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Altruistic behavior and social influence in the dictator game

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We run Dictators experiments in Southern Italy, a western country with a matrilineal culture, introducing – at the same time- social influence in the design. Our goal is to test whether the institutional culture and the role women have in the society are important factors in determining gender differences in altruism and generosity, compared to the different responses of men and women to social influence and "social clues" (Croson and Gneezy, 2009). We find more support to the hypothesis on the cultural role in shaping preferences, rather than the effects of social influence

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Abstract

We run Dictators experiments in Southern Italy, a western country with a matrilineal culture, introducing – at the same time- social influence in the design. Our goal is to test whether the institutional culture and the role women have in the society are important factors in determining gender differences in altruism and generosity, compared to the different responses of men and women to social influence and "social clues" (Croson and Gneezy, 2009). We find more support to the hypothesis on the cultural role in shaping preferences, rather than the effects of social influence

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1. Introduction

One influential result in the field of gender differences in generosity and altruism is that women are more pro-socially oriented than men, less selfish and more cooperative. Quoting C. Darwin ("women are tender and men are ambitious…"), Eckel and Grossman, 1998, find that women donate twice as much as male dictators. However, a consensus is lacking on the general applicability of the result. Indeed, the finding has so often been refuted (Croson and Gneezy, 2009) that a number of explanations for the opposite view have also been put forward. One possible all-encompassing explanation for the observed and apparently contradictory sex differences in social preferences is that they are particularly sensitive to the way such preferences are elicited. For example, as far as altruism and generosity in the dictator game are concerned, sex differences are found in experiments where choices are elicited in a totally anonymous context, but the evidence is much less clear cut if the condition of anonymity is relaxed. Thus, considering altruism as a prime, there are certainly significant differences, however such differences are obscured by the fact that women and men perceive and respond to sociality – or social cues, social network composition, social pressure, etc. - in a different way, and that the measurement of the differences in their social behaviour is affected by the context in which they are operating. Women seem to be more affected by peer pressure (Chairness and Rustichini, 2010), by the perception of what can be regarded as "socially fair behaviour" and on their willingness to conform to it (Della Vigna et al. (2013)). Also, women tend to be kinder and cooperative to friends and family and in all-female groups, men are more cooperative to strangers and in larger groups. Finally, the gender composition of the social group may play a role in shaping the difference (Balliet et al. (2011)).

Recently, field experiments have provided an important contribution to the debate on gender differences in pro-social behavior, explaining observed gender-based differences in generosity and altruism through recourse to dominant cultural mores. Gong et al.; 2014, and Gneezy et al.; 2009, have conducted field experiments in different societies in China, Tanzania and India. The distinguishing trait of these ethnic groups lies in the position women have in the community and the relevance of their roles as economic decision makers in family life. In matrilineal societies (Khasi in India and Masuo in China), women manage the family income and take economically relevant decisions. In patriarchal societies (Yo in China and Masaai in Tanzania) the roles of men and women are reversed. Their results are striking: in societies where women have an important role in the economic life, they are less altruistic and more competitive than men.

As Gong et al., 2014, suggest, most analyses of altruism which find a higher female propensity to donate and to be selfless have been conducted in Western countries (US, Europe), which have a patriarchal culture and where the role of the women is much less connected to the

economic life. Thus, rather than innate differences which may be confounded by social contexts or the way preferences are elicited, it may be reasonable to suppose that the patriarchal culture is playing a determining role, and that this makes women appear more tender and men more ambitious.

The experiment presented in this paper aims at providing a test to these alternative (but not mutually exclusive) points of view on gender differences in altruism. We conducted a Dictator experiment in Southern Italy – a Western society with a profoundly matrilineal culture – and we introduce social influence in some sessions, in order to study whether women are more sensitive to social stimuli. In two out of the three sessions, in fact, we gave the dictator an additional piece of information, communicating how much was donated by a dictator in a different session and, in one of these sessions, also the dictator's gender.

The main research question is whether the underlying matrilineal culture present in Southern Italy is more important in this context than social influence. If so, we would expect that women to be significantly less generous than men, but also that the reaction to the information on coutnterparts will be indistinguishable between men and women.

2. Experimental Design

We implemented a modified version of the Dictator Game experiment presented in Eckel and Grossman, 1998 and Gong et al.; 2014. We conducted three sessions of the experiment, involving 180 subjects. All sessions were run on a single day, participants were recruited in all departments of the University and great care was devoted to check that dictators and respondents were separated and unable to communicate. Dictators received an envelope containing two sheets of papers, one for the instructions and one to indicate the player's gender.

In all sessions, only the dictator's number was reported on the envelopes (A11, A12, etc. for session 1; A21, A22, etc.; for session 2; A31, A32, etc.; for session 3) and subjects learnt their role only when reading the Instructions sheet. In session 2, however, in addition to the instructions and the indication of the sex, dictators could view the choice a randomly chosen dictator of session 1, and in session 3 they received also the information on the observed dictator's sex. Both pieces of information were contained in a small envelope enclosed in the large one.

3. Data analysis

Table 1 shows that women are clearly less generous than men and this difference – and its statistical significance - falls as information is introduced in sessions 2 and, above-all session 3. The

gender difference is only statistically significant (at 10%) in the first session. Gender differences are also reflected in the distribution of tokens sent; only 5 (i.e. 6%) of the 90 dictators sent over one half of their allocation and these were all men. Moreover, a further 13 dictators sent exactly half their allocation, of these 11 were men. Finally, it is worth noticing that, in session 3, the generosity of female dictators' is much greater than it was in sessions 1 and 2, and in that session the difference between men's and women's donations is not statistically significant.

Table 1: Mean no. of tokens sent by gender and session

	Males	Females	MF Difference	n
Session 1 (no information)	7.65	5.40	2.15**	30
Session 2 (information on amount sent)	6.88	5.23	1.65*	30
Session 3 (information on amount sent and gender of sender)	6.29	6.33	-.04	30

Note: For the male-female difference reported in column 3, statistical significance is indicated as follows (one tailed t-test), ** indicates $p < .05$, * indicates $p < 0.10$.

One finds that in sessions 2 and 3, the number of tokens sent is positively correlated with the information provided for both men ($r= 0.23$) and women ($r= 0.25$). In session 3, the correlation between female behaviour and the observed donations of other female dictators increases to 0.5, whilst the correlation between female behaviour and male donations is close to zero ($r = 0.03$).

Table 2 reports the mean absolute and squared distance between donations (by males and females separately) and the information on donations received by participants in the different situations. Although the male-female difference is never statistically significant at conventional levels, there is a regularity in the results which is suggestive; specifically, it will be observed that the absolute distance between information and donations is always smaller for females than males[1]. A second observation is that, looking at session 3 information according to the gender of the dictator and the gender of the person on whom information is provided – that is comparing the last two rows of table three – the gender 'bias' in the relevance of information begins to emerge. That is, the divergence between male information and male behaviour, and between female information and female behaviour is always less than the corresponding distance across genders.

Table 2: Mean absolute and squared distances between information on donations and dictator donations, by gender

1 These differences are never statistically significant at conventional levels.

	Absolute difference		Squared difference	
Type of Information	**Males**	**Females**	**Males**	**Females**
Session 2: tokens sent	2.53	2.08	13.12	12.23
Session 3: tokens sent	3.52	2.89	19.81	16.89
Session 3: tokens sent by males	3.22	3.17	15.89	20.50
Session 3: tokens sent by females	3.75	2.33	22.75	9.67

In order to look at the role of information more rigorously, Poisson models were estimated to identify the nature of gender differences in generosity and in the reaction to information (table 3)[2]. The lower part of the table reports the results of the consequent t-tests on relevant gender differences. Three slightly different models were estimated for the different treatments. In column (1), for the 'no information' first treatment a model was estimated simply with separate intercepts for males and females (reported in the table) [3]. A t-test on the gender difference in donations in treatment 1 confirms that women are less generous than men in in the absence of additional information. The difference between men and women is substantial and is clearly statistically significant (at $p < .05$).

In the second treatment (column 2), the model allowed players to react to information on another dictator's behaviour and to do so differently for males and females[4]. The upper part of the table illustrates that both men and women react strongly to information on another player ($p < .01$), however, the small gender difference in the reaction to that information is clearly not statistically significant (t-test (2)).

Table 3: Poisson models of tokens sent (standard errors in parentheses)

	Treatment 1	Treatment 2	Treatment 3
	(No info)	(Information on tokens sent)	(Information on tokens sent and gender of sender)
Poisson regression results	(1)	(2)	(3)
Male	2.03*** (.081)		
- Tokens sent		0.19*** (.010)	
By Males			0.25*** (.018)
By Females			0.18*** (.013)
Female	1.69*** (.136)		
- Tokens sent		0.18*** (.015)	
By Males			0.16*** (.017)

2 A Poisson model is arguably more appropriate in this context since the dependent variable is an integer (tokens sent). In practice, an OLS model produces qualitatively similar results albeit with different parameter values.

3 Throughout, there is no default; that is, the value of the reported coefficient measures the reaction of that gender to information compared to 'no reaction'.

4 Specifically, the gender dummies were interacted with the observed amount donated by the observed dictator from treatment 1.

By Females			0.21*** (.025)
T-tests			
(1) Male/Female difference	.348** (.158)	.011 (.018)	
(2) Males: info on males vs. females			.061*** (.022)
(3) Females: info on males vs. females			-.043 (.030)
(4) MF difference: Recipient Male			.081*** (.025)
(5) MF difference: Recipient Female			-.023 (.028)
n	30	30	30
Log-Likelihood	-76.99	-105.32	-117.95

Note: For the t-tests on male-female differences reported in the lower part of the table, statistical significance is indicated as follows (two tailed t-test), *** indicates $p < .01$, ** indicates $p < 0.05$.

The third column reports the results derived from treatment 3 in which players were given information concerning the amount sent by a dictator in a previous game and the dictator's gender. As in treatment two, the reaction of men to information is slightly stronger (on average) than for women, however, the interesting result which emerges concerns the relation between the gender of the subject and the gender of the dictator on whom information is provided. That is, one can observe that males react more strongly to information on other male dictators than they do to information on female dictators and vice versa for females. The difference in the response of males to information on male and female dictators (t-test (2)) is statistically significant ($p<.01$) and although the analogous difference in females' reaction to the gender of the dictator about whom information is provided is not statistically significant at conventional levels (t-test (3), $p = .15$), the difference in the response of players of both genders to information on male dictator's behaviour is (t-test (4), $p < .01$). That is, both men and women are subject to social influence reacting to signals on others' behavior; and, both men and women tend to react more to signals coming from members of the same sex. Although, the gender based difference in reaction is not (quite) statistically significant at conventional levels for women, it is not unreasonable to suppose this may largely depend on the small sample size.

4. Conclusions

Analyzing the donations of 90 dictators distributed over the three sessions which constituted our experiment, we find that our dictators are – overall – rather stingy, but women are significantly less generous than men.

We also find that both male and female dictators' donations are affected by social influence but there is no significant difference in the relative importance men and women give to the signal. However, results are more nuanced, since both genders give more importance to signals coming from dictators of the same sex, and it appears that men differentiate react slightly more strongly than women to the (gender of the) source of the signal.

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