Only Mine or All Ours: An Artefactual Field Experiment on Procedural Altruism

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Abstract:

In an artefactual field experiment, we introduce a novel allocation game to investigate the role of procedural altruism in household decision-making and study choices of married spouses. Subjects can distribute their earnings from the experiment either on food items (joint consumption good), or on gender specific personal clothing (private consumption good). Subjects' consumption choices are observed under two treatments – earnings with effort, and earnings without effort. At the aggregate we find that subjects exhibit a strong preference for own private consumption good when assigned to the effort treatment. However, further scrutiny suggests that women's choice for the joint consumption good in the household remains largely independent of the treatment. In contrast, men exhibit a strong preference for private consumption good in the effort treatment.

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1. Introduction

Household is the core decision-making unit of all economic activities. Not surprisingly then, there has been considerable theoretical and empirical work in economics that analyzes decision-making in the household and its effects on household welfare (Samuelson 1956; Becker, 1974, 1981; Sen 1990; Lundberg and Pollak 2003). The literature suggests that men and women have different bargaining powers that can lead to different welfare outcomes for the family (Udry 1996; Fafchamps and Quisimibing 1999; Duflo and Udry 2004; Akresh 2005; Mani 2012). An unequivocal picture seems to emerge however, of women being the more altruistic member in the family who provide a stronger patronage to overall family welfare, and promote joint household consumption more, compared to their male counterparts. For example, Quisumbing and Maluccio (2000) find that in Bangladesh, Ethiopia, Indonesia and South Africa, assets in the hands of women increase expenditures on children's clothing and education and reduce the incidence of illness among girls substantially. Udry, Hoddinott, Alderman, and Haddad (1995), and Quisumbing (1996) find that in sub-Saharan Africa, women endowed with the same amount of resources (access to education, labor and fertilizer) as men, helps to improve agricultural productivity dramatically. Datt and Joliffe (1998), Datt, Simler and Mukherjee (1999), and Cross (1999) find that mother's education has substantial poverty reduction effects in Egypt and Mozambique.

These findings provide a clear direction towards endowing women in the household with a greater decision-making role in an effort to foster and improve family welfare (Kabeer 1999). In fact, some developing countries have already started to show a purposeful shift towards promoting women's role as the primary decision-maker in their targeted welfare policies.[1] Interestingly though, very little or no work has been done to examine the role of procedural dependency on such demonstrated altruistic preferences by females in the household. This is partly due to the fact that economics traditionally has focused on outcome dependent behavior. Frey, Benz and Stutzer (2004) in a seminal article advocate a greater need for economic models of decision making to be not just a function of outcomes but also a

[1] See "Are Men Useless? (Government Says Yes)", NYT, March 9, 2012.

function of the procedure that leads to an outcome. In fact Kahneman, Knetsch and Thaler (1986) provided some of the early evidence of procedural utility playing a role in consumer decisions. A more recent strand of experimental evidence indicates that preferences for sharing or notions of fairness can be procedure dependent. For example, Hoffman and Spitzer (1985), Güth and Tietz (1986), Hoffman et al. (1994), Rutström & Williams (2000), Jakiela (2009), Dasgupta (2011) find that the frequency of self-regarding choices generally increase when subjects earn the resources or the rights to be the allocators as compared to a situation where subjects are randomly assigned to be the proposers. Since husbands and wives can have different roles in the household due to historic reasons, social reasons or current economic conditions, it begs the question whether altruistic choices among household partners are procedure dependent or not. In particular, we ask: "Does the earning procedure affect altruistic decision-making in the household?" Our experiment results reply in the affirmative.

Evaluating decision-making in the household however, can be complicated. The close proximity of the decision-makers along with repeated interactions in multiple dimensions increases the complications (Lundberg and Pollak 2003, Basu 2006). Understandably, there have been attempts to use very different investigative tools to gather reliable data on household decision-making (Duck 1991; Kirshcler 1989; Almeida and Kessler 1998; Larson and Almeida 1999; Bolger, Davis and Rafaeli 2003). Among them experimental investigations of intra-household decision-making have been gaining prominence (see Mani 2011 for a discussion). Bertrand and Mulianathan (2001) suggest that potential biases that arise in some of the other exclusively survey-based data gathering exercises can possibly be circumvented in a controlled environment provided by experiments.

The experimental work so far has focused primarily on issues of household efficiency in decision-making. For example, Bateman and Munro (2004) look at the efficiency of household decisions using lottery choices and find that couples overall are more risk averse when making choices jointly compared to making choices individually. They conclude that although gender is not a direct determinant of power in joint choices, economic dependence significantly reduces women's decisiveness in joint choices.

Iversen et al. (2006) use public good games to find that spouses do not maximize surplus from cooperation typically. However, a greater surplus is realized when women are in charge. Robinson (2012) uses a randomized field experiment to look at intra household risk sharing and finds that women send bigger transfers to their husbands in the presence of shocks. Ashraf (2009) finds that communication between spouses, and observability of actions on savings and consumption choices improve savings for the family over individual savings choices. Mani (2011) looks at household efficiency where she varies information to participants exogenously. She finds that spouse's access to information does not affect economic efficiency. In fact, household members are willing to prefer personal control on household income over economic efficiency, and when a wife's assigned share increases (exogenously), husbands undercut their own income to reduce their wives' income.

In contrast to the above literature that focuses primarily on implications and plausibility of the unitary household model of decision-making (Becker 1981), we focus exclusively on eliciting the role of procedure on consumption choices for husbands and wives. We introduce a novel game to examine whether altruistic choices in the household are procedure dependent or not. Subjects in our experiment are randomly assigned to one of the two treatments – (a) no-effort: where a subject receives money for consumption without effort, and (b) effort: where a subject puts in effort to earn money for consumption. In both treatments subjects choose between a private consumption bundle and a joint household consumption bundle. In our experiment, we find that subjects when assigned to the effort treatment have an overwhelming tendency to choose the private consumption bundle over the joint consumption bundle. However, when we separate our results by gender, we find women's choices for joint consumption in the household remain largely independent of the treatment. In contrast, men exhibit a strong preference for the private consumption bundle in the effort treatment. Our results suggest that regardless of the earning procedure, women in the household are relatively more altruistic in their consumption choices compared to their male counterparts.

2. Experiment

2.1 Procedure

The experiment was conducted in Bhogal – a slum community, adjoining Jangpura – a prosperous residential colony in New Delhi, India. Bhogal residents predominantly include migrants from the Southern part of India. Given our interest in observing procedural altruism in the household, our subjects comprise married spouses only. We hired research assistants from Bhogal to recruit 210 married couples. Each subject was promised Rs. 50 (= 1 US dollar) for showing up on time for the experiment, and additional remuneration. The nature of additional remuneration was not disclosed at the time of recruitment. We used a community center near Bhogal as our gathering area for the subjects. The subjects were asked to congregate in the community center at a pre-specified time. The subjects congregated in one of the large rooms of the community center and several research assistants were in charge of monitoring them and ensuring that there were no communications amongst participating subjects. Each married couple were then separated and escorted to two smaller adjoining rooms in the community center. In one of the rooms the subject chosen to participate in the experiment made decisions privately and after completing the decision participated in a survey on demographic and socioeconomic characteristics of their own household. [2]The subject then received the pay-off from the game and the show-up fee.

Parallelly, in the other room, the spouse of the decision-maker was asked to complete the same socio-economic survey and was given Rs. 50 for completing the survey. Once the decisions were made, and the survey was completed, the husband-wife couple was asked to leave the community center without communicating with the other waiting subjects. We implemented a pre-randomized order and selected one decision-maker from each married couple to be placed into either the effort treatment or the no-effort treatment. This ensured balanced gender representation in each treatment. Of the 210 couples

[2] See Table 2.

participating in the experiment, 100 were assigned to the effort treatment and the remaining 110 were assigned to the no-effort treatment.

In preparation for the experiment we surveyed a small subset of members in the community to identify their staple food diet and preferred personal clothing choices. We also visited the local marketplace in Bhogal, which catered mostly to the slum population. Here, we surveyed multiple grocery stores to identify and verify the staple food items purchased by families residing in Bhogal. Similarly, we surveyed the clothing stores in the same market area to identify the common clothing items purchased by residents of Bhogal. We picked two prominent stores in the area to serve the subjects. The stores provided us with store-credit receipts, which we used as our experiment payoffs.

2.2 The Procedural Consumption Game and Experiment Treatments

To examine altruism in consumption choices in the household, we introduce a new allocation game called "The Procedural Consumption Game" that is devoid of any strategic concerns. In the game, each decision-maker was asked to choose between a bundle containing private consumption goods, and a bundle containing joint household consumption goods. Food items represent joint consumption, and personal clothing represents excludable personal consumption. The decision-maker was presented with the two options and asked to use the money from the experiment to choose one of them. The private consumption bundle for males contained a shirt and a pair of trousers; the private consumption bundle for females contained two saris. The joint household consumption bundle contained staple food grains (8 kg rice and 1 kg lentil).[3] Each consumption bundle was valued at Rs. 200. At the end of the experiment, the decision-maker was given a store credit receipt (from the designated stores) specifying their choices. We had already explained to the shopkeepers that they would be receiving subjects with store receipts. We also explained to the shopkeepers the nature of our research and the fact that the subjects can only receive

[3] The Indian National Sample Survey's 55th round (2000) estimates the mean monthly per capita consumption of rice and pulses to be respectively 5.5 kilograms and 1 kilogram.

the items mentioned in the store-credit receipt. We verified at the end of each day that the protocol was indeed followed by the shopkeepers. The shopkeepers maintained picture records.

In the baseline no-effort treatment the subjects were told that they have received Rs. 200 and asked to choose one of the two consumption bundles. They were shown samples of clothing items as well as the staple food bundle before making their choices. In the effort treatment, prior to the choice task, the decision-maker participated in a real-effort task. In the real effort task, the subject was presented with four plastic bowls, three empty and one containing red and white poker chips, and was asked to separate in five minutes the chips into the three bowls – one containing only white chips, a second containing only red chips and the third containing only blue chips. If they were successful, they were asked to choose one of the two bundles described above. If they could not complete the task in the allotted time they were promised only the show-up fee of Rs. 50. Note, that five minutes were sufficient to complete the task. Our interest was in evoking a sense of real-effort and not a task that required considerable effort and could not be completed in the required timeframe. All subjects in the real effort task successfully completed the task.

3. Results

3.1 Description of the Subject Pool:

Our final subject pool consists of 210 married individuals (105 males and 105 females). Summary statistics is reported in Table 1. The average age of our subjects is 33 years. The average length of marriage was fourteen years indicating early marriage among our subjects. The subjects on an average have three children. Average household income is Rs 5353 per month, and 81% of the households have positive monthly savings. [4] We also collected data on self-reported measures of conflict between spouses on budget allocation decisions. Only 8% of our subjects report any incidence of conflict over budget allocation decisions in the household. We note that our sample averages on age, education, conflict and

[4] Using the Indian Human Development Survey from 2006, we compute the average monthly household income for poor households residing in urban Delhi to be Rs 4702. This is close to the average income made by our participant households in New Delhi, India.

income are typically higher than sample averages reported in Mani (2011). This is probably indicative of a more urban lifestyle for our migrant subject population compared to the sample in Mani (2011), which also looked at a subject population from Southern India, but in rural areas.

3.2 Subject Decisions:

Figure 1 describes average consumption choices in the effort and no-effort treatments. We find that only 9% of the subjects choose the joint consumption bundle in the effort treatment while 21% of the subjects choose the joint consumption bundle in the no-effort treatment. We further examine the distribution of these choices by gender. In the no-effort treatment, 22% of the male participants choose the joint consumption bundle. However, only 4% of the male participants choose the joint consumption bundle in the effort treatment (see Figure 2). In the no-effort treatment, 20% of female participants choose the joint consumption good, and 14% choose the joint consumption good in the effort treatment (see Figure 3). Next, we formally test the hypotheses below:

H1: Choices are identical in the effort and the no-effort treatment.

H2: Choices in the effort treatment are identical for males and females.

H3: Choices in the no-effort treatment are identical for males and females.

H4: Choices for males are identical in the effort and the no-effort treatments.

H5: Choices for females are identical in the effort and the no-effort treatments.

Our results indicate that subjects in the effort treatment are significantly less likely to choose the joint consumption bundle compared to subjects in the no-effort treatment (H1 is rejected at 5% significance level, p value=0.016). Males are significantly less likely to choose the joint consumption bundle compared to females in the effort treatment (H2 is rejected at 10% significance level p-value=0.08). Male and female choices for joint consumption bundles are not significantly different in the

no-effort treatment (we fail to reject H3, p-value=0.81). Males are less likely to choose the joint consumption bundle in the effort treatment compared to the no-effort treatment (H4 is rejected at the 1% significance level, p-value=0.007). Finally, there is no significant difference in the choice of joint consumption bundle for females across treatments (we fail to reject H5, p-value=0.42).

The mean tests however do not allow us to disentangle treatment differences and gender specific treatment differences from differences in socioeconomic characteristics. Our experiment design allows us to use socioeconomic characteristics collected during the experiment to provide a better insight into choice, conditioning on such factors. In addition, the regression analysis allows us to control for any sample imbalance in the two treatments. In Table 2 we check for balance in household and demographic characteristics between subjects who participated in the effort treatment and subjects who participated in the no-effort treatment. We find that subjects in the effort treatment are on average 5 years younger and have fewer years of marriage compared to subjects assigned to the no-effort treatment. We also find that subjects in the effort treatment have 10% more income than subjects in the no-effort treatment. We find no statistically significant difference in other characteristics between the two groups (see column 3, Table 2). To be able to isolate the impact of the treatment from other factors, we control for these differences in household and demographic characteristics in the regression analysis to follow.

3.3 Regression Analysis

We estimate the following multivariate linear regression model to examine treatment and gender specific treatment differences in consumption choices controlling for demographic and socio-economic characteristics.

$$P_i = \beta_0 + \beta_1 \text{ Treatment}_i + \beta_2 \text{ Male}_i + \beta_3 \text{ Treatment*Male}_i + \sum_{j=1}^{R} \beta_j X_{ij} + \varepsilon_i \qquad (1)$$

where for each subject i, P_i takes a value 1 if the subject chooses the common consumption good, and zero otherwise. Treatment is a binary variable which takes a value 1 if the individual is assigned to the effort

treatment and 0 otherwise. Male is equal to 1 if male, 0 otherwise. Xs include a vector of socio-economic characteristics. We estimate equation (1) using the linear probability model (LPM). We account for arbitrary forms of heteroskedasticity using the White (1980) formulation (see Wooldridge 2002).

To test whether consumptions choices are identical in the effort and non-effort treatment, we estimate equation (1) without the interaction term, where β_1 captures differences in consumption choices between the effort and no-effort treatments. The associated regression result is reported in column 1, Table 3. We find that subjects assigned to the effort treatment are 10 percentage points less likely to choose the joint consumption good compared to subjects assigned to the no-effort treatment. This difference is statistically significant at the 5% significance level suggesting that the earning procedure influences altruistic consumption choices in the household.

We are particularly interested in identifying gender specific treatment differences in consumption choices. For which we estimate equation (1) as is. The associated regression result is reported in column 2, Table 3. The joint test on the treatment dummy and the interaction term ($\beta_1 + \beta_3$), captures differences in consumptions choices between the effort and no-effort treatment for males. The coefficient estimate on the treatment dummy and the interaction dummy jointly has a value of -0.20 (appended in column 2, Table 3), which is statistically significant at the 1% significance level (p-value=0.003). We find that male subjects are 20 percentage points less likely to choose the joint consumption good when assigned to the effort treatment compared to when assigned to the no-effort treatment. Next we examine treatment differences among female subjects. The coefficient estimate on the treatment dummy (β_1) captures differences in consumption choices between the effort and the no-effort treatment among female subjects. We find that women are only 1 percentage point more likely to choose the joint consumption good when assigned to the effort treatment compared to when assigned to the no-effort treatment, though this difference is not statistically significant at even the 10% significance level. This suggests that womens' preferences for the joint consumption bundle is irrespective of her treatment status, while males indicate a strong preference for the private consumption good in the effort treatment. Finally, β_3 captures the

difference between difference in consumption choices between effort and no-effort treatment for males and the difference in consumption choices between the effort and no-effort treatment for females. We find that male subjects in comparison to female subjects are 21 percentage points less likely to choose the common consumption good in the effort treatment compared to the no-effort treatment. This suggests considerable gender specific difference in consumption choices by treatment. Our results suggest that procedure in which income is earned does not influence altruistic choices for women; however, it does significantly change men's altruistic choices.

Table 3 (column 2) provides further insights into the role of socioeconomic characteristics, and its influence on experiment choices. First, we find that both age and number of years married is negatively associated with the choice of joint consumption good. In other words, relatively newly married couples seem to signal preference for joint consumption more compared to couples who have been married for long years. It is plausible that this is due to an inherent desire to appear more caring for the family for the relatively newly weds. Second, we find subjects with more children are more likely to choose the joint consumption good. This is possibly indicative of a general pressure on common consumption in larger families, where parents would like to provide more to common consumption whenever possible ceteris paribus. Third, a 100% increase in household income is associated with 11-percentage point decline in the choice of joint consumption good. Fourth, subjects with positive savings are 11-percentage point less likely to choose the common consumption good compared to subjects who do not save anything. Both of these are intuitively in the right direction. Families with relatively higher income and or saving are not in need of basic food consumption. As a result, they are in a convenient position to spend the earning from the experiment on private consumption. Fourth, we find that conflict in the household over budget allocation decisions affects consumption choices significantly. Overall, subjects who report conflict in the household over budget allocation decisions are 30 percentage points more likely to choose the joint consumption good. Curiously, we find that the response to conflict differs by gender. When we interact the conflict dummy with the male dummy and include this as an additional right hand side variable

(column 3, Table 3), we find that female subjects reporting conflict over budget allocations in the household are 64 percentage points more likely to choose the joint consumption good. In comparison, male subjects that face conflict over budget allocations in the household are 80 percentage points more likely to choose the private consumption good.

4. Conclusion

Our experiment evaluates the role of procedure in altruistic consumption choices among male and female spouses. Our results support the growing work on procedural utility that suggests that subject choices are more self-serving at the aggregate when the procedure of earning involves effort. However, we find that women's altruistic behavior remain largely independent of the earning procedure, lending support to the notion that the female gender role promotes choices that are typically nurturing and caring (Eagly and Crowley 1986; Brickell and Chant 2012). Our results also seem to be supportive of the framework of cooperative conflict (Sen 1990) where women identify more than men in household's interest. The latter is particularly interesting to observe in our subjects where presence of household conflicts over budgetary allocations make men and women behave very differently; men prefer private consumption more, while women prefer joint family consumption more facing such conflicts. In retrospect, our results broadly support the conclusion of enhancing the role of women in the household. The steps taken by countries as different as UK, Mexico and Sri Lanka, where food coupons are directed towards women than men, and India's recent step towards making women the head of the household for food distribution purposes seem a positive move to improve household welfare keeping in mind the more altruistic concerns that women spouses exhibit.

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Figures

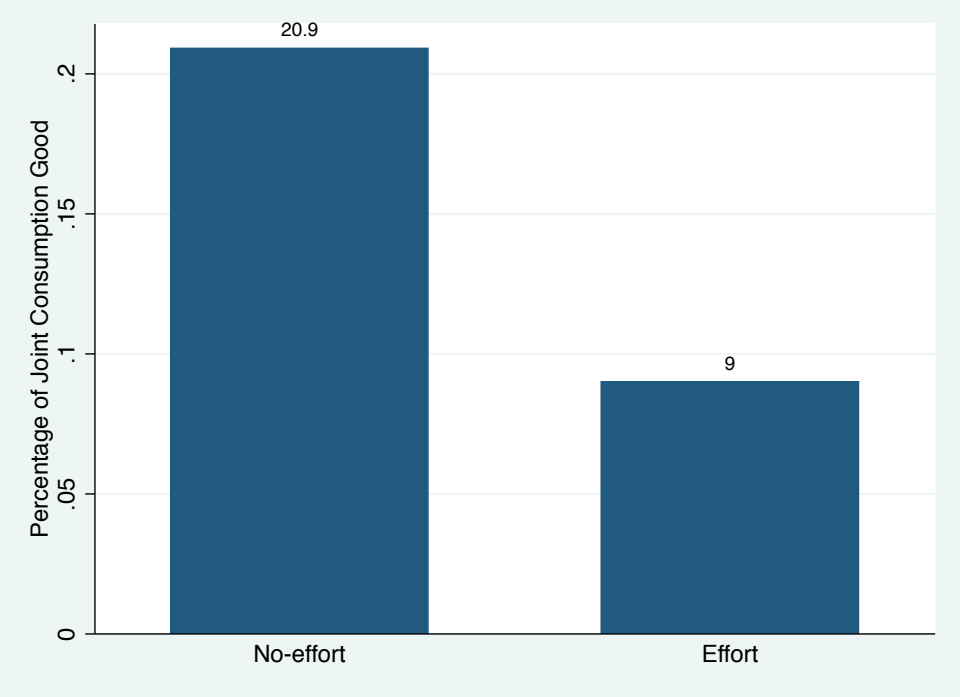

Figure 1: Percentage of joint consumption good by treatment

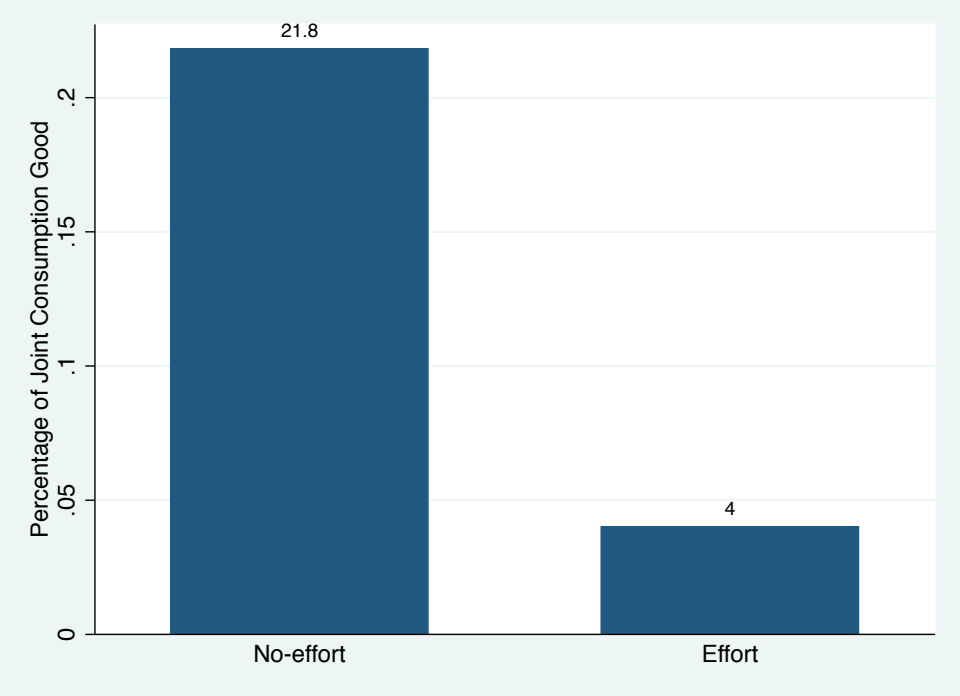

Figure 2: Percentage of joint consumption good by treatment for Males

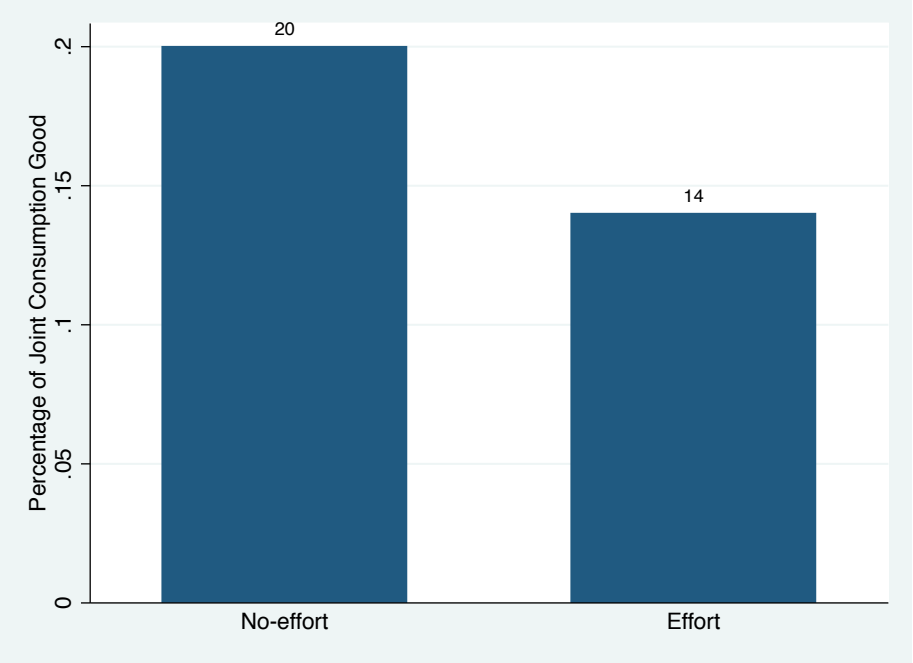

Figure 3: Percentage of joint consumption good by treatment for Females

Tables:

Table 1: Summary statistics

Variable names: Variable definition	**Mean (std. dev) Experimental data**
Common: =1 if public good chosen, 0 otherwise	0.15
	(0.36)
Male: = 1 if male, 0 otherwise	0.50
	(0.50)
Treatment: =1 if assigned to the effort treatment, 0 otherwise	0.47
	(0.50)
Age: in years	33.40
	(9.45)
Years married: number of years married	13.80
	(9.68)
Children: number of children	2.87
	(1.29)
Monthly household income: in Rupees	5353
	(2505)
Log (household income): log of monthly household income	8.50
	(0.40)
Savings: = 1 if positive monthly household savings, 0 otherwise	0.81
	(0.39)
Conflict over budget: =1 if conflict between husband and wife on budget allocation decisions, 0 otherwise	0.08
	(0.27)
Sample size	210

Table 2: Covariate balance between groups

Variables	Mean (std. dev) Effort (1)	Mean (std. dev) No-effort (2)	Mean difference (std. error) (3) [1-2]
Male	0.50	0.50	0.0
	(0.50)	(0.50)	(0.07)
Age	30.82	35.75	-4.93***
	(7.37)	(10.50)	(1.26)
Years married	12.48	15.01	-2.53*
	(8.29)	(10.68)	(1.32)
Children	2.74	3	-0.26
	(1.14)	(1.41)	(0.17)
Monthly household income in Rupees	5619.85	5110.54	509.30
	(2668.64)	(2332.47)	(345.16)
Log (household income)	8.55	8.45	0.10*
	(0.38)	(0.41)	(0.06)
Savings	0.85	0.77	0.07
	(0.35)	(0.42)	(0.05)
Conflict over budget	0.06	0.10	-0.04
	(0.23)	(0.30)	(0.03)
Sample size	100	110	

Notes: Standard deviations reported in parentheses for columns 1 and 2. In column 3, standard error reported in parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

Table 3: Determinants of Common Consumption Good

Variables	(1) Common	(2) Common	(3) Common
Treatment	-0.10**	0.01	0.04
	(0.05)	(0.06)	(0.06)
Male	-0.03	0.07	0.10
	(0.06)	(0.08)	(0.07)
Treatment*male		-0.21**	-0.24***
		(0.09)	(0.09)
Age	-0.003	-0.003	-0.002
	(0.008)	(0.008)	(0.008)
Years married	-0.002	-0.003	-0.004
	(0.009)	(0.009)	(0.009)
Number of children	0.05*	0.05*	0.057*
	(0.03)	(0.03)	(0.03)
Log (household income)	-0.08	-0.11*	-0.13**
	(0.06)	(0.06)	(0.06)
Savings	-0.10	-0.11*	-0.09
	(0.06)	(0.06)	(0.06)
Conflict over budget	0.28**	0.30***	0.64***
	(0.11)	(0.10)	(0.22)
Conflict over budget*male			-0.44*
			(0.26)
Linear Hypotheses:			
$\beta_1=0$	-0.10**		
	(0.05)		
$\beta_1 + \beta_3=0$		-0.20***	
		(0.06)	
$\beta_1=0$		0.01	
		(0.06)	
$\beta_3=0$		-0.21**	
		(0.09)	
N	210	210	210

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix: Subject Instructions

Welcome to today's experiment.

You will receive a colored chip with a code on it. If you have a red chip please go to the room on the left. In this room, you will be asked some survey questions about your day to day life. You are free to say that you do not want to answer any particular question. At the end of the survey, you will be given Rs. 50 and escorted out of the room by one of the experimenters.

[No Effort]

If you have received a green chip please go to the room on the right. Here you will participate in the following tasks:

We will give you a store receipt worth Rs. 200 which can be used to buy only the specified choices below. You have to choose from one of the two options below:

Option 1: A shirt and a pair of trousers(for males)/ Two sarees (for females). See examples displayed on the table.

Option 2: Food items (see packets displayed on the table)

Once you have made your choice, you will receive Rs. 50 for showing up. In addition, you will receive a store-receipt with your choice written on it. You should go to the store by tomorrow to pick up your chosen commodities.

Before leaving you will be asked some survey questions about your day-to-day life. You are free to say that you do not want to answer any particular question.

At the end of the survey, you will be given Rs. 50 and the store receipt and escorted out of the room by one of the experimenters. If you have any questions/clarifications you can raise your hand and I will answer your query privately.

[Effort]

If you have received a green chip please go to the room on the right. Here you will participate in the following tasks:

There are four bowls. In one bowl there are chips containing three colors. There are three other empty bowls. You need to separate out the chips into the three bowls, with each containing chips of only one color. You will get five minutes to finish your task. If you complete the task successfully, we will give you a store receipt worth Rs. 200 which can be used to buy only the specified choices below. You have to choose from one of the two options below:

Option 1: A shirt and a pair of trousers(for males)/ Two sarees (for females). See examples displayed on the table.

Option 2: Food items (see packets displayed on the table)

Once you have made your choice, you will receive Rs. 50 for showing up. In addition, you will receive a store-receipt with your choice written on it. You should go to the store by tomorrow to pick up your chosen commodities. Note: if you cannot separate the chips in the three bowls within five minutes you will only receive Rs. 50 showing up on time.

Before leaving you will be asked some survey questions about your day-to-day life. You are free to say that you do not want to answer any particular question.

At the end of the survey, you will be given Rs. 50 and the store receipt (if you successfully completed the task) and escorted out of the room by one of the experimenters. If you have any questions/clarifications you can raise your hand and I will answer your query privately.