



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).

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