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Gender differences in altruism on Mechanical Turk: Expectations and actual behaviour

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HIGHLIGHTS

- We study gender differences in altruistic behaviour. We also study gender differences in expected altruism.
- We use a sample of Amazon Mechanical Turk crowdworkers living in the US (simple > 4,000 workers).
- We show that women are significantly more altruistic than men. We also show that both women and men expect women to be more altruistic than men.

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ABSTRACT

Whether or not there are gender differences in altruistic behaviour in Dictator Game experiments has attracted considerable attention in recent years. Earlier studies found women to be more altruistic than men. However, this conclusion has been challenged by more recent accounts, which have argued that gender differences in altruistic behaviour may be a peculiarity of student samples and may not extend to other groups. Here we study gender differences in altruistic behaviour and, additionally, in expectations of altruistic behaviour, in a sample of Amazon Mechanical Turk crowdworkers living in the US. In *Study 1*, we report a mega-analysis of more than 3,500 observations and we show that women are significantly more altruistic than men. In *Study 2*, we show that both women and men expect women to be more altruistic than men.

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1. Introduction

Are women more altruistic than men? Previous research suggests so. For example, in the US in 1991, during a recession, women increased their philanthropic giving by 2.4%, while men decreased theirs by over 20% (Mixer, 1993). It has been shown that women typically give more than men to charity (Breeze and Thornton, 2006; Piper and Schnepf, 2008; Mesch et al., 2011). Social role theorists have also argued that women are *expected* to be communal and unselfish, while men are expected to be agentic and independent (Eagly, 1987; Williams and Best, 1990; Eagly, 2009), and that these differential expectations affect work performance. For example, when women are perceived to be not sufficiently altruistic, they are less likely to be hired, promoted, paid fairly, and given responsibilities in their jobs (Heilman and Chen, 2005; Heilman and Okimoto, 2007).

To explore gender differences in altruistic behaviour, experimental economists typically turn to the aseptic setting of controlled laboratory experiments using the Dictator Game (DG). In the DG one player acts in the role of dictator and the other one in the role of receiver. Dictators are given a certain amount of money and are asked how much, if any, they want to give to the receiver. Receivers have no choice and only get what the dictators decide to give. Since dictators have no incentives to give money, a payoff-maximising dictator would donate nothing. Dictators' donations are thus taken as a measure of individual's general altruistic tendencies (Brañas-Garza, 2006, 2007; Charness and Gneezy, 2008; Engel, 2011; Franzen and Pointner, 2013; Peysakhovich et al., 2014; Rand et al., 2016).

Several studies have found that, on average, women give more than men in DG experiments (Andreoni and Vesterlund, 2001; Boschini et al., 2014; Capraro and Marcelletti, 2014; Capraro et al., 2014; Capraro, 2015; Dickinson and Tiefenthaler, 2002; Dreber et al., 2013, 2014; Dufwenberg and Muren, 2006; Eckel and Grossman, 1998; Houser and Schunk, 2009; Kettner and Ceccato, 2014; Rand et al., 2016). See Bolton and Katok (1995) for a null result, although using an extremely small sample. However, there are also

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critical exceptions. In his meta-analysis of 616 DG experiments, Engel (2011) found that women are only marginally significantly more altruistic than men. Interestingly, Cappelen et al. (2015) and Carpenter et al. (2008) compared student to representative samples and found gender differences in the student samples but not in the representative samples, which led them to conclude that gender differences in DG altruism, if existing, may be domain-specific.

Here we contribute to the aforementioned literature by exploring gender differences in altruistic behaviour among Amazon Mechanical Turk (AMT) workers living in the US. AMT is an interesting platform to study gender differences in altruistic behaviour because AMT workers, although less representative than national probability samples (e.g., Asians are overrepresented and Blacks and Hispanics are underrepresented), are more representative than student samples (Berinsky et al., 2012; Paolacci and Chandler, 2014; Shapiro et al., 2013). Moreover, numerous experiments have shown that data gathered on AMT are of no less quality than data gathered on the standard physical lab (Arechar et al., 2018; Horton et al., 2011; Mason and Suri, 2012; Paolacci et al., 2010; Paolacci and Chandler, 2014).

In *Study 1*, we analyse more than 3500 previously collected DG donations, and we test whether women are more altruistic than men. In *Study 2*, we collect new experimental data with the intention to explore whether *women are expected to be more altruistic than men* or not.

Understanding gender differences in expectations of altruistic behaviour is relevant because people often make decisions based on their beliefs about others' behaviour. Thus, a mismatch between expectations and behaviour may create suboptimal outcomes. For example, in a family context, the production of human capital for children requires both mothers' and fathers' inputs (e.g., time for playing, reading to the child). If fathers expect mothers to be more willing to spend time on producing health and skills for the child, fathers may invest less time in the production of human capital than mothers. However, when fathers' expectations do not match with the actual behaviour of mothers, parental investment may result in suboptimal outcomes for their children and, consequently, for the family as a whole.

Although social psychologists have repeatedly found that women are expected to be more altruistic than men and are punished more than men when failing to act altruistically in a variety of contexts (Eagly, 1987, 2009; Heilman and Chen, 2005; Heilman and Okimoto, 2007; Piliavin and Charng, 1990; Williams and Best, 1990), this question has been largely neglected by experimental economists. We are aware of a handful of studies eliciting participants' beliefs about the level of altruism (Aguiar et al., 2009; Dufwenberg and Gneezy, 2000; Delavande and Zafar, 2015; Capraro and Kuilder, 2016), but only one of them looked at gender differences: Aguiar et al. (2009), using a student sample, found that women are expected to be more altruistic than men, but only by other women.[1]

2. Study 1

2.1. Protocol

We analyse all DG donations that we collected on AMT in several experiments conducted between 2013 and 2017 (d'Adda et al., 2017; Biziou-van Pol et al., 2015; Capraro et al., 2014; Capraro and Kuilder, 2016; Capraro and Sippel, 2017; Rand et al., 2016). In case of multiple observations from the same participant (as determined by checking for multiple IP addresses and TurkIDs), we keep only the first observation. All dictators passed two comprehension questions about the choice that would maximise their payoff and the choice that would maximise the recipient's payoff. We also include $N = 457$ observations reported in *Study 2* of the current work. Excluding these observations does not change our main findings.

2.2. Subject pool

A total of 3,583 participants (58.2% males, mean age = 32.55), living in the US at the time of the experiments, recruited on AMT.

2.3. Results

In order to make data from different projects comparable, we first build a (quasi) continuous variable representing the proportion of the endowment that dictators give to recipients (0 = nothing, 1 = all). In the experiments reported in this mega-analysis, endowments were rather small, either \$0.10 or \$0.20 (on top of the participation fee, that ranged from \$0.01 to \$0.50, depending on the study). However, this is not problematic: the average proportion of the endowment donated in our mega-analysis is 30.8%, which is in line with the proportion reported in the meta-analysis conducted by Engel (2011), that is 28.3%. This provides another piece of evidence that data gathered using small stakes on Amazon Mechanical Turk are of comparable quality than those collected in standard ways (see also Amir et al., 2012).

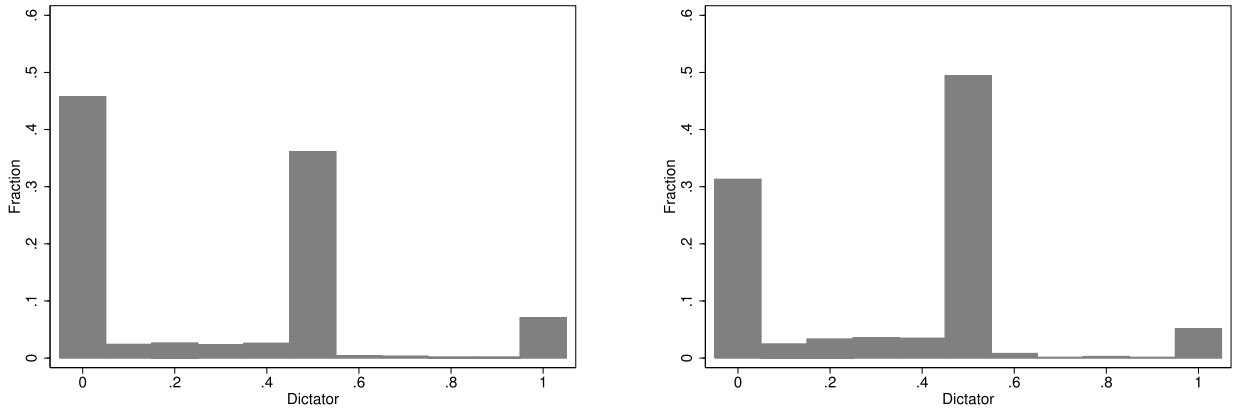
Coming to our main research question, a linear regression of donations on gender (0 = male, 1 = female) shows that women give 5.7% more than men, and that this difference is statistically significant (coeff = 0.057, $t = 5.75$, p-value = 0.000). The analysis of distribution of donations confirms and strengthens these result. See Fig. 1a and b. In line with the meta-analysis by Engel (2011), we find a virtually bi-modal distribution of donations, with one main mode at giving nothing, and the other one at giving half. However, if we analyse men and women in detail, we find that the main mode for men is at giving nothing (45.7% give nothing, while only 36.1% give half); whereas the main mode for women is at giving half (49.4% give half, while only 31.2% give nothing). Furthermore, the median donation for men is at giving 20%, while the median donation for women is at giving 50% (Fisher's exact test: p-value = 0.000).

3. Study 2

3.1. Protocol

Subjects were randomly divided between dictators and receivers. Dictators were given \$0.20 and were asked to decide how much, if any, to give to the receiver. Receivers were asked to predict the donation that another dictator would make to another receiver in one of four between-subjects treatments. Receivers would receive \$0.20 reward for correct guesses (Capraro and Kuilder, 2016). This procedure incentivises receivers to guess the modal donation. Moreover, since they do not guess their own donation there is no opportunity to hedge (Brañas-Garza et al., 2017). The treatments were as follows. In the O_n treatments, receivers were shown the same instructions given to dictators. Then they were asked to guess the dictator's decision; the O_{mow} was identical to O_n with the only difference that receivers were informed that the dictator *was either a man or a woman*; the O_m was identical to O_n with the only difference that recipients were informed that the dictator *was a man*; the O_w was identical to O_m with the only difference that

[1] Recently, Babcock et al. (2017) looked at gender differences in expected contributions to the public good. Although related, these results cannot be applied to our case, as the public goods game measures a behaviour (cooperation) different from the one measured by the dictator game (altruism): DG altruists typically contribute to the public good, but not the converse (Capraro et al., 2014).



(a) Actual behaviour of men. (b) Actual behaviour of women.

Fig. 1. *Study 1*: Distribution of donations by gender in mega-analysis (3,583 participants). Both distributions are bimodal, concentrated in giving nothing and giving half. The mode for the male's distribution is to give nothing, while for the female's is to give half. In sum, women tend to give more than men.

receivers were informed that the dictator *was a woman*. We opted for conducting two baselines, O_n and O_{mow}, so that, by comparing O_m and O_w with O_{mow}, separately, we can investigate the effect of making one particular gender salient versus making both genders salient.

At the end of the experiment, participants were matched. Bonuses were computed and paid on top of the participation fee of \$0.50. No deception was used. See Appendix for more details about the procedure and experimental instructions.

3.2. Subject pool

A total of 987 subjects (55.9% males, mean age = 34.6), residents in the US at the time of the experiment, recruited on AMT. We refer to the Appendix for details about how these subjects were distributed across conditions.

3.3. Results

In line with Engel's meta-analysis (Engel, 2011), the distribution of dictators' donations was virtually bimodal, with one mode at donating nothing (43.5%) and the other one at donating half (43.1%). The average donation was 27.3%. Also this was very close to that reported by Engel (28.3%). Although, in our experiment, the endowment given to dictators was \$0.20, in what follows, data are normalised such that the donations correspond to 0–1.

As a preliminary step, we show that the gender effect on dictators' donations found in *Study 1* is replicated in the current sample. Fig. 2a and b compare the distribution of donations by men with the distribution of donations by women, and provides visual evidence that women are more altruistic than men: giving nothing is the modal choice for males (49.6% gave 0) while sharing equally is the modal choice for women (48.3% gave half). This gender difference is reflected also on the mean donations (24.8% vs. 30.3%, linear regression, coeff = 0.055, $t = 2.20$, p-value = 0.028), and in the median donations (10% vs. 50%, Fisher's exact: p-value = 0.031). Thus, also in the current sample, women are more altruistic than men, and the effect size is essentially the same as in Study 1.

Next, we analyse gender differences in expectations of altruistic behaviour. First of all, we observe that treatments E_n and E_{mow} report similar averages (27.9% and 31.7%, linear regression, p-value = 0.243). Similarly, we do not find significant differences between $E_m \cup E_w$ and E_{mow} (p-value = 0.887). Thus, gender framed instructions do not change subjects' expectations. Fig. 3a, b show the histograms for E_m and E_w, respectively. While the main mode for expected behaviour of men is 0 (giving nothing) the main mode for expected behaviour of women is 5 (giving half). Average values reflect the same result: the mean expected modal altruism among men is smaller than among women (23.3% and 40.5%, linear regression coeff = 0.172, $t = 5.51$, p-value = 0.000). Also the median expected modal donations reflect the same results (10% and 50%, Fisher's exact: p-value = 0.171) for men and women respectively. The top part of Table 1 shows the relevant tests. Thus women are expected to be more altruistic than men.

Table 1
Linear regressions.

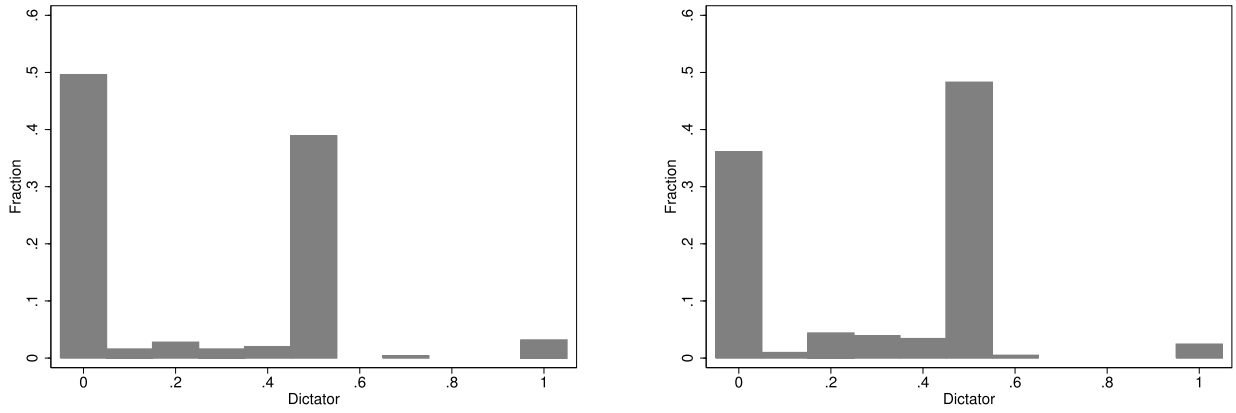
	Coefficient	t	P-value
E_{mow} vs. E_n	0.038	1.17	0.243
$E_m \cup E_w$ vs. E_{mow}	0.004	0.14	0.887
E_m vs. E_n	−0.085	−2.57	0.011
E_w vs. E_n	0.087	2.76	0.006
E_w vs. E_m	0.172	5.51	0.000
D_w vs. D_m	0.055	2.20	0.028

Note: D_m (D_w) refers to donations by men (women).

Then, we analyse whether both men and women expect women to be more altruistic than men. This is indeed the case: women are expected to be more altruistic than men both by men (mean guesses: 20.4% vs. 38.5%; coeff = 0.181, $t = 4.11$, p-value = 0.000; median guesses: 0% vs. 50%, Fisher's exact: p-value = 0.000) and by women (mean guesses: 26.9% vs. 43.1%; coeff = 0.162, $t = 3.72$, p-value = 0.000; median guesses: 20% vs. 50%, Fisher's exact: p-value = 0.999).[2]

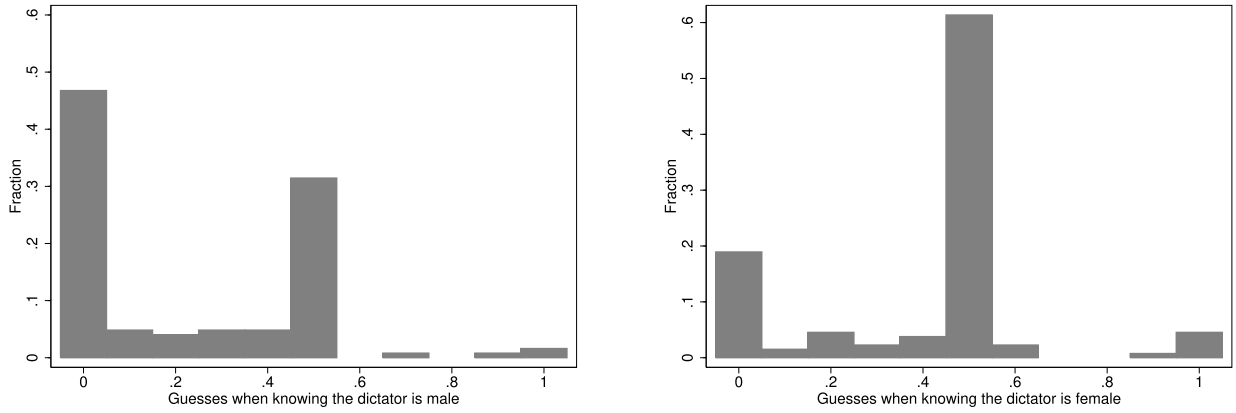
Finally, we observe that, when recipients are asked to predict women's behaviour, then more women than men guess the correct mode (70.7% vs. 54.1%, Fisher's exact: p-value = 0.071), but when recipients are asked about men's behaviour, then results trended, although not significantly so, in the opposite direction: more men than women tend to guess the correct mode (53.6% vs. 38.2%, Fisher's exact: p-value = 0.104). Moreover, men are marginally significantly better at guessing women's modal choice (54.0% guessed it right) than women are at guessing men's modal choice (only 38.2% guessed it right; Fischer's exact: p-value = 0.079). In the aggregate, people are more accurate at predicting females' modal altruism than males' (61.4% vs. 46.7%, Fisher's exact: p-value = 0.024). Note that, in these analyses, samples are very small (about 65 observations per condition), and this might explain the lack of statistical significance, despite the relatively large effect sizes).

[2] Using Mann–Whitney–Wilcoxon non-parametric tests, we obtain the same conclusions as in the regression analysis.



(a) Actual behaviour of men. (b) Actual behaviour of women.

Fig. 2. *Study 2.* Distribution of donations by gender (987 participants). As in Fig. 1, both distributions are bimodal. Women tend to give more than men.



(a) Expectations for men [E_m]. (b) Expectations for women [E_w].

Fig. 3. *Study 2.* Expected behaviour of men and women. When asked to guess dictator's donation knowing that the dictator is a man, the main mode of the guesses is 0. Conversely, when asked to guess dictator's donation knowing that the dictator is female, the main mode of the guesses is 5, half of the endowment. Thus, women are expected to be more altruistic than men.

4. Conclusion

We studied gender differences in Dictator Game altruistic behaviour and expectations of altruistic behaviour on a large sample of US residents recruited through Amazon Mechanical Turk (AMT). We found that: (i) women are more altruistic than men and (ii) both women and men expect women to be more altruistic than men.

The fact that women are expected to be more altruistic than men may explain why they are punished to a larger extent than men when they fail to act altruistically (Heilman and Chen, 2005; Heilman and Okimoto, 2007). Moreover, over-expecting communal behaviour from women may in turn lead to labour segregation, with women being offered predominantly less competitive and less paid jobs (Grimshaw and Rubery, 2001; Aguiar et al., 2009).

Our first result is in line with and extend previous studies using student samples. This is a non-trivial extension because AMT samples are more representative than student samples but less representative than random samples of the population (Berinsky et al., 2012; Paolacci and Chandler, 2014; Shapiro et al., 2013). While previous research has found gender differences in student samples, it has been suggested that gender differences in altruistic behaviour may not extend to random samples (Cappelen et al., 2015; Carpenter et al., 2008).

Our second result roughly confirms the only existing study we are aware of on the same topic (Aguiar et al., 2009), but with an important difference. While Aguiar et al. (2009), using a student sample, found that women are expected to be more altruistic than men only by other women, we found that, in our sample of AMT workers, women are expected to be more altruistic than men by both women and men.

We have also found some evidence that each gender is better at predicting their own gender's behaviour, rather than the other gender's. Moreover, men seems to be better than women at predicting the other gender's behaviour. However, all these results are only (close to) marginally significant, partly due to the small sample size, and thus they require further work in order to be validated or invalidated. Additionally, we observe that, while there is correspondence between mean actual donation and mean expected donation among men (mean donation = 24.8%, mean guess = 23.3%), the mean donation is significantly smaller than the mean expected donation among women (mean donation = 30.3%, mean guess = 40.5%, $p < .001$). However, this does not allow us to conclude that women are expected to be more altruistic than they actually are, because our design measures people's beliefs about the *modal* donation, and not those about the *mean* donation. Exploring whether women are expected to be more altruistic than they actually are is a primary direction for future research, with potential implications on real-world settings that could contribute to explain why women are punished to a larger extent than men when they fail to act altruistically (Heilman and Chen, 2005; Heilman and Okimoto, 2007).

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Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2018.05.022.

References

Aguiar, F., Brañas-Garza, P., Cobo-Reyes, R., Jimenez, N., Miller, L.M., 2009. Are women expected to be more generous? Exp. Econ. 12 (1), 93–98.
Amir, O., Rand, D.G., Gal, Y.K., 2012. Economic games on the internet: The effect of $1 stakes. PLoS One 7 (2), e31461.
Andreoni, J., Vesterlund, L., 2001. Which is the fair sex? Gender differences in altruism. Q. J. Econ. 116, 293–312.
Arechar, A.A., Gächter, S., Molleman, L., 2018. Conducting interactive experiments online. Exp. Econ. 21, 99–131.
Babcock, L., Recalde, M.P., Vesterlund, L., Weingart, L., 2017. Gender differences in accepting and receiving requests for tasks with low promotability. Amer. Econ. Rev. 107 (3), 714–747.
Berinsky, A.J., Huber, G.A., Lenz, G.S., 2012. Evaluating online labor markets for experimental research: Amazon.com's mechanical turk. Polit. Anal. 20 (3), 351–368.
Biziou-van Pol, L., Haenen, J., Novaro, A., Liberman, A.O., Capraro, V., 2015. Does telling white lies signal pro-social preferences? Judgment Decis. Making 10, 538–548.
Bolton, G.E., Katok, E., 1995. An experimental test for gender differences in beneficent behavior. Econom. Lett. 48 (3), 287–292.
Boschini, A., Dreber, A., von Essen, E., Muren, A., Ranehill, E., et al., 2014. Gender and economic preferences in a large random sample. Technical report, Stockholm University.
Brañas-Garza, P., 2006. Poverty in dictator games: Awakening solidarity. J. Econ. Behav. Organ. 60 (3), 306–320.
Brañas-Garza, P., 2007. Promoting helping behavior with framing in dictator games. J. Econ. Psychol. 28 (4), 477–486.
Brañas-Garza, P., Rodriguez-Lara, I., Sanchez, A., 2017. Humans expect generosity. Sci. Rep. 7, 42446.
Breeze, B., Thornton, A., 2006. Raising a giving nation: A report on 3 years of research and activity with young people and schools by the giving nation programme.
Cappelen, A.W., Nygaard, K., Sørensen, E.Ø., Tungodden, B., 2015. Social preferences in the lab: A comparison of students and a representative population. Scand. J. Econ. 117 (4), 1306–1326.
Capraro, V., 2015. The emergence of hyper-altruistic behaviour in conflictual situations. Sci. Rep. 4, 9916.
Capraro, V., Jordan, J.J., Rand, D.G., 2014. Heuristics guide the implementation of social preferences in one-shot Prisoner's Dilemma experiments. Sci. Rep. 4, 6790.
Capraro, V., Kuilder, J., 2016. To know or not to know? Looking at payoffs signals selfish behavior, but it does not actually mean so. J. Behav. Exp. Econ. 65, 79–84.
Capraro, V., Marcelletti, A., 2014. Do good actions inspire good actions in others? Sci. Rep. 4, 7470.
Capraro, V., Sippel, J., 2017. Gender differences in moral judgment and the evaluation of gender-specified moral agents. Cogn. Process. 18 (4), 399–405.
Carpenter, J., Connolly, C., Myers, C.K., 2008. Altruistic behavior in a representative dictator experiment. Exp. Econ. 11 (3), 282–298.
Charness, G., Gneezy, U., 2008. What's in a name? Anonymity and social distance in dictator and ultimatum games. J. Econ. Behav. Organ. 68 (1), 29–35.
d'Adda, G., Capraro, V., Tavoni, M., 2017. Push, don't nudge: Behavioral spillovers and policy instruments. Econom. Lett. 154, 92–95.
Delavande, A., Zafar, B., 2015. Stereotypes and Madrassas: Experimental evidence from Pakistan. J. Econ. Behav. Organ. 118, 247–267.
Dickinson, D.L., Tiefenthaler, J., 2002. What is fair? Experimental evidence. South. Econ. J. 414–428.
Dreber, A., Ellingsen, T., Johannesson, M., Rand, D.G., 2013. Do people care about social context? Framing effects in dictator games. Exp. Econ. 16 (3), 349–371.
Dreber, A., von Essen, E., Ranehill, E., 2014. Gender and competition in adolescence: task matters. Exp. Econ. 17 (1), 154–172.
Dufwenberg, M., Gneezy, U., 2000. Measuring beliefs in an experimental lost wallet game. Games Econom. Behav. 30 (2), 163–182.
Dufwenberg, M., Muren, A., 2006. Gender composition in teams. J. Econ. Behav. Organ. 61 (1), 50–54.
Eagly, A.H., 1987. Sex Differences in Social Behavior: A Social-Role Interpretation. Erlbaum, Mahwah, NJ.
Eagly, A.H., 2009. The his and hers of prosocial behavior: An examination of the social psychology of gender. Am. Psychol. 64 (8), 644.
Eckel, C.C., Grossman, P.J., 1998. Are women less selfish than men?: Evidence from dictator experiments. Econom. J. 108 (448), 726–735.
Engel, C., 2011. Dictator games: A meta study. Exp. Econ. 14 (4), 583–610.
Franzen, A., Pointner, S., 2013. The external validity of giving in the dictator game. Exp. Econ. 16 (2), 155–169.
Grimshaw, D., Rubery, J., 2001. The gender pay gap: a research review, Equal Opportunities Commission.
Heilman, M.E., Chen, J.J., 2005. Same behavior, different consequences: Reactions to men's and women's altruisitc citizenship behavior. J. Appl. Psychol. 90, 431–434.
Heilman, M.E., Okimoto, T.G., 2007. Why are women penalized for success at male tasks?: The implied communality deficit. J. Appl. Psychol. 92, 81–92.
Horton, J.J., Rand, D.G., Zeckhauser, R.J., 2011. The online laboratory: Conducting experiments in a real labor market. Exp. Econ. 14 (3), 399–425.
Houser, D., Schunk, D., 2009. Fairness, competition and gender: Evidence from German schoolchildren. J. Econ. Psychol. 30, 634–641.
Kettner, S.E., Ceccato, S., 2014. Framing matters in gender-paired dictator games. Technical report, Discussion paper, University of Heidelberg.
Mason, W., Suri, S., 2012. Conducting behavioral research on Amazon's Mechanical Turk. Behav. Res. Methods 44 (1), 1–23.
Mesch, D.J., Brown, M.S., Moore, Z.I., Hayat, A.D., 2011. Gender differences in charitable giving. Int. J. Nonprofit Voluntary Sect. Mark. 16 (4), 342–355.
Mixer, J.R., 1993. Principles of Professional Fundraising: Useful Foundations for Successful Practice. Jossey-Bass Inc Pub..
Paolacci, G., Chandler, J., 2014. Inside the Turk: understanding mechanical turk as a participant pool. Curr. Dir. Psychol. Sci. 23 (3), 184–188.
Paolacci, G., Chandler, J., Ipeirotis, P.G., 2010. Running experiments on Amazon Mechanical Turk.. Judgment Decis. Making 5, 411–419.
Peysakhovich, A., Nowak, M.A., Rand, D.G., 2014. Humans display a 'cooperative phenotype' that is domain general and temporally stable. Nature Commun. 5, 4939.
Piliavin, J.A., Charng, H.-W., 1990. Altruism: A review of recent theory and research. Annu. Rev. Sociol. 16 (1), 27–65.
Piper, G., Schnepf, S.V., 2008. Gender differences in charitable giving in great britain. Voluntas: Int. J. Voluntary Nonprofit Organ. 19 (2), 103–124.
Rand, D.G., Brescoll, V., Everett, J.A., Capraro, V., Barcelo, H., 2016. Social heuristics and social roles: Intuition favors altruism for women but not for men. J. Exp. Psychol.: Gen. 145, 389–396.
Shapiro, D.N., Chandler, J., Mueller, P.A., 2013. Using mechanical turk to study clinical populations. Clin. Psychol. Sci. 1 (2), 213–220.
Williams, J.E., Best, D.L., 1990. Measuring Sex Stereotypes: A Multination Study, Rev. Sage Publications, Inc..