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Do procedures matter in fairness allocations? Experimental evidence in mixed gender pairings

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Abstract

Does the procedure of entitlement affect fairness perceptions? We use a dictator game to study the question in mixed gender pairs. In our experiments, we vary the process of entitlement across treatments. Allocators in our dictator game can inherit an amount without any effort, earn an amount with effort, or inherit an amount earned by a randomly matched partner's effort. We find subjects allocate lower amounts to their paired partners when they are dividing an amount that has been earned through their own effort and allocate relatively higher amounts when dividing an amount that has been earned through the paired member's real effort. Results also suggest that female proposers are more sensitive towards variations in entitlement processes.

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1. Introduction

A recent burgeoning research (Sen 1995, Frey et al. 2004, Shor 2007, Chla Güth and Miettinen 2009) suggests that economic decision making is not outcome dependent only. It also depends on the procedure. Attitudes towards economic redistribution is one prominent area of economic decision making where notions of fairness and distributive justice can depend upon the reasons behind the primary (existing) distribution, as well as the process that established the original distribution (Fong 2001). When analyzing distributive preferences, Hoffman and Spitzer (1985) makes an interesting distinction between entitlements that are legally enforceable and claims that are morally justified to such entitlements. They point out that if procedures matter, then all processes of entitlements might not have the same levels of morally justified claims associated with them. As a result, differences in the procedures of entitlements can influence perceptions of fairness. Consequently, what constitutes a fair allocation must depend on the very process of entitlement itself.

We investigate whether changes in entitlement procedures influence perceptions of morally justified claims to the entitlement. To that end, we use a within subjects design, and systematically vary the process of entitlement for subjects in a dictator game. We evaluate the issue of procedural fairness in a mixed gender pair environment, where allocators and receivers are always of the opposite gender. Our results suggest that subjects allocate the least amount to their paired partners when dividing an amount earned through own effort and allocate the most when dividing an amount earned by the paired member's real effort. Results also indicate that female proposers are more sensitive towards variations in entitlement conditions.

2. Previous Results

Our experiment speaks to two different areas of experimental research. The first is on distributive justice. The notion that moral claims towards property rights can be different due to the method of entitlement was first investigated by Hoffman and Spitzer (1985). They had an intricate across-subjects design that included legally binding side payments and publicly-given final payments. They found that the frequency of self-regarding choices increased when subjects won the rights to be the proposers as compared to a situation where subjects were randomly assigned to be the proposers. Hoffman et al. (1994) used a similar idea in an ultimatum game where they used performances in a current events quiz to rank subjects from high scorers to low scorers and the right to be the allocator was "earned" by scoring high on the general knowledge quiz. They found that allocators behaved in a more self-regarding manner when the right to allocate was earned. Guth and Tietz (1986) found that if first and second mover rights in the ultimatum game were auctioned off then offers to second movers were reduced considerably. Rutström and Williams (2009) tested the existence of preferences over income distributions motivated by earnings-based justice. Subjects participated in a two stage process where in the first stage they solved the Tower of Hanoi game to earn their entitlements and in the second phase made their distribution choices. Contrary to earlier findings of non-selfish behavior, Rustrom and Williams found very little variation in behavior despite variations in how initial income entitlements are allocated. The authors concluded that the data could be credibly explained by the model of self interest.

The second area we add to is on gender differences.¹ Findings from experiments on gender differences suggest that there can be differences (or the lack of it) in behavior depending on the nature of the task and the experimental design (Bolton and Katok 1995; Frey and Bohnet 1995; Eckel and Grossman 1996; Eckel and Grossman 1998; Cox 2002; Carpenter et al. 2005; Cadsby et al. 2009). However, most of these experiments do not look at economic decision making in mixed gender pairings per se, even though evolutionary psychology research suggests that gender pairing affects economic behavior (Buss 1998). Sutter et al. (2009) and Cadsby et al. (2009) are the two exceptions. Sutter et al. (2009) looked at bargaining behavior between mixed gender and same gender pairs in a power-to-take game and found heightened competition and retaliation (leading to lower efficiency) in the same gender groups. Cadsby et al. (2009) compared behavior of same gender with mixed gender pairings in a dictator game in a single-blind or a double-blind protocol and found no gender effects or treatment effects.

Our paper conceptually comes closest to the Hoffman and Spitzer (1995) (hereafter, HS), but is distinct in important ways. Similar to HS (1985), the central idea in our design is to elicit preferences for fairness as we vary the procedures of entitlement. HS found support for natural law principles where subjects proposed a lower amount when they put effort towards earning it. However, in order to be fair, one should be equally mindful of another's claim, just as one is of her/his own. To evaluate this aspect of fairness, we add a Partner-effort treatment, where the allocator is responsible for the allocation of resources when someone else earns it. The Partner-effort treatment provides an important test of one's attitude towards fairness when evaluated in conjunction with the treatment where the allocator herself/himself earns the resources to be shared. We propose that our treatments collectively provide a more comprehensive test of attitudes towards distributive justice and especially that of desert-based principles. Further, our experiment design departs from the HS design in important ways. We employ a within-subjects design to control for subject-specific heterogeneity. This provides a better way to evaluate the effect of the procedure in evoking different moral claims for the *same* subject.² In contrast to HS, we also impose a double-blind protocol to ensure that experimenter effects are minimized. Finally, we add to the small but growing literature in economics experiments on bargaining behavior in mixed gender environments. In our treatments allocators and receivers are always of the opposite gender.

3. Experiment Design

We chose the simplest allocation game that is devoid of any strategic considerations (Eckel and Grossman 1998), the dictator game. In this game the dictator (allocator) is given an amount of money X and asked to allocate an amount Y to a randomly matched subject (the receiver) and to retain $(X-Y)$ for own self. We have three treatments in a within-subjects design to elicit subject's perceptions of fairness as a function of the entitlement procedure.

Our baseline treatment, the Inheritance treatment (**I**) is the standard dictator game, where the proposer is endowed with a fixed sum of money and asked to distribute it between his/her own-self and a randomly matched partner of the opposite gender. Our second treatment is the Own-Effort treatment (**OE**), where the allocator is asked to participate in a quiz in which each

¹ See Eckel and Grossman (2009) for an extensive overview of the literature.

² See Hershey and Schoemaker (1980) and Keren and Raaijmakers (1988) for discussions of the relative merits of using a within-subjects design for our problem in hand.

correct answer provides money earnings. The quiz consisted of counting the number of “0”s and “3”s that appear in ten lines of randomized numbers. At the end of the quiz, the allocators received information on their earnings and were asked to distribute that amount between their own selves and their randomly matched partners. In the third treatment, each subject’s earnings from the completed real effort task were shown to a randomly matched allocator who distributes it between his (or her) own self and the earner. This is the Partner-Effort treatment (**PE**).

In each experiment session subjects participated in all the three treatments in the roles of both proposers and receivers. The instructions for each treatment were given sequentially and read aloud. The treatment orders were changed in each session (see Table 1). Subjects made allocation decisions in each treatment without knowing their earnings as recipients. It was explained to each subject that they would be randomly re-matched with a new participant in every treatment and only one of the treatments would be chosen for payments. At the end of the experiment a bingo cage was used to choose one of the three treatments for payments, and the chosen treatment was announced. To ensure that behavior is minimally affected by experimenter contact we imposed a double blind protocol (Hoffman et al. 1994, 2001; Cox and Deck 2005) in all our sessions. A monitor was in charge of distributing and collecting all decision sheets. The experimenter calculated all payments in an adjoining room. Subjects collected payments in sealed envelopes from a third-party who was not present during the experiment. Given our interest in eliciting behavior in mixed gender pairs, allocators and receivers were always of the opposite gender and this was explicitly mentioned in the instructions and visually re-enforced by separating them into two sides of the room.³ We ran the experiments with undergraduate student subjects at Franklin and Marshall College (USA) and at Jadavpur University (India). A total of 80 subjects participated in the experiment and subjects received on an average \$27 in USA and Rs. 258 in India, inclusive of a show-up fee. Table 1 reports all session and subject information.

4. Results

Alternatives theories on fairness behavior

Before we report our results, it is useful to discuss some normative theories of distributive justice (Rawls 1971) that can provide us with benchmark predictions of fairness. We choose four candidate theories of distributive justice (see Konow 2003 and Lamont and Favor 2008 for a review) to organize our results. Our first candidate is Utilitarianism, a welfare-based principle used commonly in economic analysis. In particular, neo-classical economic theory often deals with a special form of utilitarianism where agents have independent utility functions and care only about maximizing their own money income. This “economic man,” paradigm suggests that one will make self-regarding decisions about his economic endowments and never part with any economic endowment unless he is compensated economically in return. An implication of this self-regarding version of utilitarianism suggests that an individual who acts accordingly will prefer a distribution where they have more money, independent of what other members of the society get or any procedural concerns towards fairness. We define a strong version of utilitarian behavior in our experiments if allocation amounts (for the receiver) are zero

³ Instructions are available upon request from the author.

in all three treatments. We also define a weak version of utilitarian behavior if allocation amounts are less than 10% in all three treatments.⁴

The second candidate is the principle of Strict Egalitarianism which promotes the allocation of identical levels of material goods and services for every person. We consider a rather naïve form of egalitarian behavior where all monetary entitlements will always be shared equally independent of all other characteristics. In particular, individuals adhering to such principles of distributive justice would always like to split money endowments equally, independent of the process of entitlement. We define behavior in our experiments to be egalitarian if allocation amounts are 50% in all three treatments.

Our third candidate is Locke's Natural law/Desert theory. Locke's theory proposes that if an individual spends effort on the accumulation or development of resources, it is a part of natural law that the individual deserves an entitlement to that resource because he has "mixed his labor" with the resource. An individual who holds a Lockean theory of distributive justice should then behave in a self-regarding manner whenever he perceives that he has "mixed his labor" with a resource and allocate all to the partner whenever the partner puts the effort instead. Accordingly, we define a strong version of Natural Law if allocation in OE is zero and allocation in PE is 100% and a weak version of Natural Law behavior if $OE/PE < 1$.

The fourth and final candidate principle is the libertarian principle of distributive justice. Instead of proposing any pattern of distribution, the libertarian principles focus on "just" acquisitions and exchanges. The theory posits that all distributions are just as long as individuals are "entitled" to their holdings. Nozick (1974) explicated an "Entitlement Theory" consisting of three criteria in a completely just world. First, a person who acquires a holding in accordance with the *principle of justice* in acquisition is entitled to that holding.⁵ Second, if a person who acquires a holding in accordance with the "*principle of justice in transfer*", from someone else entitled to the holding, the recipient is entitled to the holding. Third, no one is entitled to a holding except by (repeated) applications of the first and second criteria. When we consider behavior motivated by libertarian principles, there are two possibilities. A strong libertarian behavior is consistent with the observation of zero allocation in all three treatments since in all three cases the allocator is endowed with an amount by the experimenter and none of the principles of just acquisition are violated. However, it is not clear how a subject would perceive the PE treatment. On the one hand, the allocator is entitled to take allocation decision in the experiment and he (or she) may very well allocate nothing for the receiver. In that case, behavior in PE is indistinguishable from behavior under strong Utilitarianism. However, libertarian principles share with the desert based principle the notion that one has a right to the proceedings from one's own labor. As a result, it is plausible that subjects might like to respect the receiver's effort and propose a positive amount. Accordingly, behavior under libertarian principles can also suggest that allocation amounts are zero in OE and I but positive in PE. Alternatively, a weak version of the libertarian principle would suggest $OE/PE < 1$ and $I/PE < 1$.

⁴ Our choice 10% is a more conservative allocation level compared to what is typically observed in dictator games (See List 2007 for a discussion on average allocation amounts).

⁵ The principle of justice in acquisition was inspired by Locke's idea that everyone 'owns' themselves and, by mixing one's labors with the world, self-ownership can generate ownership of some part of the material world. The principle of justice in transfer was designed to specify fair contracts and ruled out situations of stealing, fraud, etc.

Based on the above discussion we set up seven hypotheses (see Table 2). Pooled results from the two countries suggest that the data does not support utilitarian, egalitarian, or libertarian ideas of distributive justice.⁶ Instead, the behavior suggests a weak version of the natural law at play (see Figure 1).

Next, we analyze gender differences in allocation amounts in our mixed gender-pair environment.

Male allocators: We do not find any difference in average allocation amounts in I and OE ($p=0.98$). However, we find that allocation amounts are lower (weakly significant) in I compared to PE ($p=0.09$). Allocation amounts are lower (weakly significant) in OE compared to PE ($p=0.08$).

Female allocators: We find average allocation amounts are lower in OE compared to I ($p=0.002$), average allocation amounts are lower in I compared to PE ($p=0.006$) and lower in OE compared to PE ($p=0.000$).

Male allocation vs. female allocation: When we compare average allocation amounts of male and female proposers in our mixed gender environment in each treatment (see Figure 2), we do not find any significant differences in allocation amounts either in I ($p=0.94$) or in PE ($p=0.3$). However, average allocation amounts are significantly different between male and female proposers in OE (t test $p=0.05$).

5. Conclusion

We elicited fairness behavior of mixed gender pairs in dictator games where the entitlement procedure was varied across treatments. Our results suggest that different methods of entitlements can lead to different moral claims associated with it, and the same subject's fairness behavior varies with the process of entitlement. We find that our data is consistent with a weak version of the fairness theories of natural desert. Subjects behave as if the moral claims towards endowments earned through own effort is the strongest. The claim is lower when allocating partners' effort-based earnings. We find that female proposers are more sensitive to differences in treatments than their male counterparts (see Figure 2). We also find that in the Own Effort treatment, female proposers allocate a significantly smaller amount to their partners compared to male proposers. This seems to be consistent with earlier findings that report women to be more sensitive to the cost of sharing than their male counterparts (Eckel and Grossman 1996, Andreoni and Vesterlund 2001, Cox and Deck 2006). In our experiments the "cost" of giving can be argued to be higher in the OE compared to the other treatments due the real effort based earnings in that treatment. It is interesting to note that female proposers also seem to feel more strongly about their partners' claims when the latter earns the endowment, although this is not statistically significant (Figure 2).

Evidence from the two countries lend support to the idea that although there can be cultural differences in weighing the trade-off between self-interest and fairness, on an average the terms have similar meanings in different places (Konow 2003). Finally, we notice a curious difference in behavior of Indian subject pool vs. USA subject pools. Our results seem to suggest that allocators in US subject pool associate a stronger moral claim towards entitlements earned

⁶ A Kruskal-Wallis test of population differences does not find any difference in the two samples ($p = 0.16$)

through own effort than their Indian counterparts ($p=0.04$).⁷ This can be indicative of cultural differences in process-based fairness considerations and can provide an interesting issue for further investigation.

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⁷ Jakiela (2007) finds similar differences in her US subject pool compared to the Kenyan subject pool in dictator games.

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Tables

Country	Sessions/matching	Treatments	Subjects
USA	2/within subjects	Inheritance, Own-effort, Partner-effort (Treatment order: Session 1: I-OE-PE; Session 2: PE-I-OE)	40 (20m,20f)
India	2/within subjects	Inheritance, Own-effort, Partner-effort (Treatment order: Session 1: OE-PE-I; I-PE-OE)	40 (20m,20f)

	Hypothesis	Alternate hypothesis	Decision (p value)
1.	Allocation is zero in all treatments.	Allocation is not zero in all treatments.	Reject (0.00)
2.	Allocation is 10% in all treatments.	Allocation is >10% in all treatments.	Reject (0.00)
3.	Allocation in OE is zero	Allocation in OE is not zero	Reject (0.00)
4.	Allocation in PE is 100%	Allocation in PE is less than 100%	Reject (0.00)
5.	Allocation in OE/Allocation in PE =1	Allocation in OE/Allocation in PE <1.	Reject (0.00)
6.	Allocation in I/Allocation in PE =1	Allocation in I/Allocation in PE <1.	Fail to reject (0.45)
7.	Allocation in PE = 0	Allocation in PE > 0.	Reject (0.00)

Graphs

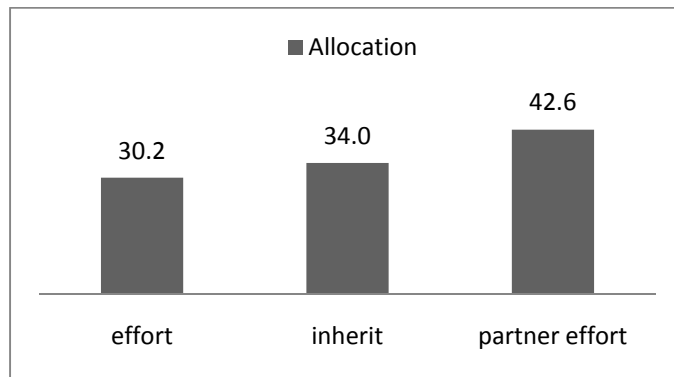


Figure 1: Average allocation (percentage) in the three treatments.

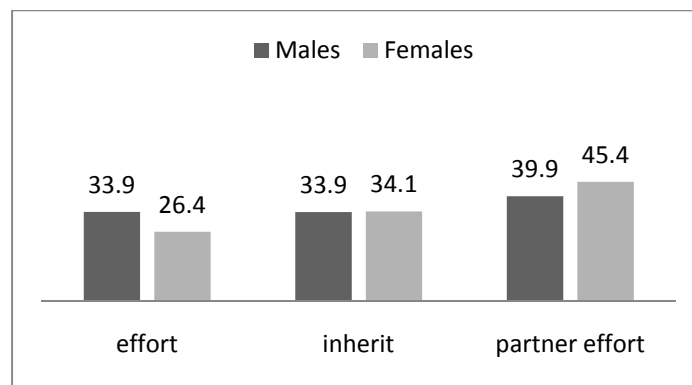


Figure 2: Average allocation (percentage) by gender.

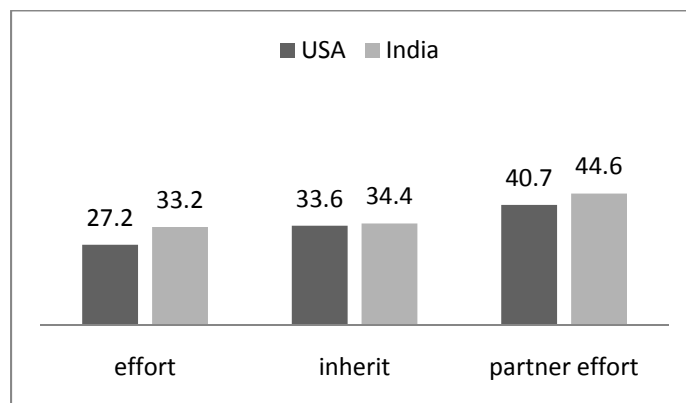


Figure 3: Pooled (males and females) country results.