Hamermesh and Biddle, 1994; Parrett, 2015). Beauty has been shown to have an effect in the dictator game (Rosenblat, 2008), public good games (Andreoni and Petrie, 2008), ultimatum games (Solnick and Schweitzer, 1999), and trust games (Wilson and Eckel, 2006).

leader's attributes, with the exception of Honesty and Competence.¹⁵ To summarize the ratings information we generate a Leadership Quality Index (*LQI*) using confirmatory factor analysis (with a varimax rotation). The six attributes loaded together on the same factor (eigenvalue = 3.11) and there is no other factor with an eigenvalue above 1. This gives us confidence that these items are common to a single factor. We use the resulting factor score as *LQI*.

To determine if the leader's gender or attributes determined how the leader's followers rated the leader, we conduct ordered probit regression analysis with clustering at the group level. In a naïve model (Table 9, column 2), we regress leader *Impact* (scaled from 0, for -5, to 20 for 5) on *Change*. In column 3 we also control for *Male leader*, *Attractive*, and *LQI*.¹⁶ In column 4, we control for the gender pairing of leader and follower. The variables are defined as:

- Impact* = Average rating of the two independent evaluators (scale: -5 to 5)
Change = (Average per period earnings for last ten periods) minus (average per period earnings for first ten periods)¹⁷
Attractiveness = 1-5; 1 if low; 5 if high
LQI = Leadership Quality Index
MM = Male leader/male follower
MF = Male leader/female follower
FM = Female leader/male follower¹⁸

In all models, leader's effectiveness in terms of the change in earnings for his/her group has a strong positive correlation with the *Impact* rating. When controlling for a leader's attributes, male leaders are, marginally more highly rated than female leaders. Leader attractiveness has a marginally negative effect on a leader's rating. Higher *LQIs* were positively and significantly related to higher *Impact* ratings. Finally, we find that female followers rate male leaders significantly higher than female leaders and significantly higher than male followers rate their leaders regardless of gender; that is, it is women who credit male leaders as having a greater impact on earnings.¹⁹

¹⁵ Using a Bonferroni adjustment for multiple comparisons, none approaches statistical significance. A p value less than 0.014 is required for 0.10 significance after this adjustment. Wilcoxon Rank-Sum tests results for differences in ratings by gender of the followers are reported in Appendix Table C.

¹⁶ The raw values for *Impact* varied between -5 and 5 in increments of 0.5. OLS results are reported in Appendix Table D.

¹⁷ *Change* averages \$1.12 with a standard deviation of 0.65. It ranged from a minimum of -\$1.13 to a maximum of \$3.85.

¹⁸ Our reference group is female leader/female follower.

¹⁹ We are able to reject the null hypothesis that MM, MF, and FM are jointly equal to 0, $p < 0.01$.

H3: Everything else constant, followers do not differentiate between male and female leaders when rewarding their leader for their group's success.

Result: After controlling for the leader's effect on earnings, their leadership attributes, and their attractiveness, male leaders receive a significant bonus premium relative to their female counterparts.

Support: After the second 10 periods, followers select a bonus for their leader. Recall that subjects can choose a bonus of 0%, 5%, 10%, or 15% at a personal cost of \$0.00, \$0.50, \$1.00, and \$1.50, respectively (see Table 2). Figure 3 reports the distribution of bonus choices made by the leader's gender. Approximately one-third of followers in both treatments (28 in male leader and 29 in female leader sessions) are unwilling to pay to provide their leaders a bonus. The mean bonus for male leaders is 6.83%; for female leaders it is 5.59%. This difference is not significant (t-stat = 1.52, two-tailed p = 0.13).

We conduct regression analysis to determine if the influence of the leader's impact on average earnings, *Change*, and the leader's characteristics (*Male Leader*, *LQI*, and *Attractive*) significantly affects the leader's bonus. Our dependent variable is the bonus choice, *Bonus*, coded as 0%, 5%, 10%, or 15%. Finally, we also controlled for the demographic variables:

<i>Age</i>	= follower's age
<i>Male Follower</i>	= 1 if yes
<i>US born</i>	= 1 if yes
<i>Caucasian</i>	= 1 if yes
<i>Classes</i>	= number of economics classes taken
<i>Group Mix</i>	= % of group members who are male.

Table 10 reports results for four OLS and four Tobit regression models.²⁰ Models 1 and 1a control for leader gender only. Models 2 and 2a include *Change*, *LQI*, and *Attractive*. Models 3 and 3a include the interaction of *Male leader* and *Change*. Finally, in models 4 and 4a, we control for the followers' characteristics.

The regression results indicate that our male leaders received a premium of between 1 and 2.4% (the average bonus is 6.22%). This male leader premium persists even after we control, in models 2 and 2a, for *Change*, *LQI*, and *Attractive*. Greater increases in average per period earnings are positively correlated with a larger bonus (approximately 1.5% per dollar increase in per period earnings). From models 3 and 3a, we can see that the impact of the change in earnings is not different for male and female leaders. *LQI* is consistently

²⁰ Tobit models are censored at 0 and 15, clustering is at the session level.

uncorrelated with *Bonus*. There is some evidence that attractive leaders receive a premium (0.7% or 1.3% depending upon the regression model). Finally, even after controlling for followers' characteristics, male leaders continue to receive a significant premium relative to female leaders.

4. Conclusion

Even though women have achieved much progress, and are overrepresented among those succeeding academically, their underrepresentation in the upper echelon leadership roles of business and government still persists. Women who do make it to higher ranks are not compensated in the same manner as men. This could be because women are less competitive, more risk averse, or just perceived as less effective leaders. In this study we adapt a five-person, weak-link, coordination game where the likely success of a leader is largely determined by the structure of the game (Weber et al. 2001). The leaders in our experiment are randomly selected individuals differentiated from their followers only by the fact that they occupy the "leadership" position. They have no information advantage and their interests are perfectly aligned with those of their followers. They only provide guided advice about how best to play the game in a way that will maximize both their own and their followers' earnings. Our design also removes the issues of a leader's competitiveness and risk attitudes as explanations for the shortage of women in leadership roles and the deficiency in their compensation. Our leaders neither compete for their leadership positions, nor is there competition between leaders, and there is no risk attached to the role of leader. In addition, we control the content of the message to be transmitted to followers. Thus, there is little scope for differences in the quality of the message. Differences such as physical and leadership attributes, and a leader's actual impact are controlled for.

Our study addresses both the leader's impact on followers' behavior, and followers' assessment and reward of their leader's effectiveness by focusing mainly on psychological explanations: Women are perceived as less effective leaders (Eagly et al. 1995); men's contributions in groups receive more attention (Carli 2001); and men resist the influence of women leaders (Taps and Martin 1990). Our results show that a message from a male leader has more impact on the behavior of followers, other things constant, implying that messages from men are attended to more closely, which is consistent with the idea that there is a gender difference regarding status (Ridgeway 2001).

Our results show that, even though the message relayed by our leaders had a common content, the impact of a male leader on followers' cooperative play and average per period earnings was significantly greater than the impact of a female leader, everything else

constant. We also find that even though there are no significant differences in male and female leader's leadership attributes or attractiveness, when asked: "What impact do you believe the leaders had on your earnings?," followers rated male leaders significantly higher than female leaders. Finally, we report evidence that leaders are rewarded differently based on gender; male leaders receive a premium. Bonuses for male leaders are, between 1 and 2.5%, more generous than those given female leaders even after controlling for improvements in their followers' average per period earnings, the followers' assessment of their leader's leadership attributes, and the leader's attractiveness.

This difference in the perception of the contributions and effectiveness of male and female leaders can perhaps shed some light on recent political events, where an experienced female presidential candidate with an extensive track record is seen by many as a weaker and less effective leader than a male candidate with little political experience. Decades of research in political science document the ways in which female candidates are discounted relative to their male counterparts, and the discouraging effect this has on women's willingness to run for office (e.g., Kanthak and Woon, 2015; Lawless 2015). Thus differences in perceptions of leaders can influence not only the success of female leaders, but also their willingness to compete for leadership positions.

Our findings also provide evidence that the gender gap in earnings at the top may be due at least in part to perceptions of male and female leaders, rather than differences in performance (Bertrand and Hallock 2001). It also may help in understanding recent research focusing on academia. In a study using identical CVs with only the names changed, Moss-Racusin et al. (2012) show that female graduate students are less likely to be selected for a lab manager position; past accomplishments do not mean the same thing when attached to a female as opposed to a male candidate. Another example is provided by Sarsons (2015) who finds that women receive less credit at tenure time than their male collaborators on co-authored papers. Thus women are less likely to break through the tenure barrier because of the way they are perceived, not because of differences in performance. These studies reflect implicit rather than explicit bias (Rudman and Kilianski 2000), as do our own results showing no difference in evaluations of explicit attributes (communication skills, competence, etc.) but marked differences in compensation.

Our results suggest that even women who are as competitive and risk loving as men may find it difficult to attain positions and succeed at the upper levels of business and government. Women, whatever their attributes, are still not perceived as leadership material

to the same extent as men. Their words and actions are not afforded the same attention and respect as the words and actions of their male counterparts.

References

- Andreoni, J. and R. Petrie. 2008. Beauty, gender and stereotypes: Evidence from laboratory experiments. **Journal of Economic Psychology** 29: 73-93.
- Asiedu, E. and M. Ibanez. 2014. The weaker sex? Gender differences in punishment across matrilineal and patriarchal societies. (No. 30). GlobalFood Discussion Papers.
- Bell, L.A. 2005. Women-led firms and the gender gap in top executive jobs. **IZA Discussion Paper No. 1689**.
- Bertrand, M. and K.F. Hallock. 2001. The gender gap in top corporate jobs. **Industrial & Labor Relations Review** 55: 3-21.
- Carli, L.L., 2001. Gender and social influence. *Journal of Social Issues*,57(4), pp.725-741.
- Catalyst. Pyramid: Women in S&P 500 Companies. New York: Catalyst, February 3, 2016.
- Charness, G. 2000. Self-serving cheap talk: a test of Aumann's conjecture. *Games and Economic Behavior* 33: 177-194.
- Charness, G. and B. Grosskopf. 2004. What makes cheap talk effective? Experimental evidence. *Economics Letters* 83: 383-389.
- Cooper, R., D.V. DeJong, R. Forsythe, and T.W. Ross. 1989. Communication in the battle of the sexes game: some experimental results. **RAND Journal of Economics** 20: 568-587.
- Cooper, R., D.V. DeJong, R. Forsythe, and T.W. Ross. 1992. Communication in coordination games. **Quarterly Journal of Economics** 107: 739-771.
- Crosen, R. and U. Gneezy. 2009. Gender differences in preferences. **Journal of Economic Literature** 47: 1-27.
- Davis, D. and C. Holt. 1993. **Experimental Economics**, Princeton, NJ: Princeton University Press.
- Duffy, J. and N. Feltovich. 2002. Do actions speak louder than words? An experimental comparison of observation and cheap talk. **Games and Economic Behavior** 39: 1-27.
- Eagly, A.H., S.J. Karau, and M.G. Makhijani. 1995. Gender and the effectiveness of leaders: A meta-analysis. **Psychological Bulletin** 117: 125-145.
- Eckel, C.C. and P.J. Grossman. 2002. Sex differences and statistical stereotyping in attitudes toward financial risk. **Evolution and Human Behavior** 23: 281-295.

- Eckel, C.C. and Grossman, P.J., 2008. Men, women and risk aversion: Experimental evidence. *Handbook of experimental economics results, 1*, pp.1061-1073.
- Ertac, S. and M.Y. Gurdal. 2012. Deciding to decide: Gender, leadership and risk-taking in groups. **Journal of Economic Behavior and Organization** 83: 24-30.
- European Commission. 2013. **She Figures 2012 - Gender in Research and Innovation**. Luxembourg: Publications Office of the European Union (http://ec.europa.eu/research/science-society/document_library/pdf_06/she-figures-2012_en.pdf).
- Feltovich, N. and P.J. Grossman. 2015. How does the effect of pre-play suggestions vary with group size? Experimental evidence from a threshold public-good game. **European Economic Review** 79: 263-280.
- Fischbacher, U. 2007. z-Tree: Zurich toolbox for ready-made economic experiments. **Experimental Economics** 10: 171-178.
- Gangadharan, L., T. Jain, P. Maitra, and J. Vecci. 2016. Social identity and governance: The behavioral response to female leaders. **European Economic Review**.
- Gneezy, U., M. Niederle, and A. Rustichini. 2003. Performance in competitive environments: Gender differences. **Quarterly Journal of Economics** 118: 1049-1074.
- Goldin, C., 2006. *The quiet revolution that transformed women's employment, education, and family* (No. w11953). National Bureau of Economic Research.
- Grossman, P.J., Komai, M. and Jensen, J.E., 2015. Leadership and gender in groups: An experiment. **Canadian Journal of Economics/Revue canadienne d'économique**, 48(1), pp.368-388.
- Greiner, B. 2015. Subject pool recruitment procedures: organizing experiments with ORSEE. *Journal of the Economic Science Association* 1: 114-125.
- Hamermesh, D.S. and J.E. Biddle. 1994. Beauty and the labor market. **American Economic Review** 84: 1174–1194
- Holt, C.A., M. Porzio and M.Y. Song. 2015. Price bubbles and expectations in experimental asset markets: Gender and risk aversion. *Manuscript, University of Virginia*.
- Kanthak, K. and J. Woon. 2015. Women don't run? Election aversion and candidate entry. **American Journal of Political Science**, 59: 595-612.
- Keloharju, M., S. Knüpfer, and J. Tåg. 2016. Equal Opportunity? Gender Gaps in CEO Appointments and Executive Pay. **Harvard Business School Research Paper Series 16-092**.

- Kent, L. 2015. Number of women leaders around the world has grown, but they're still a small group. <http://www.pewresearch.org/fact-tank/2015/07/30/about-one-in-ten-of-todays-world-leaders-are-women/>
- Komai, M., P.J. Grossman, and T. Deters. 2011. Leadership and information in a single-shot collective action game: An experiment. **Management and Decision Economics** 32:119-134.
- Lawless, J.L. 2015. Female Candidates and Legislators. **Annual Review of Political Science**, 18: 349-366.
- Moss-Racusin, C.A., J.F. Dovidio, V.L. Brescoll, M.J. Graham, and J. Handelsman. 2012. Science faculty's subtle gender biases favor male students. **Proceedings of the National Academy of Sciences**, 109 (41), pp.16474-16479.
- Niederle, M. and L. Vesterlund. 2007. Do women shy away from competition? Do men compete too much? **Quarterly Journal of Economics** 122: 1067-1101.
- Parrett, M. 2015. Beauty and the feast: Examining the effect of beauty on earnings using restaurant tipping data. **Journal of Economic Psychology** 49: 34-46.
- Potters J., M. Sefton, and L. Vesterlund. 2007. Leading by example and signalling in voluntary contribution games: An experimental study. **Economic Theory** 33: 169-182.
- Prive, T. 2012. Top 10 Qualities That Make a Great Leader. Forbes Entrepreneurs (<http://www.forbes.com/sites/tanyaprive/2012/12/19/top-10-qualities-that-make-a-great-leader/#617952de3564>).
- Propp, K.M. 1995. An experimental examination of biological sex as a status cue in decision-making groups and its influence on information use. **Small Group Research** 26: 451-474.
- Reuben, E., P. Rey-Biel, P. Sapienza, and L. Zingales. 2012. The emergence of male leadership in competitive environments. **Journal of Economic Behavior and Organization** 83: 111-117.
- Ridgeway, C.L. 2001. Gender, status, and leadership. **Journal of Social Issues** 57: 637-655.
- Ridgeway, C.L., C. Johnson, and D. Diekema. 1994. External status, legitimacy, and compliance in male and female groups. **Social Forces** 72: 1051-1077.
- Rosenblat, T.S. The beauty premium: Physical attractiveness and gender in dictator games. **Negotiation Journal** 24: 465-481.

- Rudman, L.A. and S.E. Kilianski. 2000. Implicit and explicit attitudes toward female authority. **Personality and Social Psychology Bulletin** 26: 1315-1328.
- Sahin, S.G., C.C. Eckel, and M. Komai. 2015. "An experimental study of leadership institutions in collective action games." **Journal of the Economic Science Association** 1 (1): 100-113.
- Sandberg, S. 2013. *Lean in: Women, work, and the will to lead*. Random House.
- Sarsons, H., 2015. Gender Differences in Recognition for Group Work. Working paper, Harvard University.
- Shobe, W., C.A. Holt and T. Huettman. 2014. Elements of Emission Market Design: An Experimental Analysis of California's Market for Greenhouse Gas Allowances. **Journal of Economic Behavior and Organization**, 107: 402-420.
- Solnick, S.J. and M.E. Schweitzer. 1999. The Influence of Physical Attractiveness and Gender on Ultimatum Game Decisions. **Organizational Behavior and Human Decision Processes** 79: 199–215.
- Souther, M.E. and A.S. Yore. 2016. Racial and Gender Inequality in the Boardroom. Available at SSRN.
- Taps, J. and P.Y. Martin. 1990. Gender composition, attributional accounts, and women's influence and likability in task groups. **Small Group Research** 21: 471-491.
- Vesterlund, L., 2015. Breaking the Glass Ceiling with “No”: Gender Differences in Accepting and Receiving Requests for Non-Promotable Tasks (No. 5663).
- Warner, J. Fact Sheet: The Women's Leadership Gap. Center for American Progress (<https://www.americanprogress.org/issues/women/report/2014/03/07/85457/fact-sheet-the-womens-leadership-gap/>).
- Weber, R., C. Camerer, Y. Rottenstreich, and M. Knez. 2001. The illusion of leadership: Misattribution of cause in coordination games. **Organization Science** 12: 582-598.
- Wilson, R.K. and C.C. Eckel. 2006. Judging a book by its cover: Beauty and expectations in the trust game. **Political Research Quarterly** 59: 189–202.

Figure 1: Distribution of Personal Fees by Leader Gender and Period

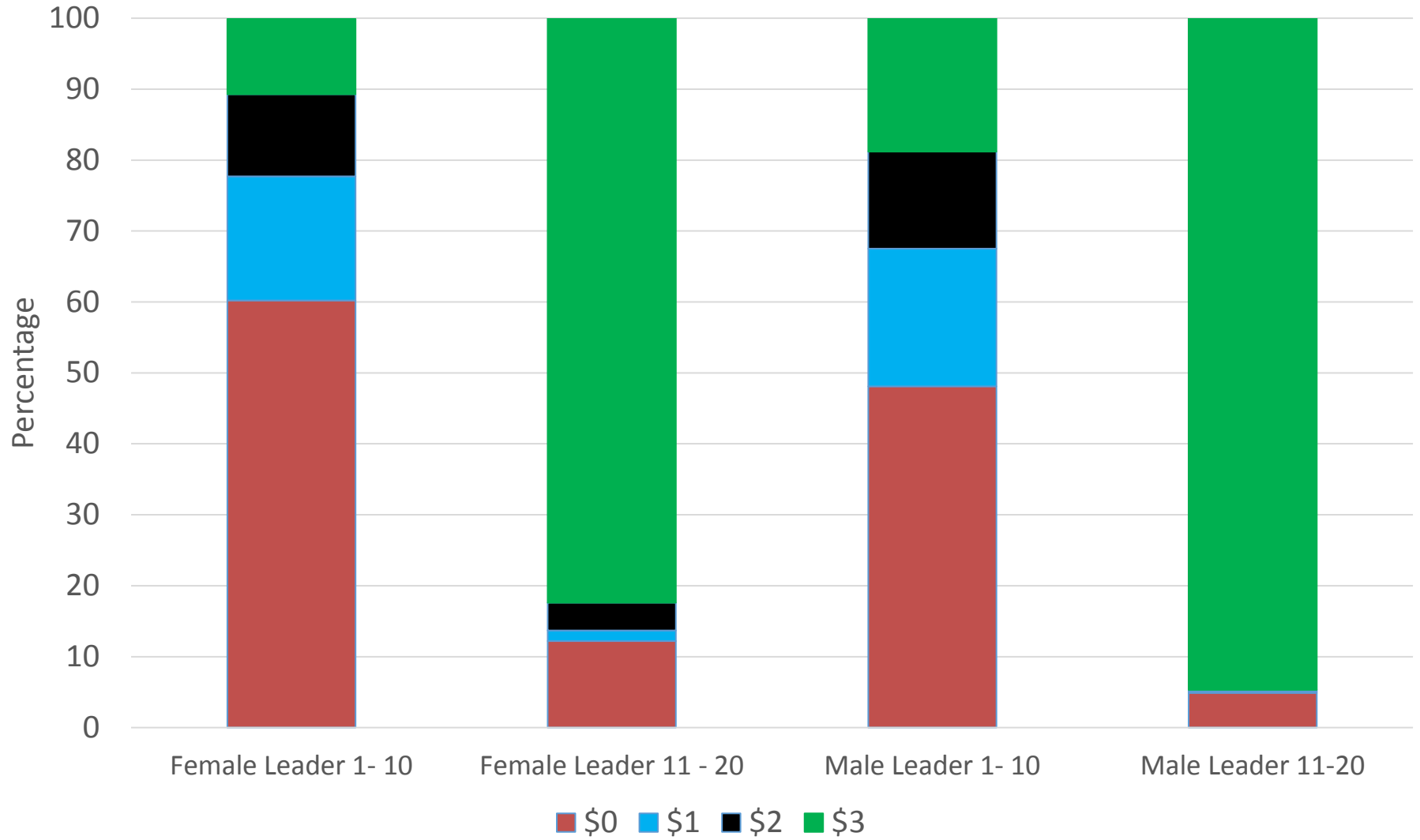
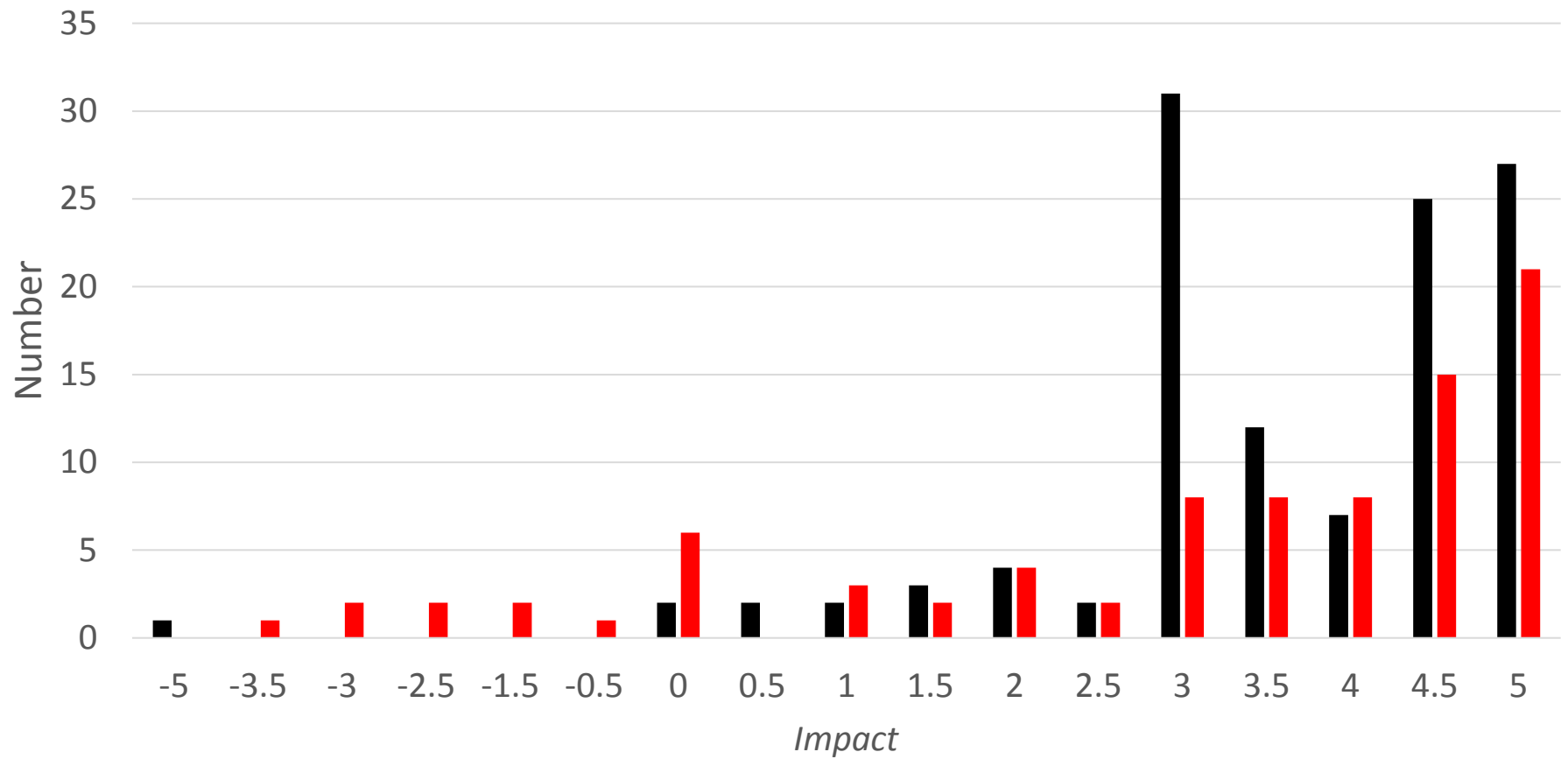


Figure 2: Distribution of *Impact*



■ Male Leaders (Mean = 3.81, St.Dev. = 1.6)

■ Female Leaders (Mean = 3.03, St.Dev. = 2.3)

Figure 3: Bonus Choices by Treatment

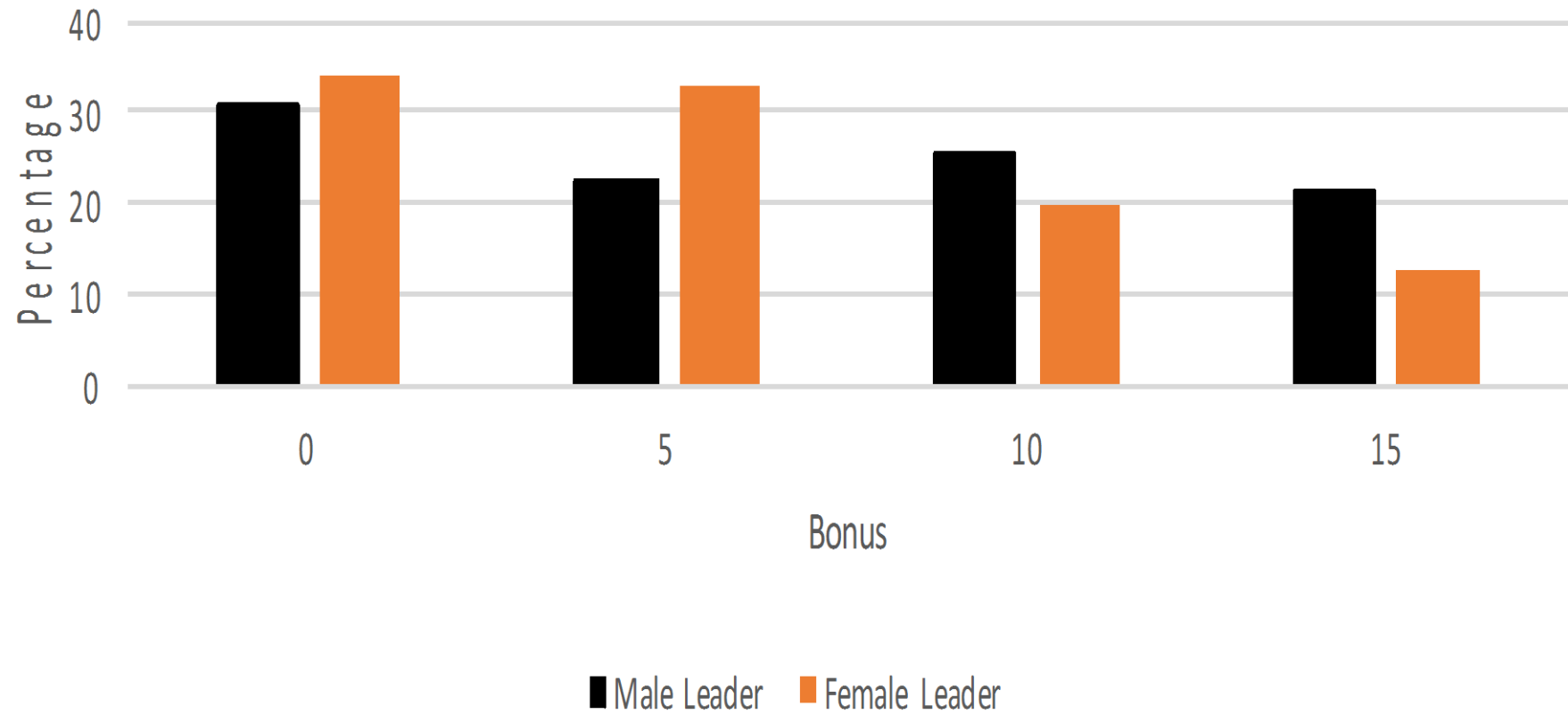


Table 1: Payoff Matrix

Player's Fee	Group Minimum Fee (Per Group Member Reward)			
	\$0.00 (\$1.00)	\$1.00 (\$2.50)	\$2.00 (\$3.75)	\$3.00 (\$5.00)
\$0	\$1.00			
\$1	\$0.00	\$1.50		
\$2	-\$1.00	\$0.50	\$1.75	
\$3	-\$2.00	-\$0.50	\$0.75	\$2.00

Table 2: Bonus/Fee Schedule

Bonus Fee	% Increase in Leader's Earnings
\$0.00	0%
\$0.50	5%
\$1.00	10%
\$1.50	15%

Table 3: Follower Characteristics

	Male Leader	Female Leader	Test Statistic p-value ⁺
Age	20.2 (1.53)	19.9 (1.94)	p = 0.42 ^a
Male	53.3%	50.6%	p = 0.72 ^b
Caucasian	67.8%	74.1%	p = 0.36
Business/Economics	30.0%	20.0%	p = 0.13 ^b
US Born	81.1%	78.8%	p = 0.70 ^b
Economics Classes			p = 0.52 ^d
0	30	31	
1	32	33	
2	13	14	
3	7	3	
4	3	3	
5+	5	1	
Gender Mix of Groups (% male, last 10 periods)			p = 0.66 ^d
0%	1	1	
20%	1	2	
40%	5	5	
60%	9	6	
80%	0	2	
100%	2	1	
N	90	85	

+ two-tailed test

a – means test, b - Fisher's exact test, c - Mann Whitney test.

Table 4: Random Effects Regression Results: Personal Fee Chosen in Periods 1 – 10

Variable	Coefficient (Std. Error)	
	<i>Male Leader</i>	0.33 (0.21)
<i>Earnings_{it-1}</i>	0.10*** (0.03)	0.07 (0.04)
<i>Male Leader x Earnings_{it-1}</i>	...	0.05 (0.06)
<i>Period</i>	-0.14*** (0.01)	-0.14*** (0.02)
<i>Male Leader x Period</i>	...	-0.01 (0.03)
Constant	1.36*** (0.15)	1.35*** (0.18)
N	1575	

+ cluster on group

*** 1%, ** 5%, * 10% two-tailed test

Table 5: Average Earnings per Period by Leader’s Gender, Periods 1 – 10

Session	Average Earnings per Period, Periods 1 – 10	
	Female Leader	Male Leader
1	\$0.74	\$0.74
2	\$0.58	\$0.50
3	\$0.61	\$0.75
4	\$0.50	\$0.66
Average	\$0.41	\$0.48
Difference (ML-FL)	\$0.05	
Permutations test p-value*	0.21	

* The STATA “permute” command was used and 100 random permutations were performed.

Table 6: Random Effects Regression Results: Personal Fee Chosen in Periods 11 – 20⁺

Variable	Coefficient (Std. Error)	
	<i>Male Leader</i>	0.25 (0.23)
<i>Earnings_{it-1}</i>	0.22*** (0.05)	0.24*** (0.04)
<i>Male Leader x Earnings_{it-1}</i>		-0.13** (0.06)
<i>Period</i>	-0.04** (0.02)	-0.07** (0.03)
<i>Male Leader x Period</i>		0.06* (0.03)
Constant	2.79*** (0.17)	3.20*** (0.36)
N	1575	
Groups	175	

+ cluster on group

*** 1%, ** 5%, * 10% two-tailed test

Table 7: Average Earnings per Period, Periods 11 – 20, and Average Increase in per Period Earnings by Leader’s Gender

Sessions	Average Earnings per Period, Periods 11 – 20		Change in Average Earnings per Period (Last 10 - First 10)	
	Female Leader	Male Leader	Female Leader	Male Leader
1	\$1.76	\$1.72	\$1.02	\$0.98
2	\$1.59	\$1.92	\$1.01	\$1.42
3	\$1.61	\$1.98	\$1.00	\$1.23
4	\$1.57	\$1.89	\$1.07	\$1.23
Average	\$1.63	\$1.87	\$1.03	\$1.21
Difference (ML-FL)	\$0.24		\$0.19	
Permutations test p-value*	0.05		0.09	

* The STATA “permute” command was used and 100 random permutations were performed.

Table 8: Followers' Assessments of Leader's Attributes

Attribute	Leader's Gender		Wilcoxon Test Statistic (p-value) ^a
	Male (n=90)	Female (n=85)	
Effective Communication	1	0	z = -0.51 (p = 0.61)
	2	2	
	3	6	
	4	17	
	5	65	
Honesty	1	0	z = -2.04 (p = 0.04)
	2	1	
	3	3	
	4	8	
	5	78	
Competence	1	0	z = -1.65 (p = 0.10)
	2	1	
	3	6	
	4	11	
	5	72	
Confidence	1	1	z = -0.27 (p = 0.79)
	2	2	
	3	6	
	4	18	
	5	63	
Ability to Inspire	1	3	z = -0.53 (p = 0.60)
	2	7	
	3	16	
	4	13	
	5	51	
Positive Attitude	1	1	z = -1.16 (p = 0.24)
	2	4	
	3	5	
	4	13	
	5	67	
Attractiveness	1	2	z = -1.25 (p = 0.21)
	2	10	
	3	20	
	4	28	
	5	30	

a - Using a Bonferroni adjustment for multiple comparisons, none approaches statistical significance. A p value less than .014 is required for 0.10 significance after this adjustment.

Table 9: Ordered Probit Regression Results: Leader's Perceived Impact⁺

Variable	Coefficient (Std. Error)		
	Model 1	Model 2	Model 3
<i>Change</i>	0.854*** (0.220)	0.837*** (0.222)	0.855*** (0.208)
<i>Male leader</i>		0.237* (0.143)	
<i>Attractive</i>		-0.155* (0.087)	-0.157 (0.087)
<i>LQI</i>		0.406*** (0.084)	0.385*** (0.086)
<i>MM</i>			0.180 (0.133)
<i>MF</i>			0.522*** (0.145)
<i>FM</i>			0.201 (0.268)
N	175		
Pseudo R ²	0.06	0.08	0.08

Dependent variable = Impact

+ cluster on session

*** 1%, ** 5%, * 10% two-tailed test

Table 10: Bonus Vote Regression Results +

Variable	Model 1 OLS	Model 1a Tobit	Model 2 OLS	Model 2a Tobit	Model 3 OLS	Model 3a Tobit	Model 4 OLS	Model 4a Tobit
<i>Male leader</i>	1.245 (0.674)	2.120* (1.285)	1.081* (0.500)	1.816** (0.902)	-0.287 (1.617)	-0.479 (3.012)	1.493*** (0.373)	2.410*** (0.663)
<i>Change</i>			1.443* (0.685)	2.519** (1.198)	0.911 (1.014)	1.608 (1.879)	1.625* (0.790)	2.809** (0.1392)
<i>Male leader * Change</i>					1.205 (1.417)	2.039 (2.618)		
<i>LQI</i>			0.574 (0.655)	0.989 (1.223)	0.656 (0.664)	1.550 (1.278)	0.684 (0.617)	1.129 (1.158)
<i>Attractiveness</i>			0.629 (0.457)	1.204 (0.940)	0.627 (466)	1.193 (0.958)	0.690* (0.332)	1.322** (0.644)
<i>Age</i>							-0.050 (0.250)	-0.073 (0.528)
<i>Male Follower</i>							0.605 (1.034)	1.292 (2.078)
<i>Caucasian</i>							3.411*** (0.923)	6.567*** (1.628)
<i>US Born</i>							-1.623 (0.931)	-3.033* (1.748)
<i>Economic Classes</i>							-0.539 (0.387)	-0.980 (0.911)
<i>Group Mix</i>							-0.002 (0.019)	0.002 (0.033)
<i>Constant</i>	5.588*** (0.487)	3.968*** (0.965)	1.585 (2.239)	-3.362 (4.455)	2.142 (2.238)	-2.384 (4.824)	1.267 (6.089)	-4.832 (11.064)
<i>R²</i>	0.01	0.002	0.08	0.02	0.08	0.02	0.16	0.03
<i>N</i>	175							

+ cluster on session, Tobit models censored at 0 and 15

*** 1%, ** 5%, * 10%, two-tailed test

Appendix A: Instructions

Set-up and Rules

You have been randomly placed in a group with four other persons here today. Your group is involved in an activity which has ten rounds. Every round works as follows.

1. Each group member must choose a personal fee. The personal fee can be \$0.00, \$1.00, \$2.00, or \$3.00.
2. Each group member receives the same reward. The size of the reward depends on the personal fees you and the other members of your group choose.
3. Specifically, the reward is determined by the minimum personal fee of everyone in your group as demonstrated on the next page.
4. Your earnings are the reward minus your personal fee.

Previous

Next

Instructions

Thank you for participating. This is a study of individual and group decision-making. You will be paid a show-up fee of \$5.00 for attending the experiment. In addition to the show-up fee you will also receive compensation based on the decisions you and others make over the course of the session. Your total compensation will be paid to you in cash at the end of this session. How your total compensation will be determined is explained below.

The experimenter will read the instructions aloud. It is important that you understand all the instructions. If you do not understand the instructions you may not be able to participate effectively. If there is something you do not understand or you have any questions please raise your hand.

After you have completed the main activity, you will be asked to fill out an exit survey.

Please do not turn around or look at anyone else or anyone else's computer screen. Do not communicate with the other participants during the experiment.

You are free to leave the experiment at any time; however, you must complete all activities as well as the exit survey in order to receive your earnings.

[Previous](#)

[Next](#)

If the Minimum Personal Fee of your group is:	You and all other group members receive this reward:
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Set-up and Rules, continued

Your earnings in a round are simply the reward received minus the personal fee you chose to pay.

Previous Next

Example 1

If the Minimum Personal Fee of your group is	You and all other group members receive this reward
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

For round X, suppose you select a personal fee of \$2.00 while the other members of your group select personal fees of \$3.00, \$2.00, \$2.00, and \$3.00. The reward earned by you and each other member of the group is \$3.75, determined by the smallest personal fee selected by any group member.

Your earnings for round X will be \$1.75 (= your group's reward of \$3.75 - your selected personal fee of \$2.00).

Example 2

If the Minimum Personal Fee of your group is	You and all other group members receive this reward
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Suppose instead that in round X you select a personal fee of \$3.00, while the other members of your group select personal fees of \$3.00, \$3.00, \$3.00, and \$3.00. The reward earned by you and each other member of the group is \$5.00, determined by the smallest personal fee selected by any group member. Your earnings for round X will be \$2.00 (= your group's reward of \$5.00 - your selected personal fee of \$3.00).

Previous

Next

Example 3

If the Minimum Personal Fee of your group is:	You and all other group members receive this reward:
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Suppose instead that in round X you select a personal fee of \$0.00, while the other members of your group select personal fees of \$0.00, \$0.00, \$0.00, and \$0.00. The reward earned by you and each other member of the group is \$1.00, determined by the smallest personal fee selected by any group member. Your earnings for round X will be \$1.00 (= your group's reward of \$1.00 - your selected personal fee of \$0.00).

Period 1

If the Minimum Personal Fee of your group is:	You and all other group members receive:
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Please Select a personal fee:

- \$0.00
- \$1.00
- \$2.00
- \$3.00

Remember that your earnings for the round are your group reward minus your personal fee.

Submit Personal Fee

Period 1

If the Minimum Personal Fee of your group is:	You and all other group members receive:
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Your Personal Fee: \$ 0.00

Your Group Minimum Personal Fee: \$ 0.00

Your Group Reward: \$ 1.00

Your Earnings for this Round: \$ 1.00

Your Cumulative Earnings: \$ 1.00

Session Leader

One participant has been selected at random to be the session leader. The leader is not a member of any group and has not made any personal fee decisions. The leader has received a handout outlining techniques useful in organizing these types of group decisions. The leader will now address you and prepare you for the remaining rounds. The session leader's earnings each round will equal 120% of average group earnings plus \$1.

The randomly selected leader will now explain strategies which could improve your earnings.

You will now be randomly assigned into **NEW** groups.

You will play the remaining ten rounds in your new group.

STOP!

Please do not continue until instructed.

Continue

Period 2

If the Minimum Personal Fee of your group is:	You and all other group members receive:
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Please Select a personal fee:

- \$0.00
- \$1.00
- \$2.00
- \$3.00

Remember that your earnings for the round are your group reward minus your personal fee.

Submit Personal Fee

Period 2

If the Minimum Personal Fee of your group is:	You and all other group members receive:
\$0.00	\$1.00
\$1.00	\$2.50
\$2.00	\$3.75
\$3.00	\$5.00

Your Personal Fee: \$ 1.00

Your Group Minimum Personal Fee: \$ 1.00

Your Group Reward: \$ 2.50

Your Earnings for this Round: \$ 1.50

Your Cumulative Earnings: \$ 0.50

Leader Evaluation

How effective was your leader? Please enter your evaluation of the leader in the box below.

Continue

Leadership Rewards

You and your group members now have the ability to reward the leader. Every group will be asked to submit their reward decision. One group will be selected at random and their group's rewards will be implemented, and the leader will receive the specified reward.

Depending on your evaluation of the leader, you can choose one of four reward levels. Rewards are costly, as shown in the table below. For example, if you determine that the leader should have a reward of 10% of their earnings, then you will have to pay \$1.00, if your group is selected. (This is just an example. You may select any level you think appropriate.)

Your group's reward decision will be the sum of the individual reward decisions. For example if you choose 10% and everyone else also chooses 10%, then the total reward will be 40% of the leader's earnings.

Recall, the leader's earnings (before any rewards are added) are 120% of the participant's average earnings plus \$1.00

Your Reward Fee	Percentage of Earnings Leader Gains
\$0.00	0%
\$0.50	5%
\$1.00	10%
\$1.50	15%

Your Reward Fee	Percentage of Earnings Leader Gains
\$0.00	0%
\$0.50	5%
\$1.00	10%
\$1.50	15%

You must now determine your reward for the session leader.
One Group will be selected and their total rewards implemented to determine the leader's bonus.

- Pay \$0.00 to reward 0%
- Pay \$0.50 to reward 5%
- Pay \$1.00 to reward 10%
- Pay \$1.50 to reward 15%

Custom Feedback Choice

Final Summary

Was Your Group Selected to Reward Leader: Yes

Percentage of earnings gained by the leader: 35 %

Leader's Payment: \$ 2.81

Your Payment: \$ 0.50

Please keep the slip of paper with your ID number for payment.

Continue

Please complete the following survey questions

How old are you?

What is your gender?

- Female
- Male

Are you married?

- No
- Yes

Do you have children?

- No
- Yes

In what county were you born?

What is your racial or ethnic background?

- Latin American/Chicano
- Black or African American
- White/Caucasian
- Hispanic/Latino
- Hispanic/White
- Latin American/Hispanic Indian
- Multi-racial
- Other

If you choose Other, please specify

What is your classification?

- Freshman
- Sophomore
- Junior
- Senior
- Masters student
- Law student
- Doctoral student
- Faculty or other non-student

What is your major?

- Economics
- Business
- Psychology
- Science/Engineering
- Humanities
- Other

If you choose Other, please specify

How many economics courses have you taken?

- None
- One
- Two
- Three
- Four
- Five
- Six
- More than six

Continue

Please indicate the extent to which you agree or disagree with that statement.

	Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
The procedures in this experiment presented your anonymity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The instructions for this experiment were clear and easy to follow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please rate your session leader on the following attributes (1 = low, 5 = high)

	1	2	3	4	5
Effective Communicator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Honest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inspiring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What impact do you believe the leader had on your experience?

Please explain your thought process in this experiment. Be sure to explain how you made your revealed decision.

OK

Appendix Table B: Ten Randomly Selected Responses (verbatim) to: What impact do you believe the leaders had on your earnings?

Female Leaders

1	A great impact. Like very postivive.
2	She improved them to the highest degree possible
3	some people are idiots unless they are told what to do so if it wasnt for her we wouldve made less money. Its really not hard to see that if everyone were to pick 3 dollars every time then we would make more money. people are less willing to spend the money when they don't trust the other members to do the same.
4	She did a good job of increasing my earnings. Before we all just went with the minimum because it had the least risk and there was a lack of trust. Because our leader was able to get us all on the same page, we were able to double our earnings for that next round.
5	She had a negative impact because if I took her advice, I lost money.
6	She made sure whoever kept choosing 0 didnt do so anymore, she theres that.
7	About half of my total earnings
8	Her instructions led to larger earnings.
9	She maximized my earnings in the second round because once in the first round, I actually lost one dollar, so then i just picked 0 until she told us to all pick 3. She really helped.
10	Because she convinced the entire group to do \$3.00 personal money, we had an earnings of \$5.00 so we all got \$2.00, which was awesome! Except some jerk had to randomly start putting in lower than \$3.00 so I had to switch to \$0.00 so I knew I would get at least \$1.00. I didn't want to gamble. So, the leader's impact was good in the beginning for the group, then it was totally gone by a few turns because one member messed it up for everyone.

Male Leaders

1	Huge, I had already figured out that if everyone picked the highest amount it would maximize the earnings, but ppl in my group still chose the lowest so I did as well. He was able to communicate this point across and allowed us all to make more money.
2	He raised them a considerable amount, because my group had previously been picking low numbers and then consistently picked the highest number.
3	Very positive. Increased earnings by 100%
4	The leader made it possible for all of our group to work together and increased my earnings significantly. Before he stepped in, the group couldn't earn much and after his intervention, we were able to be on the same page and make the maximum earnings.
5	Familiar with the experiment and truthful
6	he got everyone to place the same value
7	The leader had a strong impact as previously the people in my group were not contributing any money.
8	Increased greatly
9	He helped me make more money.
10	Alot because my group was filled with idiots who can't read instructions.

Appendix Table C: Wilcoxon Rank-Sum Test p-values for Assessments of Leader's Attributes by Followers' Gender^a

Attribute	Leader's Gender	
	Male	Female
Effective Communication	$z = 1.25$ ($p = 0.21$)	$z = -0.01$ ($p = 0.99$)
Honesty	$z = 0.43$ ($p = 0.67$)	$z = 0.32$ ($p = 0.75$)
Competence	$z = 0.82$ ($p = 0.41$)	$z = 0.20$ ($p = 0.84$)
Confidence	$z = 2.32$ ($p = 0.02$)	$z = 0.32$ ($p = 0.75$)
Ability to Inspire	$z = 2.22$ ($p = 0.03$)	$z = 1.73$ ($p = 0.08$)
Positive Attitude	$z = 2.33$ ($p = 0.02$)	$z = 0.24$ ($p = 0.81$)
Attractiveness	$z = 0.96$ ($p = 0.34$)	$z = 0.30$ ($p = 0.77$)
Male Followers	48	43
Female Followers	42	42

a - Using a Bonferroni adjustment for multiple comparisons, none approaches statistical significance. A p value less than .007 is required for 0.10 significance after this adjustment.

Appendix Table D: OLS Regression Results: Leader's Perceived Impact⁺

Variable	Coefficient (Std. Error)		
	Model 1	Model 2	Model 3
<i>Change</i>	1.717*** (0.448)	1.621*** (0.424)	1.637*** (0.405)
<i>Male leader</i>		0.404 (0.319)	
<i>Attractive</i>		-0.213 (0.117)	-0.211 (0.115)
<i>LQI</i>		0.548*** (0.089)	0.497*** (0.100)
<i>MM</i>			0.139 (0.274)
<i>MF</i>			0.727** (0.295)
<i>FM</i>			0.019 (0.403)
Constant	1.498* (0.660)	2.234*** (0.595)	2.197*** (0.552)
N	175		
R-Squared	0.32	0.38	0.39

Dependent variable = Impact
+ cluster on session
*** 1%, ** 5%, * 10% two-tailed test