Constructing Gender in the Economics Lab

Anne Boschini[♥], Astri Muren[♣] and Mats Persson[♠]

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Abstract

Several experimental studies on altruism have found women to be more generous than men. We investigate whether observed gender gaps in generosity can be explained by experimental setting, where some settings are more conducive than others to activating gender identity and social norms. In a dictator game we study priming along two dimensions: 1) some subjects enter their gender on the first page of the questionnaire (*Pre*) while others enter their gender on the last page (*Post*) and 2) some subjects are seated in single-sex rooms (*Homogeneous*) while others are seated in gender-mixed rooms (*Mixed*). It turns out that gender differences occur (women are more generous than men) only for the combination *Pre* and *Mixed*. The effect is driven by males: men are sensitive to priming, while women are not.

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[♥] Department of Economics, Stockholm University, S-106 91 Stockholm, Sweden; ab@ne.su.se.
[♣] Department of Economics, Stockholm University, S-106 91 Stockholm, Sweden; acm@ne.su.se.
[♠] Institute for International Economic Studies, Stockholm University, S-106 91 Stockholm, Sweden; mp@iies.su.se.

1. Introduction

There is a notion, originating with French philosopher Simone de Beauvoir, that the difference between men and women is only a social construct. Be that as it may; we all agree that there are stereotypes: women are expected to behave differently than men in certain situations. Such stereotypes can be powerful. They may even affect our own behavior so as to make us conform to social expectations. Behavioral differences between men and women have been observed in a number of economic experiments.[1] In this paper, we suggest that at least some of these gender differences are the result of the experimental context. As our vehicle of investigation we have used the dictator game, which is a game that involves altruistic behavior. There are clear gender stereotypes that might guide such behavior: people expect men to be relatively more egoistic and women more generous. Our aim is to study whether, and to what extent, gender differences in dictator-game behavior can be attributed to the experimental setting.

We know from social psychology that the design of an experiment affects the way subjects think of themselves, and may induce subjects to behave according to stereotypes by, for instance, the use of priming.[2] In a famous study, Steele and Aronson (1995) showed that self-perceived expectations affected subjects' academic performance: if they were *not* reminded of their race, black and white students performed equally well in a math test, whereas if they *were* reminded, blacks performed significantly worse than whites.[3] According to the theory of self-categorization within social psychology, this particular type of priming

[1] See Eckel and Grossman (2008b) and Croson and Gneezy (2009) for recent overviews of the experimental literature on gender-specific behavior.

[2] Priming means that certain associations are activated in the mind just before a task is to be undertaken, It can, be achieved, for example, by letting subjects complete sentences with words related to ageing and consequently observing their walking speed (Bargh *et al.,* 1996), looking at photos of black and white people and thereafter asking them to indicate whether adjectives are "good" or "bad" (Fazio *et al.*, 1995) or even by subliminal methods (Strahan *et al.*, 2002).

[3] Similar effects of priming concern women and math performance; see, for instance, Brown and Josephs (1999), Spencer *et al.* (1999) and McGlone and Aronson (2006).

activates a "social identity" which regulates behavior.[4] The activation of a social identity can be seen as the self-imposed internalization of a social norm – a process called self-stereotyping. In this sphere, different social identities can co-exist. Self-categorization theory also suggests that gender priming may interact with other aspects of context. Guimond *et al.* (2006) find that stereotypes lead to behavioral differences in social contexts where subjects see themselves as part of a group, rather than as individuals. Such dependency on context implies that the self-induced gender differences are unstable and can be manipulated experimentally.

In economics, the effects of identity have aroused increasing interest. Akerlof and Kranton (2000) introduced identity in an economic model of behavior where identity or self-image enters into the utility function.[5] Here, individual utility is affected by the degree of adherence to a social norm, and behaving according to the norm strengthens an individual's identity. We use this theoretical framework to structure our experiment and, specifically we examine gender social norms in connection with generous or altruistic behavior.

In the experimental economics literature, the role of *priming* has not been studied systematically.[6] Gender priming means gently reminding the subjects of their gender before playing, e.g., a dictator game. Our point of departure is that gender priming may entice men and women to act in accordance with some perceived norms of behavior, even if there are no inherent differences between men and women in this context. Such gender stereotypes are expectations or beliefs about differences in character traits between men and women and are

[4] Some key references in social identity theory and self-categorization theory are Tajfel and Turner (1979), Turner (1982), Hogg and Abrams (1988) and Turner and Onorato (1999). For an overview of the concept of "identity" in the social psychology literature, see the textbook by Hogg and Vaughan (2008, chapters 4 and 11).
[5] See also Akerlof and Kranton (2005, 2008), Antecol and Cobb-Clark (2008), and Ben-Ner *et al*. (2008).
[6] There is, however, a growing number of new studies, such as Ahmed (2008) on religious priming, Rigdon *et al.* (2008) on priming involving a picture with "watching eyes", Eckel *et al*. (2007) on priming in the wake of Hurricane Katrina; and Benjamin *et al* (2008); see also Gilad and Kliger (2008), Meier-Pesti and Penz (2008) on priming and risk preferences.

well known in the social psychology literature: women are expected to be docile and generous, while men are expected to be confident and self-assertive (see Bakan, 1966, Williams and Best, 1982, and Myers, 2008). Expectations consistent with these gender norms have also been identified in dictator experiments (see Aguiar *et al*., 2009, and Eckel and Grossman, 2002).

Since Kahneman *et al*. (1986) and Forsythe *et al*. (1994), the dictator game has been a standard tool in experimental economics. While many researchers have claimed that behavior in laboratory experiments with the dictator game could be used to draw general conclusions about prosocial behavior, this view has recently been challenged by, for instance, List (2007) and Levitt and List (2007). One aspect of this criticism of the external validity of lab experiments is that "context matters" and that the way the experiment tasks are presented, combined with the personal expectations and references that subjects bring into the experiment, may affect behavior. For instance, subjects who play the dictator game may part with money to some extent because they feel that they are expected to so do in a particular experimental context.[7] Our experiment explores the importance of context in some detail for the case of gender-specific expectations of egoism and generosity.

Among the large number of dictator-game studies, several have dealt with gender differences. The results are ambiguous, however. Bolton and Katok (1995) found no gender effects in the dictator game. But Eckel and Grossman (1998) found that women donate twice as much as men. This result conforms to the conventional wisdom that women are more generous than men. In terms of experimental setting, it may be noted that Eckel and Grossman (1998) seated their subjects in single-sex rooms. Andreoni and Vesterlund (2001) studied dictator games with different prices of giving. They found no gender differences when

[7] Similar conclusions, i.e. that prosocial behavior may partly be the result of social norms in a particular context, are reached by Bardsley (2008), Dana *et al.* (2006), and Koch and Normann (2008).

the price of giving was unity, but did find gender differences at other prices. A few other studies have found gender differences under different experimental settings, while others have found no significant differences; for an overview of the literature, see Table 1. None of the previous studies on gender effects in the dictator game considered priming.

(Table 1)

In the experiment reported in this paper, we primed some of the participants in the sense of gently reminding them of their gender before they played the game (the priming condition). Our hypothesis, based on self-categorization theory, is that such priming only activates the gender identity of those subjects who are seated with individuals of the other sex (the mixed-gender condition) but not for those subjects that are seated in single-sex rooms. It turned out that sizeable gender differences appeared when primed subjects were seated together in gender-mixed rooms. In this setting, men were significantly and considerably less generous than women. Gender effects were less pronounced in single-sex settings, with one exception: men turned out to be more generous than women when the price of donations was low. When we compared behavior under different treatments, we found that the men changed their behavior depending on the combination of priming and seating conditions, while women turned out to be quite insensitive to types of treatment.

Below, we begin by presenting our theoretical predictions and the experiment. We then report on our results on gender difference effects (on average and distribution-wise) in each of the priming configurations for the case when the price of giving was equal to one. Next, we investigate what happened when the price of transferring money was allowed to vary. We then look at subjects' expectations about the recipient, and examine treatment effects for men

and women. A penultimate section discusses how our findings relate to observer gender differences in the experimental literature (mainly in risk aversion), followed by a conclusion.

2. Theory and predictions

We adapt the utility function proposed by Akerlof and Kranton (2000) to a dictator-game decision and formulate the following utility function:

$$U_j = u_j(\pi_j, \pi_{-j}, I_j).$$

Individual utility depends on the own payoff π_j, and the amount given to the other player(s) π_{-j}. The term I_j is "identity deviation", i.e., the extent to which the individual deviates from what she perceives as expected of her. We postulate that u_j is increasing in the first two arguments, and decreasing in the third. Identity deviation is given by

$$I_j = s \cdot \left| G_{gender(j)} - \pi_{-j} \right|,$$

where $G_{gender(j)}$ is what individual *j* perceives as the norm associated with her gender identity. For instance, if *j* is a woman, $G_{gender(j)} = G_{female}$ and might take the form "act generously" – while for a man, $G_{gender(j)} = G_{male}$ might take the form "act egoistically". A deviation from the norm will then affect the individual's utility U_j negatively. We assume a norm sensitivity, s, which is zero if the norm is not activated and unity if it is. The gender norm $G_{gender(j)}$ prescribes the amount to be given to the other, and non-adherence imposes a loss if and only if the norm is activated. The norm is gender-specific and smaller for men than for women:

$G_{male} < G_{female}$. For men, minimizing loss of identity implies donating a smaller amount to the recipient, compared with women's loss-minimizing behavior. The magnitude of the individual's reaction to norm activation depends on the utility function u_j, i.e., different individuals can be affected differently which, in turn, would cause variation in how much individuals adapt their behavior. In summary, gender enters utility indirectly through the gender norm *only* when the sense of gender identity is triggered.

The question now is under which circumstances the gender identity is activated. We propose that two conditions need to be satisfied for this to occur: subjects have to be reminded of their gender (the priming condition) *and* subjects have to be in the presence of individuals of the other sex (the gender-mixed group condition). We now turn to the implementation of these conditions in the experiment.

Our priming condition concerns the formulation of experiment instructions. Some subjects were asked to enter their gender on the first page of the questionnaire in which they record their decisions in the experiment, i.e., before playing the dictator game. This group is labeled *Pre*. Others were asked to enter their gender on the last page of the questionnaire, i.e., after playing the dictator game. This group is labeled *Post*. The purpose of the *Pre* treatment is to remind subjects of their gender and thereby indirectly of the gender norm, which is easily interpreted in a dictator game: men should be egoistic and women generous.

Our gender-mixed group condition concerns the gender composition in the room where the experiment takes place. The subjects were seated either in single-sex rooms (*Homogeneous*), or in gender-mixed rooms (*Mixed*). It might be argued that people become more aware of their own sex when seated in a room with many attractive representatives of the opposite sex. This, in fact, is what follows from self-categorization theory – see, for

example, Onorato and Turner (2004) who find that gender norms prevail less strongly in a single-sex environment.[8]

Our experimental set-up combines the priming condition in the experimental instructions (*Post* vs. *Pre*), with the gender-mixed group condition (*Mixed* vs. *Homogeneous*), to achieve four configurations of gender priming: *Mixed Post*, *Mixed Pre*, *Homogeneous Post* and *Homogeneous Pre*. We are now ready to formulate our expected empirical observations with respect to our different treatments:

Proposition 1: We expect to find larger gender differences in generosity when the *Pre* and *Mixed* treatments are combined. In the *Mixed Pre* treatment, women donate more than men.

Our hypotheses about gender differences in the four treatments are summarized in Table 2, where we have sharpened the hypothesis from Proposition 1 to say that we not only expect weaker gender differences in the *Homogoenous* treatment, but even zero differences.

(Table 2)

3. The experiment

Four consecutive classes of law students at Stockholm University played the dictator game in 2007, 2008 and 2009.[9] The experiments were introduced straightforwardly during a lecture on

[8] Alternatively it might be hypothesized that subjects are more primed – i.e., more aware of their own gender – when they are seated in a room with others of the same gender. According to social psychology, however, the Eckel and Grossman (1998) arrangement with men and women in different rooms is less likely to activate gender norms. As noted above, Eckel and Grossman found women to be significantly more generous than men.

[9] During the experiment, which lasted for one half-hour, the students played three prisoner's dilemma games and three dictator games. In the present paper we deal only with the latter.

negotiations and game theory. The students had not been introduced to concepts such as optimal strategies, Nash equilibrium, etc. prior to the experiment.

In all of these dictator games, each subject was told that she had 500 Swedish crowns (approximately 65 US dollars) at her disposal and that she could anonymously donate part of this amount to an anonymous, randomly chosen fellow student in the class, and keep the rest for herself. According to the mainstream economics notion of a rational "economic man", all participants would keep the whole amount and donate nothing. Dictator-game subjects in general do not keep everything for themselves – in fact, a majority of subjects give something and, on average, about 20 percent is given away (see Camerer, 2003, chapter 2).

It was made clear to all participants that they were anonymous. Subjects were identifiable to the experimenters only by a lottery number, and dictators and recipients were anonymous vis-à-vis one another. Subjects were seated spaciously in the lecture halls, so nobody could see what the neighbors chose to answer. The stakes were real, but for practical reasons only 20 percent of the subjects actually received what they had gained. Those winners were drawn randomly. The maximum gain was 1000 Swedish crowns (USD 130) and the average payment for the 20 percent who were actually paid was 318 Swedish crowns (USD 42). Since real money was involved, the Swedish tax authorities had to know the identities of those who were actually paid; payment of the money to each winner was handled by an administrator who was otherwise not involved in the experiment.

As in most experiments of this type, we used students at our own university as subjects. Thus, our results are subject to the reservation that students are not necessarily representative of the country's population as a whole. Even among students there is a selection problem, since those who actively volunteer to participate are not necessarily representative of the student body as a whole. We were able to avoid the latter problem by performing the

experiment as part of a law school program. Although the students were told that participation was voluntary, the experiment formed a natural part of the required economics course they were taking. In fact, only a handful declined to participate.

The actual experiment was carried out in the following way. Each subject received a questionnaire with a page stating the general conditions of the game ("you are given 500 crowns and may give away part of this amount to an anonymous, randomly chosen fellow student in the class") and showing eleven alternative donations (0, 50, 100, 150, …, 450, 500). The subject was asked to choose one of these donations. On the next page the question was then repeated but any amount transferred was divided by two before it reached the recipient, i.e., the price of giving was equal to two. On a third page the question was again repeated but the price of giving was one-half, i.e., amounts donated were doubled. After having answered the questions about donations, subjects in the *Post* group were asked to turn the page and answer three supplementary questions: age, gender and the number of terms studied at university. For the *Pre* group, however, the question about gender was on the first page and only the questions about age and the number of terms studied was on the last page.[10]

The allocations of subjects over the four configurations (*Mixed Post*, *Mixed Pre*, *Homogeneous Post* and *Homogeneous Pre*) are shown in Table 3.

Table 3.

4. Main findings

In Appendix 1, we provide the raw data of the experiment for each of the three prices of giving (i.e., $p = 1$, $p = 2$, and $p = ½$). Here, we present an analysis of the raw data for the case

[10] A translation of the instructions may be found in Appendix 2.

where the price of giving is equal to one, i.e., the recipient gets exactly the amount given to her by the dictator. In all presentations of the results, the maximum donation has been normalized to 100; this also means that results can be interpreted as donations in percent of the maximum donation.[11] The discussion of our main findings starts with the question of whether there is a gender difference in central moments (means and medians), and proceeds to consider gender differences in the general distributions. It ends by examining how priming affects the prevalence of male and female egoists and egalitarians.

4.1 Gender differences by means and medians

Table 4 reports the means and medians of the amount given (in percent of 500 Swedish crowns) by men and women, respectively, in each of the four treatment groups. The table also shows the results of *t* tests and Wilcoxon-Mann-Whitney (WMW) tests for gender effects within each treatment group (in the right-hand column).[12]

Table 4.

In the *Mixed Post* treatment men are more generous than women, which is in contrast with the gender stereotype as well as with the most commonly reported gender difference. The difference is not statistically significant under a two-sided *t* test or WMW test. However, if we consider the one-sided hypothesis that women are *more* generous than men, this can be rejected at the ten percent level (the *P* value = 0.0532 in the *t* test and 0.0862 in the WMW

[11] This was done by dividing all donations by five.
[12] The *t* test is the standard parametric test which compares the means of two random samples from a normal distribution, while the Wilcoxon-Mann-Whitney uses ranks to test the hypothesis that the two samples are drawn from the same distribution without making assumptions about the form of that distribution. The WMW test is commonly used as a medians test, although this is strictly true only if the variances of the distributions from which the samples are taken are the same (see Siegel and Castellan, 1988, pp. 128-137). The alternative median test is less powerful than the WMW test (see Freidlin and Gastwirth, 2000).

test). In the *Mixed Pre* treatment the situation is reversed and women give almost twice as much as men do. This difference between men and women is strongly significant.[13] In the *Homogeneous Post* and *Homogeneous Pre* treatments there are no gender differences in donations.

Thus, we find strong support for our Proposition 1 when analyzing the first moment of the distribution.

4.2 Gender differences by distributions

The above discussion of data from the four treatments focused on differences in central tendency. More information about subject behavior can be gained from looking at distributions. Figure 1 shows histograms over the donations (in percent of 500) in each of the four treatments. The distributions of donations in Figure 1 are clearly bimodal in all four treatments. There seem to be two major personality types in our data: those who give nothing (egoists) and those who give away half (egalitarians). In all four treatments a majority of the subjects belong to either of these categories.[14] This is much in line with the findings in Andreoni and Miller (2002), who identify about 75 percent of their subjects in a dictator game as either selfish or having Leontief preferences. A glance at Figure 1 is enough to detect that there are only minor differences across panels a, c and d, while panel b (*Mixed Pre*) looks different. While in the other three panels there are roughly as many egoists as egalitarians among both men and women, when men are primed in a gender-mixed seating almost 60 percent become egoists and only 10 percent egalitarians.

[13] Tests are two-sided unless otherwise noted.
[14] In *Mixed Post* this is true for 73 percent of the men and 64 percent of the women, in *Mixed Pre* for 70 percent of the men and 72 percent of the women, in *Homogeneous Post* for 77 percent of the men and 68 percent of the women, and in *Homogeneous Pre* for 76 percent of the men and 73 percent of the women.

Figure 1.

Again, this appears to be consistent with Proposition 1, but requires formal testing. To check this we compare the distributions using the Kolmogorov-Smirnov test and the Epps-Singleton test.[15] Table 5 shows the *P* values in tests for gender effects. The tests point in the same direction as our previous results, namely that a gender difference arises in *Mixed Pre*. The Epps-Singleton test also detects a gender difference in *Mixed Post*, where women donate on average less than men (see Table 4).

Table 5.

As one might expect, Figure 1 indicates that within a gender, all individuals are not similar. The categories we call "men" and "women" may actually consist of several groups/types with different personality traits. What we perceive as "gender differences" could then simply be different proportions of these personality traits within each gender. Since such a large proportion of the subjects act as either egoists or egalitarians, we might expect our results on gender differences to be evident also if we study only egoists and egalitarians.

4.3 Gender differences by egoists and egalitarians

We now define two personalities as follows. An "egoist" gives away zero; an "egalitarian" gives away half the money. The proportions of egoists and egalitarians among men and women in each of the treatments are shown in Table 6, along with *P* values for tests for

[15] The Kolmogorov-Smirnov test is sensitive to differences in location and skewness, as well as central tendency. It is a non-parametric test based on the largest of the observed deviations between the cumulative distribution functions for the two samples (see Siegel and Castellan, 1988, pp. 144-151). The Epps-Singleton test is based on the empirical characteristic function (see Epps, 1993). Forsythe *et al.* (1994) found this test more powerful than the Kolmogorov-Smirnov test in simulations based on dictator and ultimatum games.

gender effects.[16] These results are in accordance with our hypotheses. In *Mixed Post* there is no gender difference in the proportion of egoists or egalitarians, while in *Mixed Pre* there is a significant gender difference: a larger proportion of men are egoists and a larger proportion of women are egalitarians. In *Homogeneous Post* and in *Homogeneous Pre* there are no gender differences in the proportions of egoists or egalitarians.

Table 6.

The tendency for a large proportion of subjects to choose either the egoistic ("keep all") or the egalitarian ("fair split") behavior is very general in dictator games. Of these, it is egalitarian behavior that seems the more puzzling. In a recent paper, Andreoni and Bernheim (2009) investigate egalitarian behavior and explain the fact that it is so common in these games as the result of a desire to be perceived as fair by others, even among subjects who do not have strong preferences for fairness *per se*. In terms of our theoretical framework with identity and gender norm adherence, a parallel effect could be that people like to perceive *themselves* as fair, and that the gender norm, when it is activated, introduces a gender difference in this respect.

5. Prices and gender effects

So far we have analyzed the economic decisions of men and women when the price of giving has been unity, that is, the recipient gets exactly the amount given by the donator. Other studies, however, have found that the price of altruism matters for how much people give; see, for instance, Andreoni and Miller (2002) and Fisman *et al.* (2005). In particular, Andreoni and

[16] We use a two-sided test for equality of proportions (the *prtest* in Stata).

Vesterlund (2001) show that men and women react differently to prices: while men tend to be more altruistic than women when it is cheap to give, women tend to be more altruistic than men when it is expensive to give. However, Andreoni and Vesterlund (2001) do not address the possibility of context effects.

5.1 Prices and gender effects by means and medians

Self-categorization theory (as described in the Introduction) implies that we should expect gender differences in altruism to be strongest in the *Mixed Pre*-treatment, but says nothing about price effects. A priori, it is not possible to know whether the price effect or the treatment effect will dominate. Table 7 states the expected effects according to the two different strands of literature. As in Table 2, we have exaggerated the importance of treatments by hypothesizing that the gender effects exist when the two strands of literature say they are strong, and that the effects are zero when the literature says they are weaker.

Table 7.

Interestingly enough, there is only one case, namely in *Mixed Pre* with the price of giving equal to one-half (cell B1), where self-categorization theory (SCT) and Andreoni and Vesterlund (2001) yield opposite predictions. In the remaining cases they have either the same predictions (as in A2, B3, C2 and D2) or one strand of literature predicts gender inequalities in altruism while the other does not.

The raw data for different prices are given in Appendix 1. Let us now see whether there are any gender differences in means and medians when the price is equal to ½ and 2, respectively. In Table 8 we report the gender effects for each treatment The picture is somewhat different from what we found in the case when the price of giving is equal to one –

see Table 4. When it is inexpensive to give (p = ½) we find just one gender effect: men are more generous than women in the *Homogeneous Pre*-treatment. When it is expensive to give (p = 2), women are significantly more generous than men in the *Mixed Pre*-treatment (and also in the *Homogeneous Post* according to the WMW test). When p = ½ we also note that although there is a statistically significant gender difference only in *Homogeneous Pre*, men are more generous than women in three out of four treatments (we return to this below).

Table 8.

We summarize our findings from Tables 4 and 8 in Table 9, where we also state the existing hypotheses (understood as the unweighted sum of predictions from Andreoni and Vesterlund, 2001, and self-categorization theory). Our results are to a surprising extent in line with the hypothesized implications. This suggests that it is not sufficient to consider only the price or the treatment dimension when attempting to understand gender differences in altruism. In particular, taking only the price dimension into account would have made it difficult to understand the absence of gender differences in B1 (i.e., when it is inexpensive to give in *Mixed Pre*), and it would have been equally difficult to rationalize the presence of a significant gender difference in B2 (when p = 1). On the other hand, considering only SCT predictions would not have explained why we find the tendency of men to be more altruistic when it is cheap to give, while they give less than women when it is expensive to be altruistic.

Table 9.

5.2. Summing up the effects of gender and prices

According to our results above on gender differences in the four treatments price by price, it is clear that gender differences vary with price. The next step is to analyze the impacts of gender and price jointly, so as to separate any systematic effects. Table 10 reports the results of five regressions where the dependent variable is the (percentage) amount donated (regressions (*i*), (*ii*) and (*iii*)), the proportion of egoists (*iv*), and egalitarians (*v*), respectively.

Table 10.

As expected, gender in itself does not explain the amount given, nor do any of the treatments. But the interaction of being a man in a mixed-gender seating and having indicated one's gender before playing the game (*Mixed Pre * Men*) is strongly significant, and implies that men give significantly less (14 percentage points less) than women in the same treatment. We see that a low price of altruism increases donations, and even more so for men, which is in line with Andreoni and Vesterlund (2001). This is also clear from Table 8, i.e., men are particularly generous when the price of giving is low. A high price reduces average donations, but in this instance the gender effect is not significant.

We conclude that the gender effects that are evident when the price of giving is equal to one are robust when we control for the price of giving. Thus a stable gender difference is found in *Mixed Pre* but not in the other treatments. In *Mixed Pre* men are more egoistic than women as expected from Proposition 1.

6. Subject expectations and gender

We now investigate some potentially confounding factors regarding subjects' beliefs about the gender of the recipient. We also consider whether the stereotypes about male and female behavior are explicitly shared by our subjects. To do this we formulated an additional treatment: subjects in some of the *Homogeneous Post* sessions were informed that the recipient of their donation would be a randomly chosen and anonymous person in the same room, instead of someone in the full group of students as in the standard formulation. We also asked a subset of the subjects some questions about whether they would prefer a man or a woman as recipient (if they were dictators), and whether they would prefer a man or a woman as dictator (if they were recipients).

6.1 Recipient effects

In our experiment, the recipient of the dictator's choice has – independently of treatment – explicitly been a randomly selected fellow student attending the same course; see Appendix 2. Even so, it is conceivable that subjects seated with persons of the same sex (in the *Homogeneous* condition) might expect the recipient to be in the same room, i.e., that he or she is of the same sex. To control for this possibility we let 57 subjects in the *Homogeneous Post*-treatment explicitly have a same-sex recipient seated in their room. Table 11 compares the amounts given by subjects with a same-sex recipient as opposed to those having a recipient of random sex.

Table 11.

There are no significant differences in donations either between genders or within each gender with respect to different types of recipients. The absence of a recipient effect is in contrast to some previous studies where both men and women were found to be more generous towards women – see Dufwenberg and Muren (2006), Saad and Gill (2001) and Eckel and Grossman (2001). This suggests that the gender of the recipient does not matter in our particular context. (Alternatively, it might be that our dictators in the *Homogeneous* condition always feel, although incorrectly, that their recipient is of their own sex.)

The irrelevance of the recipient's gender may well reflect a more general gender neutrality in preferences over the recipient. This is supported by the observation that when asked to indicate their preference over the gender of the recipient in an additional question, approximately 70 percent of the subjects indicated that they were indifferent regarding the sex of the recipient, independently of type of treatment – see Table 12.[17] Our analysis of recipient effects thus does not suggest that subject expectations about or preferences over the gender of the recipient would be a confounding factor behind our results.

Table 12.

6.2 Dictator gender and expectations

A reason for choosing the dictator game to study gender priming is that the correspondence between choices in the game and well-documented stereotypes about male = competitive/egoistic, and female = kind/other-regarding seems very clear. A study by Aguiar *et al*. (2009) confirms this; their subjects expect female dictators to be more generous than

[17] There appears to be a tendency for generosity towards women to increase in the *Pre* treatment; but the difference is not significant.

male ones. We asked 132 subjects about their preference for the gender of the dictator. The results are presented in Table 13.

Table 13.

A majority of the subjects express indifference about the dictator's gender, but most of those who do indicate a preference prefer a woman as dictator. When only considering those who express a preference over the gender of the dictator, men tend to choose male dictators to a much larger extent than women. This mimics the result in Aguiar *et al.* (2009) that 48.4 percent of the men chose to be the recipients of a male dictator against only 26.3 percent of the women. (Note that Aguiar *et al.*, 2009, do not allow for the possibility of respondents' indifference about the sex of the dictator.)

7. Decomposition by gender and treatment

So far we have reported results on differences in generosity between male and female subjects in the four treatments. Our main result is that there is a gender difference in the *Mixed Pre* treatment – and that there, men are more egoistic than women. We now ask how this gender difference might emerge. We approach the question by running regressions on treatment effects for men and women. In doing so, we consider separately the priming condition (*Pre* as compared to *Post*) and the gender-mixed group condition (*Homogeneous* as compared to *Mixed*). The test results are shown in Table 14.

Table 14.

Columns (*i*) and (*iv*) show significant differences between treatments only for men, and only for the *Mixed Pre* treatment. This treatment makes men less generous and reduces the average male donation by almost half (see also Table 3). The other treatments do not have significant effects on donations.

Columns (*ii*) and (*iii*) show the effects of the *Homogeneous* seating condition and the priming condition *Pre* on male donations, one at a time and without considering the four treatment categories. It turns out that, when taken on its own, *Homogeneous* has a significant positive effect on donations, while *Pre* when taken on its own has a significant negative effect. This suggests a slightly different interpretation of our results: priming may activate the gender norm of male egoism in both the *Homogeneous* and *Mixed* seating conditions, but is counteracted by *Homogeneous*, which indicates that men are more generous in a completely male environment. At this point we can only speculate about the origin of this effect. Could it reflect a situation where men completely relax and free themselves from social expectations in a setting where they are reminded of being men among men? They would then become more generous when liberating themselves from residual social norms.[18] Another interpretation could be that there is some confusion as to who is the recipient. Despite clear instructions, people in same-sexed rooms may have been convinced that the recipient is in the room, and thus of their own sex. In fact, some recent articles note an asymmetry between genders with respect to "in-group love".[19] Men are found to be more generous towards group-members

[18] The observation that men tend to become more generous than women in single-sex settings is not new; Rapoport and Chammah (1965) have already found this pattern in prisoner's dilemma games. Likewise, Brown-Kruse and Hummels (1993) find that men contribute more than women in single-sex groups in a public good provision game, although this result was later questioned by Nowell and Tinkler (1994).

[19] See, for example, Yamagishi and Mifune (2009) and Halevy, Bornstein and Sagiv (2008) who examine "in-group love" in relation to "out-group hate" and competition among groups.

than women, which in our case could be translated into men becoming more altruistic when reminded that they are actually in such a setting.

Table 14 also shows that women give similar amounts in all treatments, thereby implying that being reminded of their sex does not seem to affect women's egoism or altruism. The gender difference in *Mixed Pre* is caused by men changing their behavior due to gender priming. Thus our results suggest that men are more sensitive to priming than women. Some other papers also point in this direction: Meier (2006) studies how information about the behavior of others affects voluntary contributions, and finds that men react more strongly to such information than women do; Rigdon *et al*. (2008) show men to be more responsive than women to social cues; and Croson *et al*. (2008) study charitable giving in both the field and the lab, and find that only men react to temporarily created social norms. The overview of experimental gender differences by Croson and Gneezy (2009), however, argues that women are more sensitive than men to variations in context. Our (and others') observation that men but not women are sensitive to priming suggests that Simone de Beauvoir's notion of the female gender as the constructed one should be revised. While she claimed that "One is not born a woman, but becomes one", our data rather suggests that "One is not born a man, but becomes one". More research is needed to shed light on this issue.

8. Gender in experiments

Our experiment shows that gender identity can be activated quite easily, and that it leads to gender-stereotypical behavior in a dictator game. Our work thus adds to the literature on gender differences in altruism. However, experimental data based on the decisions of men and

women are used to address many issues besides altruism, and our results therefore also have implications for experimental methodology.

In most experimental studies, the aim is not to study gender social identity and its effects, but rather how (non-primed) individuals act and react in a specific experimental decision situation. Our research suggests that when designing experiments, we may have to pay explicit attention to how gender should be handled, in order to avoid the activation of gender social identity. Otherwise, when we aim at analyzing deep gender differences in experiments, we may be capturing behavior emanating from a gender social identity, rather than the "true" behavior of an individual man or woman.

Our results question the existence of deep gender differences in pro-social behavior and preferences – at least as far as these are reflected in the dictator game. A vast literature in experimental economics has investigated and sometimes identified gender differences in other kinds of behavior. One might question whether, and to what extent, these observed gender differences are the result of unintended activation of gender social norms by the experimenter, or the result of actual deep gender differences? We chose to study generosity because the gender norms seem particularly clear there, and we found that gender norms explain gender differences in generous behavior in dictator games. This makes us suspect that there may be particular reason to be cautious about observed gender differences which coincide with strong stereotypes of male and female behavior. Generosity is one such area, and decision-making under risk may be another.

There appears to be a gender social norm regarding risk aversion, where women are believed by both men and women to be more risk averse than men; see Eckel and Grossman (2002). Indeed, common gender stereotypes, i.e., that women are expected to be docile and generous, while men are expected to be confident and self-assertive, also have implications

for risk preferences in the sense of docile = careful/risk-avoiding and confident = brave/risk-taking. If, in experiments or surveys, the gender-social norm is activated by priming or in other ways, then that might induce women to make more risk-averse decisions, and men less so.

There are a number of studies on gender differences in risk aversion. In a recent survey of the existing experimental literature, Croson and Gneezy (2009, p. 7), state in their conclusion about risk preferences that "[a] large literature documents gender differences in risk taking: women are more risk averse than men". However, in light of our findings and combined with other observations, it is possible to question this conclusion. First, as pointed out by Eckel and Grossman (2008a), it is not the case that women are always found to be more risk averse than men. For instance, when risk is framed as a potential loss, men tend to be more risk averse; see Schubert *et al.* (1999) and Moore and Eckel (2003). Moreover, many studies do not find statistically significant gender differences, as reported in Eckel and Grossman (2008, Table 1). Second, observed gender differences that conform to the gender norm may, at least to some extent, be due to unintentional gender priming. Benjamin *et al.* (2008) find that subjects modify their risk-taking behavior in experiments when they are primed. In their data, subjects adhere to their perception of the gender social norm with regard to risk-taking only when reminded of their sex. Survey data can also suffer from priming. For example, one of the surveys used in Hartog *et al.* (2002) starts by asking the subjects to indicate whether they are men or women.[20] As we have shown in this paper, this question alone can be enough to activate gender-typical behavior.

[20] The BPD Newspaper survey used by Hartog *et al*. (2002) begin by asking the respondents about their gender. The survey and data are available from DANS (the national organization responsible for storing and providing permanent access to research data from the Humanities and Social Sciences in the Netherlands) at http://www.dans.knaw.nl/en/ .

Other aspects of an experiment or survey than the formulation of questionnaires may matter. As suggested by our results, and as predicted by self-categorization theory, the homogeneous (single-sex) environment might in some sense prevent the activation of gender norms, which would make it preferable to mix subjects. This might explain the patterns of gender differences found in the prisoner's dilemma games in Ortmann and Tichy (1999). In a repeated prisoner's dilemma game, they find significant gender differences when the subjects are seated in a mixed environment, while the gender differences disappear in a gender homogeneous setting. The authors interpret this as a "subject pool effect", also discussed in Davis and Holt (1993, ch. 6 and 7) and Ball and Cech (1996). A more precise explanation could be that involuntary activation of a gender social norm of cooperation in the gender-mixed setting produces a gender gap in cooperation rates. In the gender-homogeneous treatment, this activation does not occur since there is no one to be compared with from the other sex. Similarly, Booth and Nolan (2009) do not find any gender difference in real-stakes gamble choices between girls from single-sex schools and boys from either coeducational or single sex schools, while girls from coeducational schools chose lower stakes. Moreover, girls exhibited more risk-taking behavior in all-girl groups than in gender-mixed groups.

Thus, subtle aspects of experimental or survey design – such as how and when subjects' gender is identified, and whether subjects take their decisions or answer the questionnaires in a gender-mixed or a gender-homogeneous setting – may unintentionally prompt subjects to act in gender-typical ways. Although such design aspects of experiments are sometimes spelled out, in most cases they are not. The fact that these aspects can affect results indicates that they may be important.

9. Conclusion

We have seen that gender priming matters: it creates gender differences in economic behavior. The effects can be surprisingly large; even such innocuous priming as asking people to enter their gender on the first page of a questionnaire (rather than the last) can prompt male and female subjects to act according to gender stereotypes – in our experiment, men become less generous than women. Our results suggest that gender differences in conformity with social norms may be completely induced by the experimental setting. This means that there may be reason to be cautious about the generality of experimental results on gender differences, particularly when they seem to be in line with expectations. Priming also occurs outside the experimental economics lab, and potentially very forceful priming may take place in employment interviews, wage negotiations, and political bargaining. Information about priming in such situations is scarce and evasive. Nevertheless, this is clearly an important field of research for understanding social relations in the economic arena.

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Figure 1. Histograms

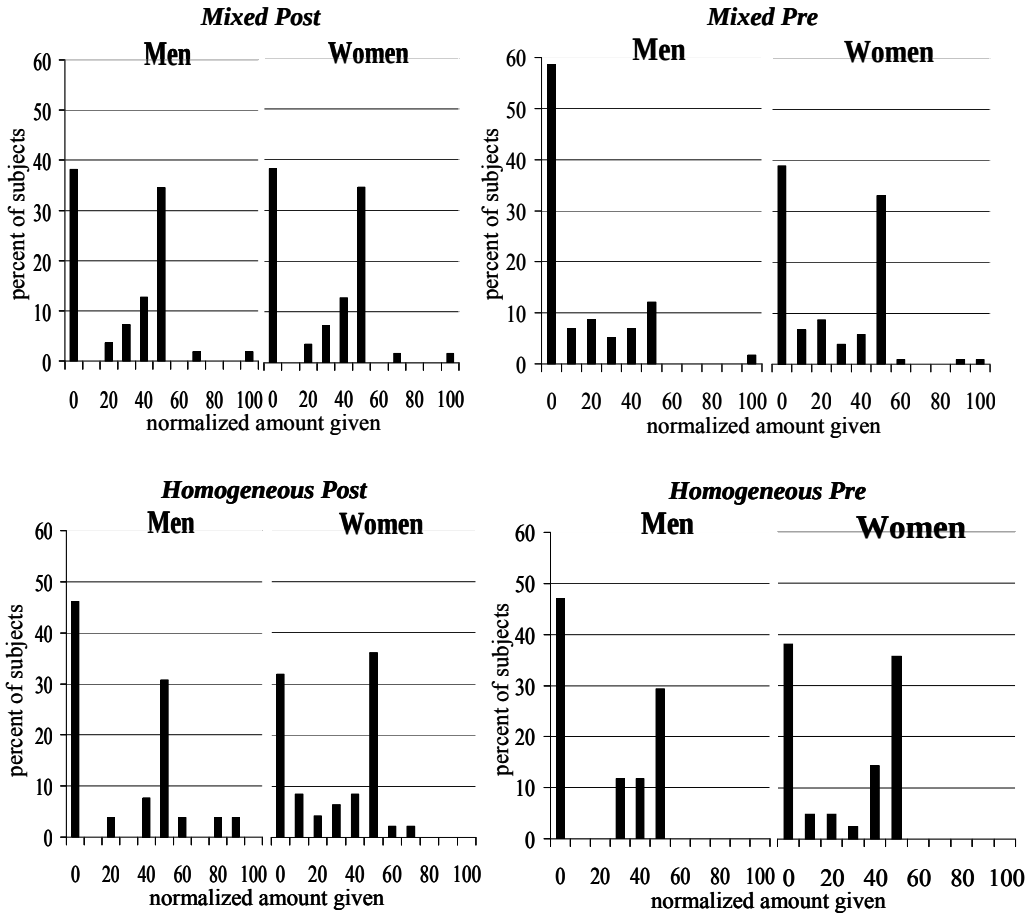

Table 1. Studies of gender effects in dictator games

Authors	Gender differences	Gender identification	Anonymity	Price/income differences	Comments
Eckel and Grossman (1998)	yes	by placing men and women in separate rooms	yes	not tested	women donate twice as much as men
Andreoni and Vesterlund (2001)	yes	?	yes?	eight budgets with varying prices	men more sensitive to price than women; women more generous when it is expensive to give while men more altruistic when it is cheap to give.
Cox (2002)	yes	by name when there is no anonymity, otherwise by an ingenious exit procedure.	varies	agent defined as generous if rejects keeping all to herself; different total budgets	women more generous than men when not anonymous; women less generous than men when there is complete anonymity between dictator and receiver. Women's altruism more sensitive to the size of the budget.
Bolton and Katok (1995)	no	by consent forms and check-out forms (probably)	dictator-recipient anonymity	total budget the same; but involved one or 10 games.	
Frey and Bonnet (1995)	no	questionnaire after experiment	varies	not tested	the paper reports only on the absence of gender differences in fairness combining data from dictator and ultimatum games
Ben-Ner, Kong and Putterman (2004)	no	questionnaire after experiment	yes	not tested	
Dufwenberg and Muren (2006)	no	questionnaire after experiment	weak	not tested	everybody gives more to women than to men

Table 2. Hypothesized effects.
"M" is the amount given by men, "W" the amount given by women.

	Mixed	*Homogeneous*
Post	M = W	M = W
Pre	M < W	M = W

Table 3. Numbers of observations in different cells

	Mixed		*Homogeneous*	
	Men	Women	Men	Women
Post	55	106	26	47
Pre	56	103	17	40

Table 4. Gender effects

	Men		Women		*Gender effects p-values*	
	Mean	Median	Mean	Median	*t* test	WMW
Mixed Post	28.4	40	22.1	20	0.1063	0.1723
Mixed Pre	13.2	0	24.9	20	0.0030	0.0015
Homogeneous Post	28.1	30	27.9	30	0.9739	0.8325
Homogeneous Pre	22.9	30	24.5	25	0.8140	0.7186

Table 5. Kolmogorov-Smirnov and Epps-Singleton *P* values

	Kolmogorov-Smirnov	Epps-Singleton
Mixed Post	0.149	0.0090127
Mixed Pre	0.013	0.0061455
Homogeneous Post	0.832	0.19797
Homogeneous Pre	1.000	0.27668

Table 6. Proportions of egoists and egalitarians

	Men		**Women**		**Gender effects**	
	Egoists	**Egalitarians**	**Egoists**	**Egalitarians**		
Mixed Post	0.382	0.345	0.396	0.245	0.8590	0.1792
Mixed Pre	0.607	0.089	0.388	0.330	0.0082	0.0007
Homogeneous Post	0.462	0.308	0.319	0.362	0.2275	0.6415
Homogeneous Pre	0.471	0.294	0.400	0.325	0.6214	0.8185

Table 7. Hypothesized effects according to self-categorization theory (SCT) and Andreoni and Vesterlund, 2001

		(1) p = ½	*(2) p* = 1	*(3) p* = 2
(A) Mixed Post	SCT	(M = W)	M = W	(M = W)
	Andreoni-Vesterlund	M > W	M = W	M < W
(B) Mixed Pre	SCT	(M < W)	M < W	(M< W)
	Andreoni-Vesterlund	(M > W)	(M = W)	(M <W)
(C) Homogeneous Post	SCT	(M = W)	M = W	(M = W)
	Andreoni-Vesterlund	(M > W)	(M = W)	(M < W)
(D) Homogeneous Pre	SCT	(M = W)	M = W	(M = W)
	Andreoni-Vesterlund	(M > W)	(M = W)	(M < W)

Table 8: Means and medians of share given at prices = ½ and 2

At price = ½		Men	Women	**Gender effects** *t* test	WMW
Mixed Post	Mean	35.1	29.3	0.3734	
	Median	30	20		0.7916
Mixed Pre	Mean	29.2	32.7	0.5808	
	Median	20	30		0.3084
Homogeneous Post					
Mean		40.7	31.7	0.2375	
	Median	30	30		0.4029
Homogeneous Pre					
Mean		45.3	23.5	0.0149	
	Median	30	20		0.0643
At price = 2					
Mixed Post	Mean	21.1	19.7	0.8084	
	Median	0	0		0.8685
Mixed Pre	Mean	12.6	21.6	0.0895	
	Median	0	0		0.0543
Homogeneous Post					
Mean		14.2	22.8	0.1678	
	Median	0	10		0.0689
Homogeneous Pre					
Mean		22.3	18.6	0.6323	
	Median	0	0		0.5825

P values reported.

Table 9. Expected and observed patterns of altruism

	(1) $p = ½$		(2) $p = 1$		(3) $p = 2$	
	Predicted	**Observed**	**Predicted**	**Observed**	**Predicted**	**Observed**
(A) *Mixed Post*	$M \geq W$	=	$M = W$	=	$M \leq W$	=
(B) *Mixed Pre*	$M = W$*	=	$M \leq W$	<	$M < W$	<
(C) *Homo Post*	$M \geq W$	=	$M = W$	=	$M \leq W$	<
(D) *Homo Pre*	$M \geq W$	>	$M = W$	=	$M \leq W$	=

* This presumes that the effects from Andreoni and Vesterlund (2001) and social psychology are of the same magnitude.

Table 10. Regression results

Dependent var:	(*i*) Percentage amount donated (obs. clustered at ind. level)	(*ii*) Percentage amount donated (panel random eff:s at ind. level)	(*iii*) Percentage amount donated (tobit with random eff:s at ind. level)	(*iv*) Being an egoist (panel random effect at ind. level)	(*v*) Being an egalitarian (panel random effect at ind. level)
Men	1.679 (5.126)	2.242 (4.679)	0.637 (7.358)	0.062 (0.085)	0.014 (0.064)
Mixed Pre	3.123 (3.623)	3.126 (3.598)	4.887 (5.615)	-0.042 (0.069)	0.069 (0.040)*
*Mixed Pre * Men*	-14.420 (6.094)**	-14.965 (6.102)**	-25.892 (9.154)***	0.202 (0.110)*	-0.184 (0.057)***
Homogeneous Post	3.638 (3.724)	3.677 (3.886)	6.909 (5.876)	-0.072 (0.074)	0.043 (0.042)
*Homogeneous Post * Men*	-3.106 (7.238)	-3.690 (6.957)	-7.930 (9.740)	0.085 (0.118)	-0.026 (0.071)
Homogeneous Pre	0.031 (4.259)	0.038 (3.811)	-1.281 (6.208)	0.033 (0.079)	0.055 (0.043)
*Homogeneous Pre * Men*	2.868 (7.726)	2.317 (7.723)	6.049 (10.650)	-0.067 (0.135)	-0.058 (0.077)
Price_half	6.238 (2.192)***	6.238 (2.108)***	14.278 (3.680)***	-0.203 (0.034)***	-0.248 (0.033)***
*Price_half * Men*	8.676 (3.901)**	8.676 (3.906)**	14.179 (6.241)**	-0.047 (0.057)	0.049 (0.053)
Price_double	-2.871 (1.657)*	-2.871 (1.995)	-7.061 (3.825)*	0.119 (0.037)***	-0.233 (0.034)***
*Price_double * Men*	-1.870 (2.764)	-1.870 (3.266)	-4.299 (6.624)	0.010 (0.059)	0.009 (0.052)
Constant	14.735 (7.071)**	15.057 (6.847)**	0.442 (10.877)	0.488 (0.143)***	0.165 (0.079)**
Observations Individuals	954 318	954 318	954 318	954 318	954 318

Note: All estimations include *age* and *terms studied at university* as controls.

Table 11. Means and medians of amount given in game 1 (p = 1) by recipient

	Men	**Women**	**Gender effects** *P*-value
Random-sex recipient	obs=26	obs=47	
Mean	28.1	27.9	0.9739
Median	30	30	0.8325
Same-sex recipient	obs=24	obs=33	
Mean	25.4	26,1	0.9218
Median	30	30	0.8185
Treatment effects	0.7428	0.7401	
P values	0.7713	0.4219	

Same sex-observations from session 3, "random sex" from sessions 1 and 2.

Table 12. Preference over the gender of the recipient, by gender

Sex of recipient \ Sex of subject	Men	Women	Total
Man	4	2	6
Woman	6	20	26
Indifferent	26	72	98
Total	36	94	130

Table 13. Preference over the gender of the dictator, by gender

Sex of dictator \ Sex of subject	Men	Women	total
Man	7 (19%)	1 (1%)	8 (6 %)
Woman	6 (16 %)	27 (30%)	33 (26 %)
Indifferent	24 (65%)	63 (69%)	87 (68 %)
Total	37 (100%)	81 (100%)	128 (100 %)

Table 14. Decomposing gender and treatment effects

	Normalized amount given					
	Men			Women		
	(*i*)	(*ii*)	(*iii*)	(*iv*)	(*v*)	(*vi*)
Homogeneous		7.274 (4.246)*			0.450 (2.810)	
Pre			-6.963 (4.024)*			0.260 (2.738)
Mixed Pre	-11.247 (4.950)**			3.129 (3.624)		
Homogeneous Post	0.657 (6.194)			3.767 (3.706)		
Homogeneous Pre	2.981 (6.505)			-0.032 (4.308)		
Price_half	14.914 (3.246)***	14.914 (3.237)***	14.914 (3.237)***	6.238 (2.191)***	6.238 (2.188)***	6.238 (2.188)***
Price_double	-4.741 (2.226)**	-4.741 (2.219)**	-4.741 (2.219)**	-2.871 (1.657)*	-2.871 (1.654)*	-2.871 (1.654)*
Constant	15.272 (16.510)	10.873 (16.103)	14.975 (16.481)	15.680 (7.855)**	15.709 (7.675)**	15.434 (7.849)*
Observations	348	348	348	606	606	606
R-squared	0.11	0.09	0.09	0.03	0.02	0.02

Table 15. Treatment effects for men and women

Men / Women	*MixPost*	*MixPre*	*HomPost*	*HomPre*
MixPost		Yes	No	No
MixPre	No		Yes	No
HomPost	No	No		No
HomPre	No	No	No	

Appendix 1: The Raw Data

Table A1. Numbers of persons across donations, by gender and treatment configuration, when price of giving is 1

Amount given	Number of persons who gave a certain amount for various treatment configurations							
	Mixed Post		*Mixed Pre*		*Homogeneous Post*		*Homogeneous Pre*	
	Men	Women	Men	Women	Men	Women	Men	Women
0	21	42	34	40	12	15	8	16
50	0	7	4	7	0	4	0	2
100	2	14	5	9	1	2	0	2
150	4	8	3	4	0	3	2	1
200	7	7	4	6	2	4	2	6
250	19	26	5	34	8	17	5	13
300	0	0	0	1	1	1	0	0
350	1	0	0	0	0	1	0	0
400	0	1	0	0	1	0	0	0
450	0	1	0	1	1	0	0	0
500	1	0	1	1	0	0	0	0
No. of obs.	55	106	56	103	26	47	17	40

Table A2. Numbers of persons across donations, by gender and treatment configuration, when price of giving is 2

Amount given	Number of persons who gave a certain amount for various treatment configurations							
	Mixed Post		*Mixed Pre*		*Homogeneous Post*		*Homogeneous Pre*	
	Men	Women	Men	Women	Men	Women	Men	Women
0	23	33	27	28	18	21	9	24
50	1	1	1	4	0	3	0	1
100	0	7	0	3	1	6	1	3
150	0	1	2	1	1	0	1	1
200	4	6	4	3	3	4	1	3
250	1	3	0	6	1	3	1	2
300	4	5	1	8	1	9	4	2
350	2	3	1	0	0	1	0	2
400	1	0	0	2	0	0	0	1
450	0	0	0	0	1	0	0	0
500	1	1	0	0	0	0	0	1
No. of obs.	37	60	36	55	26	47	17	40

Table A3. Numbers of persons across donations, by gender and treatment configuration, when price of giving is 1/2

Amount given	Number of persons who gave a certain amount for various treatment configurations							
	Mixed Post		*Mixed Pre*		*Homogeneous Post*		*Homogeneous Pre*	
	Men	Women	Men	Women	Men	Women	Men	Women
0	10	11	13	8	6	9	4	13
50	3	5	1	3	0	2	0	2
100	5	15	6	15	5	10	2	7
150	6	15	6	13	3	13	4	7
200	3	4	4	6	2	4	0	5
250	2	0	0	2	3	2	1	3
300	0	4	0	1	0	2	1	0
350	1	0	0	0	1	0	0	0
400	0	0	1	0	1	0	0	1
450	0	0	1	2	1	0	0	1
500	7	6	4	5	4	5	5	1
No. of obs.	37	60	36	55	26	47	17	40

Appendix 2: Instructions

READ THE INSTRUCTIONS CAREFULLY
- YOU MAY WIN SEVERAL HUNDRED KRONOR

This form has been distributed to everyone who attends today's lecture on micro theory. In order to make the procedure more interesting, Stockholm University will pay real money to the participants. The money has been made available through a research project on decision-making. Since we cannot pay everyone in the course, we will randomly select one fifth of the participants who will be paid in real money according to their decisions.

You will be completely anonymous throughout the investigation and your answers cannot be identified by classmates or teachers. Those who are randomly selected to receive money will have to provide the university administration with their names, addresses and social security numbers. The draw of winners will be based on the pre-assigned numbers written on each form and will take place at the end of the lecture.

(Turn the page when
the teacher signals.)

The investigation starts now. Your lottery number is: ☐

The last page contains more information about how your lottery number will be handled.

[in the *Pre* treatment this question was placed here]

State your sex here: Woman: ☐ Man: ☐

In this phase of the investigation you are given 500 kronor. You may then give away part of this amount to another randomly selected person among the 150 participants in the course. The distribution between you and the other person will be one of the following:

Alternative	You keep	The other person receives
A	500 kr	0 kr
B	450 kr	50 kr
C	400 kr	100 kr
D	350 kr	150 kr
E	300 kr	200 kr
F	250 kr	250 kr
G	200 kr	300 kr
H	150 kr	350 kr
I	100 kr	400 kr
K	50 kr	450 kr
L	0 kr	500 kr

Write your choice of alternative here: ☐

If you are randomly selected to be paid in this phase, we will match you anonymously with one of the other 150 students in the course, and pay each person the amounts in accordance with your choice.

(Turn the page when
the teacher signals.)

In this phase you are again given 500 kronor and can give away some of this amount to a randomly selected person among the 150 participants in the course. The difference now is that the amount you give is reduced by one half. The distribution between you and the other person will thus be one of the following:

Alternative	You keep	The other person receives
A	500 kr	0 kr
B	450 kr	25 kr
C	400 kr	50 kr
D	350 kr	75 kr
E	300 kr	100 kr
F	250 kr	125 kr
G	200 kr	150 kr
H	150 kr	175 kr
I	100 kr	200 kr
K	50 kr	225 kr
L	0 kr	250 kr

Write here your choice of which alternative: [ ]

If you are randomly selected to be paid in this part, we will match you anonymously with one of the other 150 students in the course, and pay each person the amounts in accordance with your choice.

(Turn the page when
the teacher signals.)

In this phase you are again given 500 kronor and can give away some of this amount to a randomly selected person among the 150 participants in the course. But now the amount you give to the other person is doubled. The distribution between you and the other person will thus be one of the following:

Alternative	You keep	The other person receives
A	500 kr	0 kr
B	450 kr	100 kr
C	400 kr	200 kr
D	350 kr	300 kr
E	300 kr	400 kr
F	250 kr	500 kr
G	200 kr	600 kr
H	150 kr	700 kr
I	100 kr	800 kr
K	50 kr	900 kr
L	0 kr	1000 kr

Write here your choice of alternative: ☐

If you are randomly selected to be paid in this phase, we will match you anonymously with one of the other 150 students in the course, and pay each person the amounts resulting from your choice.

(Turn the page when
the teacher signals.)

[For some subjects, the second and third dictator game decision above were replaced with the following three questions:

1. In this phase you can choose your role in the game on the previous page: donator or recipient.

A. This alternative is exactly the game you played on the previous page: you are the donator and you choose the division of the 500 crowns.

B. This alternative implies that you become the recipient. A randomly selected person among the students in the class will have 500 crowns and can give an optional amount to an unknown recipient (i.e., you).

If you are randomly selected to be paid in this part, the payment will be determined as follows:

- If you choose alternative A we will match your answer on the previous page anonymously against a randomly selected person among the other 150 students in the class. The 500 crowns are then divided according to your choice on the previous page.
- If you choose alternative B we will randomly draw one anonymous person among the other 150 students in the class. The 500 crowns are divided according to what that person chose on the previous page.

Write here your choice of alternative: ☐

2. Now assume that you are the donator in the game on the previous page. Would you prefer that the recipient is drawn among the male students in the course or among the female students? Circle your choice.

Male

Female

Doesn't matter

3. Now assume instead that you are the recipient in the game on the previous page. Would you prefer that the donator is drawn among the male students in the course or among the female students? Circle your choice.

Male

Female

Doesn't matter]

Concluding questions:

Write your age here: ☐

[in the *Post* treatment this question was placed here]

Indicate your sex here: Woman: ☐ Man: ☐

How many terms have you studied at university before this? ☐

Thank you for your participation!

(Turn the page when
the teacher signals.)

Lottery number:

Tear off the strip below. Hand in your reply form to the teacher, along with one of the slips containing the lottery number (required for the random draw). Keep the other slip in order to cash in your payment.

Fold and tear: ----------