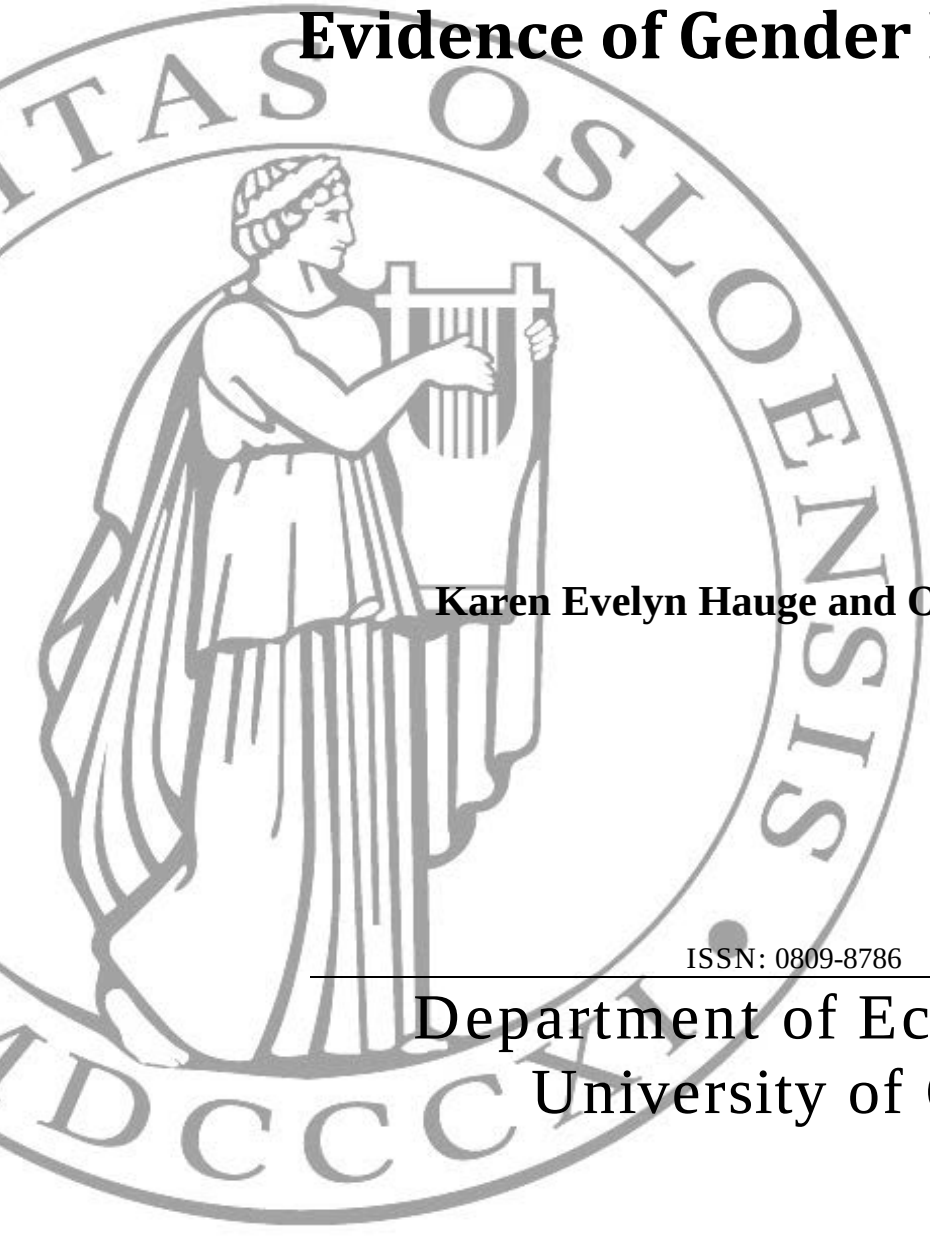
MEMORANDUM

No 16/2014

Contributing to Public Goods as Individuals versus Group Representatives: Evidence of Gender Differences



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ISSN: 0809-8786

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This series is published by the
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Contributing to public goods as individuals versus group representatives: Evidence of gender differences

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Memo 16/2014-v1

(This version July 2014)

Abstract

We report evidence from a laboratory experiment comparing contributions in public good games played as individuals to contributions made as group representatives. We find that women alter their behaviour more than men. The change is in an out-group friendly direction: while men's contributions are largely similar across the two treatments, women increase their contributions by 40% on average as group representatives. The results are consistent with empirical research from labour markets suggesting that female corporate leaders emphasize stakeholders beyond the shareholders to a larger extent than men, and they are in line with stereotypes commonly held regarding male and female leaders.

Keywords: responsibility; group representative; gender; public good game; laboratory experiment;

JEL-codes: C91: Laboratory, Individual Behavior; H41: Public Goods; J16: Economics of Gender; Non-labor Discrimination.

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Contributing to public goods as individuals versus group representatives: Evidence of gender differences

1 Introduction

Studies of decision making within economics have mostly focused on decisions made by individuals on behalf of themselves. Many important decisions, however, are made on behalf of others: Individuals may make decisions on behalf of their family, friends or work team; CEOs make decisions on behalf of firms, and politicians on behalf of countries. In this paper, we will define a group representative as a person who makes a decision on behalf of others in addition to him or herself. We ask how such responsibility affects the decisions made in public good games, comparing decisions to the ones an individual makes on behalf of him- or herself only.

A few experimental studies have compared decisions made as individuals with decision made as group representatives. The results suggest that it indeed matters for the decision outcome whether it is made on behalf of the individual only or on behalf of others as well. In general, it seems as though group representatives take less risk and behave less other-regarding than individuals, but that gender might influence how the decision maker responds to being a representative (Charness and Jackson 2009; Humphrey and Renner 2011; Song, Cadsby, and Morris 2004; Song 2006; Song 2008).

Social preferences imply that people make trade-offs between their own payoff and that of others. When acting as representatives, this requires the decision maker to consider and weight the interests of several others; those whose payoffs are aligned with the decision maker, and those whose payoffs are not.

We examine how such responsibility affects individual behavior, and how this effect may differ across genders, using a public good game. Previous research has documented gender differences that might give rise to gender-specific effects of responsibility. Specifically, women seem to be more sensitive to differences in social contexts (Croson & Gneezy, 2009), and men and women have be shown to respond differently to having their decisions observed by in-group and out-group members (Charness and Rustichini 2011).

To identify causal effects of gender on decisions made by individuals versus group representatives requires exogenous variation in the assignment of roles with responsibility for others. As natural experiments are hard to find, lab experiments is a promising method. We design a public good game experiment that compares decisions made as individuals versus group representatives, using an ABA crossover design that enables us to use within-individual variation to identify causal effects.

Our design is related to, but different from, the one employed by Humphrey and Renner (2011). Comparing public good contributions with and without responsibility (either for a friend or an anonymous third person), they find that contributions are the same for individuals making decisions on their own behalf and on behalf of themselves and an anonymous person. Contributions are somewhat reduced when decisions are made on behalf of themselves and a friend. Our study differs in two ways: Most importantly, they assign each individual to either no-responsibility or one of the two responsibility treatments, identifying differences by between-individual variation. The other difference

is that their responsibility treatments add one individual to the player's side of the table, while we scale up the numbers on both sides of the table so the ratio is constant.

Our results find that male contributions to the public good is largely unaffected by responsibility, whereas female contributions are strongly increased. This result is consistent with empirical research from labor markets, where several studies find female presence in top-level positions to be correlated with a stronger emphasis on the interests of employees, their families, the environment – in other words, stakeholders beyond the shareholders(Adams and Ferreira 2009; Terjesen, Sealy, and Singh 2009; Bart and McQueen 2013; Bloom, Kretschmer, and Van Reenen 2011).

2 Experimental design

The experimental design compares contribution behavior in a "baseline" standard public good game with results from public good games altered along two dimensions: group representative (making a decision on behalf of oneself only vs. making a decision as a group representative, on behalf of oneself and two others), and anonymity (full anonymity vs. a known probability of having to reveal your choice at the end of the session).

Subjects were randomly divided into groups of three. The group number was displayed on the computer screen, and was the same throughout the experiment. The group number, however, only had a purpose in the Group Representative Treatments, as described more below.

2.1 Individual Treatment (IT): Decisions as individuals

The baseline treatment was a standard, one-shot, three-person public good game. Participants were given an endowment of 60 Norwegian kroner (NOK) (~$10). The game was explained using the concept of a "doubling bucket". Each subject shared a doubling bucket with one other subject from each of two groups identified by group number. Each round of the game thus involved individuals from three separate groups.

Each subject could decide how much of his or her endowment to put in the doubling bucket and how much to keep. All money placed in the bucket was doubled and divided equally between the players, giving the monetary payoff function provided in equation (1) below. Subjects made simultaneous-move contributions to the doubling bucket, stated as shares of the endowment in ten percent increments.

$$\pi_i^I = e(1-c_i) + \frac{2}{3}\sum_{i=1}^{3} ec_i \qquad (1)$$

where $c_i =$ is individual *i*'s contribution as share of the endowment e.

2.2 Group Representative Treatment (GRT): Decisions as group representatives

The Group Representative Treatment is also a one-shot public good game. As in the Individual Treatment, the game was explained using the concept of the "doubling bucket". Each subject shared a doubling bucket with the two other subjects in his group, in addition to the members of two other groups. In other words, members of three different groups, in total nine subjects, could put money in the same bucket.

Each subject was given an endowment of 60 NOK each, such that the group had 180 NOK in total to their disposal. In the Group Representative Treatment, subjects were asked to make the following decision:

Your task is to answer the following question: How much of your group's money do you want to put in the bucket on behalf of yourself and the two others in your group?

The contributions were stated as shares of the group's total endowment in ten percent increments. By design, therefore, all three members of each group contributed the same amount. All subjects made a choice on behalf of their group, and one of the choices was randomly picked to be implemented. As in the Individual Treatment, all money placed in the bucket was doubled, and split equally amongst those sharing it, which in this case were nine individuals (three groups of three individuals). This, however, generates the same private financial incentives for the group representative as in the Individual Treatment: each decision maker in this treatment decided over 3 endowments à 60 NOK, and the content of the bucket was to be shared equally between 9 individuals. We see this in the following payoff function for a group representative *i*:

$$\pi_i^G = \frac{1}{3}\left[3e(1-c_g) + \frac{2}{3}\sum_{g=1}^{3} 3ec_g \right] = e(1-c_g) + \frac{2}{3}\sum_{g=1}^{3} ec_g \qquad (2)$$

where $c_g \in [0,1]$ is the contribution share decision on behalf of group *g* stated as percentage of the group's total endowment $3e$.

The Group Representative Treatment thus is a scaled up version of the Individual Treatment. The per-capita return to the public good is by construction identical between the Individual Treatment and Group Representative Treatments, so is the Nash Equilibrium.

2.3 Anonymous versus public decisions

Contributions to public goods increase when individual contributions must be announced publicly (Rege and Telle 2004), and this audience effect has been claimed to confound previous studies on group representatives (Humphrey and Renner 2011).

Our design distinguished between *anonymous decisions*, where subjects knew neither the identity nor the decisions made by others, and *public decisions*, where participants knew there was a positive, known probability that they would have to write their group number and contribution decision on a flip-over chart at the end of the session in full view of all participants.

In the sessions with public decisions, each subject had a 1/9 probability of having each of their decisions revealed to the other participants. In the Individual Treatment, 3 of 27 participants were drawn. In the Group Representative Treatment, each participant had a 1/3 chance of being the group leader, and each leader had a 1/3 chance of having his or her decision made public. Separate and independent draws were made for each game played within the session. Since "forcing" people to go public could be experienced as unpleasant and unexpected, participants in public sessions were notified of this possibility during the introduction and given the opportunity to leave with a show-up fee. No one did.

2.4 Post-experimental questionnaire

At the very end of the session, all subjects answered a questionnaire covering background questions (gender, age and faculty of science attended at the University).

2.5 Experimental procedures

As we are interested in measuring the *difference* in contributions as individuals and group representatives, we employ a within-subject design. All subjects in the experiment make contribution decisions on behalf of themselves only, as well as on behalf of themselves and two others. As illustrated in figure 1, the experiment was conducted in four sessions. Two of the sessions played under the anonymous condition, while two played under the public condition. To correct for possible order effects, the experiment had a crossover design following an A-B-A versus a B-A-B pattern. Each subject participated in only one session, and played three separate one-shot games within the session.

As mentioned previously, subjects were randomly divided into groups of three. The groups served a purpose only in decisions made as group representatives, where subjects made their contribution decision on behalf of their group. Subjects were member of the same group together with the same two others throughout the experiment, so subjects who made two decisions as group representatives made both decisions on behalf of the same group. Except for this, subjects never shared a doubling bucket with the same person twice (i.e. a perfect stranger design (Fehr and Gächter 2000)).

After the instructions were read, and before subjects started making their decisions, subjects had some training periods where they could test out various contribution decisions of three fantasy players, and observe how this affected the payoffs.

All feedback on outcomes was delayed to the end of the experiment to avoid having outcomes from early games contaminate results from later games. In the Individual Treatment, subjects were informed about their own decision, the total amount contributed to their bucket, and how much the subject consequently received in return. In Group Representative Treatments, each subject was told whether his/her decision was the one drawn as the group representative, the total amount contributed to their bucket, and how much he/she received back. In the public sessions, the final feedback stage also informed participants of whether they would have to reveal their group number and contribution decision in front of the other participants.

The experiment was programmed in z-tree (Fischbacher 2007). The subjects were recruited from lectures attended by first-year students from a number of faculties of science at the University of Oslo, Norway. Each session contained 27 subjects, giving a total of 108 subjects and 324 contribution decisions. 50 of the subjects were female. The distribution of subjects across sessions is presented in table 1.

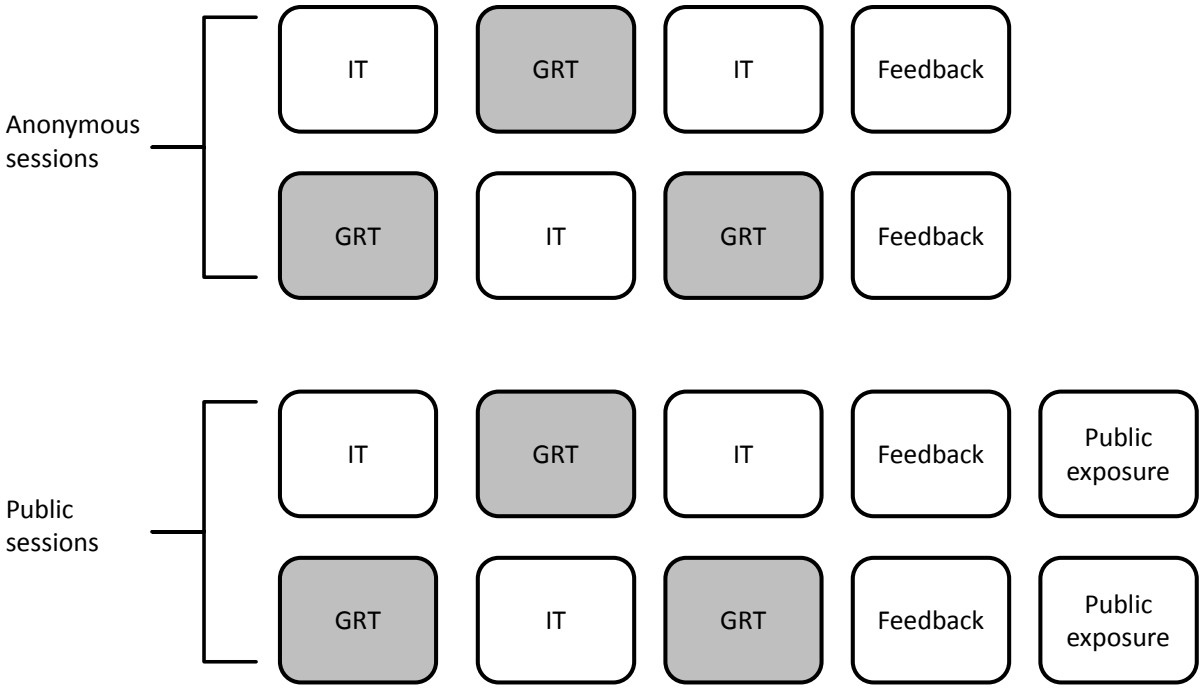

Figure 1 – Overview of experimental design. Four sessions were run with treatments varying along two dimensions. All participants made decisions for themselves (IT) and as leaders on behalf of their group (GRT). Half the sessions included a risk of 1/9 that your group membership and contribution would be publicly revealed at the end of the session (public).

Session	All subjects		Math and Science		Humanities		Social Science		Education		Other faculties		Mean age
	#	Female share	#	female share	#	female Share	#	female share	#	female share	#	Female share	
1	27	0.55	11	0.41	0	0	8	0.3	5	0.2	3	1	21.9
2	27	0.55	18	0.67	6	0.22	2	0.07	0	0	1	0	20.4
3	27	0.41	19	0.70	2	0.07	2	0.07	0	0	4	0.75	21.7
4	27	0.33	13	0.48	4	0.15	4	0.15	1	1	5	0.40	21.4
Total	108	0.46	61	0.56	12	0.11	16	0.15	6	0.33	13	0.58	21.4

3 Results

The difference between expected contributions when acting as a group representative compared to acting as an individual (i.e., $E(c_i \mid GRT) - E(c_i \mid IT)$) can be thought of as the individual's response to acting as a group representative. We will call this the responsibility response as the individual has the responsibility for the group's decision. A simple estimator for this at the individual level is the difference between contributions under GRT and IT, averaging an individual's contributions under identical treatments (choice 1 and 3, see figure 1 for the design of the experiment). As shown in Figure 2, average responsibility responses were strikingly different for men and women. The difference is

apparent at all levels, as shown by the cumulative distributions plotted in Figure 3. While both sexes show substantial heterogeneity, the distribution is clearly shifted towards positive responsibility responses for women (i.e. they contribute more as group representatives compared to as individuals) relative to men. While approximately 60% of men have a responsibility response of zero or less (i.e. they contribute the same or less as group representatives compared to as individuals), the comparable number for women is approximately 30%. In other words, 70% of all women in the experiment contributed more as group representatives than as individuals.

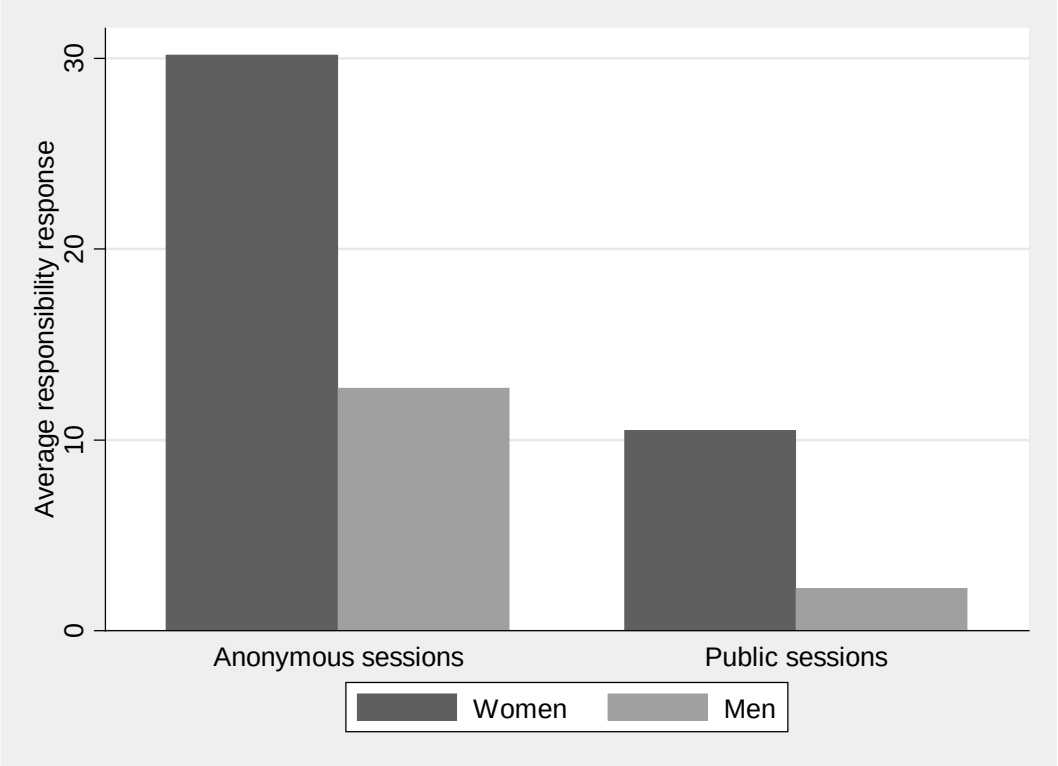

Figure 2 - Average responsibility response by gender. Private sessions were completely anonymous, public sessions involved a 1/9 chance that any decision would be made public at the end of the session along with identity and group affiliation.

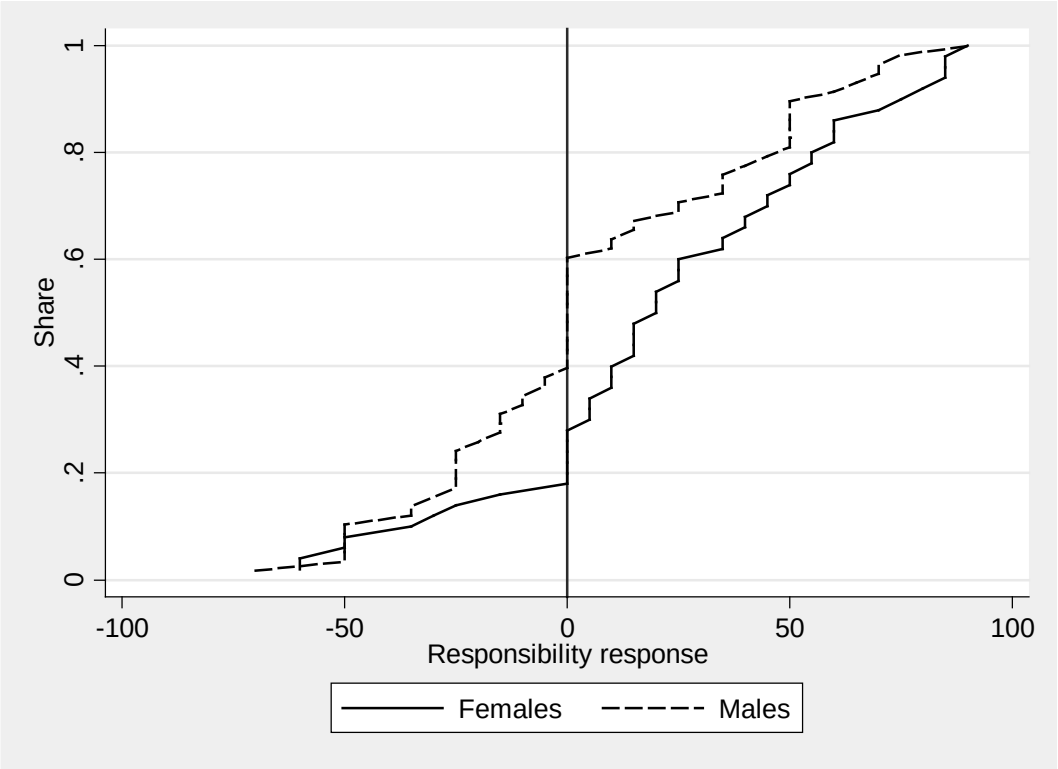

Figure 3 – Cumulative distribution of responsibility responses by gender.

Table 2 provides OLS regressions of contributions to the public good in percentage of the endowment, with standard errors clustered at the individual level. The regression equation of interest is

$$Y_i = \alpha + \beta_{GRT} D_{GRT} + \beta_P D_P + \beta_{GRTxP} D_{GRTxP} + \beta_F D_F + \beta_{FxGRT} D_{FxGRT} + \beta_{FxP} D_{FxP} + \beta_{GRTxPxF} D_{GRTxPxF} + (\beta_C D_C) + \varepsilon \quad (3)$$

Here, Y_i is the public good contribution of individual *i*, while the D's are dummies that indicate treatment: GRT refers to decisions made as a group representative, P refers to public sessions, F indicates female participants. Interaction terms have these acronyms separated with "x". In addition, there are dummies (here referred to by index C) that control for session and order in some of the regressions. The results for this specification are given in table 2.

VARIABLES	(1) Contribution	(2) Contribution	(3) Contribution	(4) Contribution
GRT dummy (responsibility effect)	**2.180**	**1.945**	**6.091**	**9.290**
	(5.230)	**(5.050)**	**(4.848)**	**(7.456)**
Public session (dummy)	15.24*	15.24*	6.104	6.649
	(8.208)	(8.234)	(9.773)	(11.68)
GRT/public session interaction				-5.671
				(9.794)
Female (dummy)	-8.364	-8.617	-9.177	-12.61
	(9.069)	(9.244)	(8.759)	(10.03)
Female/GRT interaction	**15.12***	**15.62***	**16.74****	**23.61****
	(7.925)	**(7.886)**	**(8.002)**	**(11.60)**
Female/public session interaction	-7.641	-7.644	-7.377	2.274
	(10.95)	(10.99)	(10.46)	(14.65)
Female/public session/GRT interaction				-19.13
				(15.63)
Controls for period within sessions		YES	YES	YES
Controls for sessions			YES	YES
Constant	53.49***	54.16***	63.60***	63.24***
	(7.171)	(7.653)	(7.979)	(8.731)
Observations	324	324	324	324
R-squared	0.060	0.074	0.120	0.132

Table 1 – Regression results. Clustering on the individual. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In order to ease the comparison between how men and women react to behaving as group representatives versus as individuals, the model presented in equation 3 can be reformulated to a model with gender-specific parameters:

$$Y_i = \sum_{s\in\{M,F\}} (\alpha^s + \beta^s_{GRT} D^s_{GRT} + \beta^s_P D^s_P + \beta^s_{GRTxP} D^s_{GRTxP}) + \beta_C D_C + \varepsilon \qquad (4)$$

Results from this model are presented in table 3. The models presented in equation (3) and (4) are equivalent. Whereas the model in equation (3) models the *deviation* of female choices from male choices (e.g. a constant term and a female dummy), the models in equation (4) have gender specific intercepts and coefficients. To find the female responsibility response in table 2, for instance, one must sum the responsibility response (=2.18) and the responsibility-female interaction term (=15.12), which

gives the female responsibility response of 17.3. This sum is identical to the directly expressed female responsibility response (17.3) in table 3.

In the following presentation of the results, the numerical coefficients from table 3 will be used for ease. Model 1 only includes the treatment dimensions, while Model 2 adds controls for order effects (choice 1, 2 or 3). Adding in controls for session (Model 3) shifts estimates somewhat, increasing the estimated size of male and female responsibility responses to 6.1% and 22.8% of the endowment respectively. Finally, allowing for gender-specific interactions between the two treatment dimensions, Model 4 finds an even more substantial responsibility response for women relative to men in the anonymous sessions (32.9% of the endowment relative to 9.3%) – and a strongly reduced responsibility response in public sessions (where the responsibility response is 8.1% for women and 3.6% of the endowment for men). This is in line with the impression given by Figure 2.

It is worth noting that the interaction effect between public/anonymous sessions and responsibility treatments somewhat complicates simple gender narratives proposed in earlier research. An experiment comparing public good contributions of a group leader playing in front of an in-group or an out-group audience found that men cooperated less in front of in-group members than in front of out-group members, while women showed the opposite pattern (Charness and Rustichini 2011). The researchers hypothesize that the differences are caused by a desire to give different signals to in-group members: Males wish to signal formidability, while females wish to signal cooperativeness. In our design, we can compare male and female responsibility responses in public and anonymous sessions. If the signaling-hypothesis is correct, it would predict that males *reduce* their responsibility response when their decision is observed while women *increase* theirs. Contrary to this, we found that leaders of both genders had a smaller leadership effect when sessions were public. The effect of public sessions on individual choices, on the other hand, was similar to that reported elsewhere: if we again use predicted values from Model 4, this model predicts that public individual contributions are higher by 6.65 percentage point of the endowment for men and by 8.9 percentage points for women.

While the two model formulations are equivalent, the models in table 3 do not tell us directly whether various differences between the genders are statistically significant. The models in table 2 do this: Since female responses are predicted as the male response *plus* additional coefficients, table 2 makes it easier to examine whether the differences between genders was statistically different from zero. If the interaction term between "female" and "responsibility" is statistically different from zero, for instance, this would mean that there is a statistically significant difference between the responses of men and women to responsibility.

The results from table 2 report no statistically significant gender difference in individual, anonymous decisions or in the audience effect, while the difference in responsibility responses was different at the 10% level in Models 1 and 2, and at the 5% level in Models 3 and 4. Finally, while the gender difference in the public/responsibility interaction term is large, it is imprecisely estimated and not significant at any conventional levels.

VARIABLES	(1) Percent	(2) Percent	(3) Percent	(4) Percent
Female responsibility response	17.30*** (5.954)	17.57*** (6.046)	22.83*** (5.914)	32.90*** (7.916)
Male responsibility response	2.180 (5.230)	1.945 (5.050)	6.091 (4.848)	9.290 (7.456)
Female audience effect	7.601 (7.252)	7.596 (7.279)	-1.273 (9.566)	8.923 (11.65)
Male audience effect	15.24* (8.208)	15.24* (8.234)	6.104 (9.773)	6.649 (11.68)
Audience/responsibility interaction – women				-24.80** (11.29)
Audience/responsibility interaction – men				-5.671 (9.794)
Controls for period within session		YES	YES	YES
Controls for session			YES	YES
Female intercept	45.13*** (5.552)	45.55*** (6.092)	54.42*** (7.259)	50.63*** (7.711)
Male intercept	53.49*** (7.171)	54.16*** (7.653)	63.60*** (7.979)	63.24*** (8.731)
Observations	324	324	324	324
R-squared	0.741	0.745	0.757	0.761

Table 2 - Regression results – transformed but equivalent model. Clustering on the individual. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

2.6 Robustness checks

2.6.1 Floor/ceiling effects

Since contributions were constrained to lie within 0 and 100, there might be floor or ceiling effects. Of the 324 decisions made, 49 (15%) were zero and 119 (37%) were 100. Also, since male contributions in the Individual Treatment (IT) are higher than female, this could leave men with less room to increase their contributions in the Group Representative Treatment (GRT), thus exaggerating the difference between the genders' responsibility response.

To examine this possibility we ran a Tobit regression with two-sided censoring (table 4). The results indicate that censoring has *dampened* the difference rather than exaggerated it: the female responsibility response is estimated to be equal to 63% of the endowment, nearly the double of the analogous estimate from Model 4 in table 3 that did not take censoring into account. While the point

estimate for male responsibility response is larger than before as well, it remains statistically insignificant under the null hypothesis of no effect.

VARIABLES	(1) Model
Female responsibility response	62.64*** (15.15)
Male responsibility response	22.76 (14.46)
Female audience response	12.81 (21.01)
Male audience response	14.61 (23.52)
Responsibility/audience interaction – females	-46.97** (22.07)
Responsibility/audience interaction – males	-18.38 (20.39)
Female intercept	56.10*** (12.79)
Male intercept	77.25*** (17.34)
Controls for period within session	YES
Controls for session	YES
Observations	324

Table 3: Two-sided tobit regression. 49 left-censored observations (contribution=0% of endowment), 156 uncensored observations, 119 right-censored observations (contributions=100% of endowment). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

2.6.2 Confounding from age or field of study

The female share varied across study fields (Table 1). If a student's field influences contributions and the magnitude of the responsibility effect, then this would bias the results.

Similarly, we might want to control for differences in age. While the average reported age was similar, there was a larger spread in ages for men: average (SD) age was 22 (3.6) for men, against an average of 21 (1.8) for women.

	Number of students	Female share
Math and sciences	61	38 %
Social science	16	63 %
Humanities	12	58 %
Education	6	33%
Law	4	100 %
Medicine	1	100 %
Theology	1	100 %
Other	7	29%

Table 4: Female share of subjects by field

To examine this, we ran three further regressions (table 6). Model 1 includes a dummy set containing faculty background, each of which was also interacted with the responsibility effect. Model 2 also added a dummy set capturing participant age, and interacted this with the responsibility effect. Finally, Model 3 retains these dummy sets while running the full model that allows for interactions between gender and both treatment dimensions, but using the subsample of students from the three most gender-equal faculties (Math and sciences, humanities and social science). While the magnitude and statistical significance of the female responsibility response changes with the specification, the female responsibility response remains above the male in all variants of the model.

VARIABLES	(1) Percent	(2) Percent	(3) Percent
Female responsibility response	17.52 (17.70)	26.79 (17.12)	39.53** (17.70)
Male responsibility response	2.717 (16.09)	5.923 (16.40)	13.33 (17.02)
Female audience response	-14.12 (9.187)	-16.80* (9.364)	-7.580 (10.93)
Male audience response	3.746 (10.63)	-0.611 (11.34)	1.098 (13.47)
Audience/responsibility interaction – men			-6.860 (10.15)
Audience/responsibility interaction – women			-21.89** (10.73)
Controls for period within sessions	YES	YES	YES
Controls for session	YES	YES	YES
Responsibility/academic department interaction	YES	YES	YES
Responsibility/age interaction		YES	YES
Female intercept	88.74*** (17.12)	83.04*** (18.43)	77.92*** (18.63)
Male intercept	88.62*** (17.07)	87.00*** (17.75)	84.50*** (18.15)
Observations	324	324	324
R-squared	0.786	0.800	0.802

Table 5: Regressions controlling for age and faculty interactions with leadership responsibility. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

3 Conclusion

We find that men and women alter their choices to different extents as group representatives rather than as individuals in a public good game. Women contribute more to the public good as group representatives than as individuals, while men's contribution levels are similar as individuals and group representatives. This result holds for a number of robustness checks.

Our results are in line with the related experimental findings that women are more sensitive to social cues than men (Croson and Gneezy 2009), and research reporting that women, relatively to men, are more pro-social as representatives (Charness and Rustichini 2011; Song, Cadsby, and Morris 2004). Research on negotiation, however, has reported that women perform better when negotiating on behalf

of groups rather than themselves, while men perform the same in both cases (Bowles et al 2005). There may thus be a number of gender specific effects.

Several experiments on group decision making (situations where group members make decisions together as a group) suggest that groups make decisions more in line with standard economic theory than individuals (Charness and Sutter 2012). The results from our experiment do not support this claim. To the contrary, in our experiment women shift their contribution decisions further away from that predicted by Homo Oeconomicus models, while men behave similarly as individuals and representatives.

According to Charness (2000) the responsibility-alleviation effect implies that "shifting responsibility for an outcome to an external authority dampens internal impulses towards honesty, loyalty, or generosity". This hypothesis is consistent with experimental evidence he presents: employees provide higher effort when a random device determines wage compared to when a neutral third party determines the wage. Interpreted as a responsibility-alleviation effect, the employee feels less responsibility for the outcome when some of the responsibility is shifted to a third party, causing him or her to reduce own efforts. The responsibility-alleviation effect has also found support in a gift-exchange game (Morgenstern 2004).

The flip-side coin of the argument in the responsibility-alleviation effect is that increasing the responsibility for an outcome will strengthen the internal impulses of honesty, loyalty and generosity. In our experiment, making decisions as group representatives as compared to as individuals can be regarded as increasing the responsibility for the outcome. But towards whom should the impulses of honesty, loyalty and generosity strengthen? If towards those the decision is made on behalf of, the responsibility-alleviation effect would predict lower levels of contributions, while if towards all people, it would predict an increase in contributions. The result from our experiment supports a responsibility-alleviation effect for women, not towards the people the decision is made on behalf of, but towards all the people that the decision affects in general.

Our results are consistent with common gender stereotypes that have been documented regarding leaders (see Dolan 2013 for references). People tend to assume that female leaders are more caring and compassionate than male, and more interested in "soft" issues such as health care, environment and weak groups (the poor, children). Male leaders, on the other hand, are assumed to be more competent and aggressive, and more interested in "hard" policy issues (economic issues, military, etc.). Empirical research on firm behavior finds patterns consistent with the underlying stereotypes of male and female leaders: Female leaders systematically prefer a more participatory and democratic leadership style (Eagly and Johnson 1990), and several studies find their presence in top-level positions to correlate with a stronger emphasis on the interests of employees, their families, the environment – in other words, stakeholders beyond the shareholders (Adams and Ferreira 2009; Terjesen, Sealy, and Singh 2009; Bart and McQueen 2013; Bloom, Kretschmer, and Van Reenen 2011).

The result from our experiment implies that decisions made as individuals and group representatives are not necessarily the same. This is important to have in mind when using insight from individual behavior (from experiments or otherwise) to inform about decisions made as group representatives. When selecting a candidate who will make decisions on behalf of others, one should keep in mind that individual behavior might not be identical to how that individual will behave as a group representative. Further, our results suggest that women might change their behavior more than men as representatives compared to as individuals. Individual behavior by women might therefore be less informative of how they will behave as representatives.

If confirmed, our results would also have methodological implications for studies of labour market discrimination. Gender specific effects of this kind could lead to statistical discrimination of individuals, particularly of individuals with limited experience (and performance history) in roles as group representatives, such as in leader roles: Even taking past individual choices and performance into account, predictions of performance as group representatives is improved by taking account of gender. If the female responsibility response effects are larger on average and more heterogeneous in their distribution than male responsibility response effects, then employers will tend to prefer the "safer bet" and hire men for leader positions. For those with an observable history of leadership performance, however, gender holds less informational value for predicting future performance and has smaller effects on progression. Such *effect differences* between men and women imply that information on gender may be used to improve predictions of future performance when information on individual leadership performance is limited.

4 Acknowledgements

This project was funded by the Research Council of Norway, grant number 193703. Thanks to Ragnhild Haugli Bråten, Åshild Auglænd Johnsen and Hans Olav Melberg for valuable comments on earlier drafts; and to Ragnhild Haugli Bråten and Espen Stokkereit for research assistance.

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