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Experimenter Demand Effects and Altruism towards the Experimenter

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1. Introduction

This paper presents a stress test of experimenter demand effects, which refer to changes in behavior by experimental subjects due to cues about what constitutes appropriate behavior (Zizzo, 2010). This test is of particular relevance to interpret results in settings, such as public good games, trust games or bargaining games, that are characterized by *variable surplus*. That is, how the overall amount is split across the subjects depends on the actions by the subjects.

We run an experiment where subjects can physically destroy money-equivalent coupons awarded to them[1] as well as, in a different task, explicitly return money to the experimenter. The advantage of the destruction task is that the coupons' destruction could not directly benefit the experimenter. This is in contrast to experiments where it implicitly implies a money transfer to the budget of the experimenter if experimental surplus is destroyed or not obtained. Of course, returning money to the experimenter by the implied transfer of unexploited experimental surplus could *in itself* be due to experimenter demand, i.e. being due to the demands of the experimental decision environment, rather than being due to altruism towards the experimenter.

In our experiment, if subjects are driven by altruism towards the experimenter in deciding what to do in experiments with variable surplus tasks, we would expect subjects to return money to the experimenter but *not* to destroy the coupons as this could not benefit the experimenter. Conversely, if experimenter demand effects drive both physical coupon destruction *and* returning money to the experimenter, both should be positive and should be positively correlated to each other. Our analysis variously controls for the pleasure of the physical destruction activity, for the potential benefits of coupon destruction for the coupons provider and for the clarity of the instructions.

We have a social information treatment manipulation where we provide summary information about how subjects behaved in a pilot. We also have a partial, albeit imperfect,

[1] We cannot use money directly because in the U.K. it is illegal to destroy money. We describe later experimental checks for our claim that we can treat coupons as equivalent to money in the experiments.

measure of sensitivity to social pressure by using the Stöber (2001) social desirability scale.[2] Intuitively, under social information the *experimental norm* (what is expected of subjects in the experimental environment) should be clearer and therefore subjects who are more responsive to social pressure should destroy more (conversely, subjects who are resistant to social pressure may destroy less). The potential role of social pressure in economic behavior is, of course, not new and has been previously recognized for example in Masclet et al. (2003) and Masclet (2003); and so has the role of experimenter demand characteristics, for example in Bardsley (2008), Zizzo (2010) and Zizzo and Fleming (2011).

2. The Experiment[3]

Design. 64 participants completed the social desirability measure online. About one week later participants were invited back to an experimental laboratory session. Participants completed two tasks in counter-balanced order followed by debriefing questions. Questions to check understanding were given ahead of each task, and clarifications were given to subjects who gave any incorrect question.

The two tasks were a (coupons) *destruction task* and a (cash) *return task*. In the destruction task participants were given six 50 pence paper coupons worth £3 and six paper blanks. The coupons were redeemable at university cafés. The participants were told "you need to decide how many vouchers to **destroy** by shredding them". For each coupon not destroyed a paper blank was destroyed instead, using the same shredder, so that the same physical activity took place for all participants, thus controlling for any pleasure from the physical activity. Participants were discreetly observed during this task. Participants kept any non-destroyed coupons for use after the experiment. In the return task participants were given six 50 pieces worth £3. The participants were told "you need to decide how much cash to

[2] An example of question on this scale 'I always stay friendly and courteous with other people even when I'm stressed out' (Stober, 2001).
[3] The experimental instructions is available as an online appendix.

return to the experimenters" and were provided with an envelope into which cash could be returned. Any remaining cash and coupons could be kept as participant payment.[4]

There were two experimental treatments. In a *NoInfo* treatment (n=31), there were no further instructions. In the *SocialInfo* treatment (n=33), subjects were told, truthfully, the following social information: "In test sessions… some people destroyed vouchers/returned cash - of those that did, on average (rounded to the nearest 50p) they destroyed/returned £1 of vouchers/cash."

After the decision tasks participants were asked about their perceived altruism in voucher destruction, "Do you think destroying vouchers would be beneficial to [campus cafés]?" on a Likert scale from 1 *not at all beneficial* to 7 *extremely beneficial*. As a further check, subjects were also asked about how clear they had found the instructions for each of the two tasks, again on a 1 to 7 Likert scale.

Results. Figure 1 presents histograms with amounts destroyed and returned. 30% of participants in the *NoInfo* treatment and 35% of participants in the *SocialInfo* treatment did destroy some coupons. 6.6% and 11.1% of endowments were respectively returned and destroyed in the *NoInfo* treatment, vs. 9.7% and 11.8% in the *SocialInfo* treatment. The amounts destroyed and returned are comparable (Wilcoxon p=0.392),[5] implying that altruism towards the experimenter (as separate from experimenter demand) is not the primary driver of behavior, for it cannot explain the destruction activity. While there was more destruction or returning of coupons under *SocialInfo*, this does not achieve statistical significance (Mann-Whitney p=0.753 and 0.258 for destruction and returning, respectively).

Table 1 presents a regression analysis on the amount destroyed. As independent variables we have CashReturned (the amount returned in the return task) in two of the regressions, SocialInfo (=1 in *SocialInfo*, else 0), SocDes (the Stöber measure of social

[4] Before leaving participants had the opportunity to sell their remaining vouchers using an incentivized Becker et al. (1964) minimum selling price methodology if so they wished. Their average valuations for the 50p coupons was 51 pence (S.D. = 18.49), confirming that the coupons were appropriately valued by subjects.
[5] All p values reported in this paper are two-sided.

desirability),[6] SocDesxSocialInfo (an interaction term), Beneficial (stated extent to which the coupons destruction is seen as beneficial towards the university café provider), ClearIDestruction (stated clarity of the destruction task instructions), ClearIReturn (stated clarity of the return task instructions). There is a clear and strong positive correlation between amount returned and amount destroyed, which is consistent with an experimenter demand effect explanation rather than one based on altruism towards the experiment. There is also a positive coefficient on Beneficial, which is to be expected; however, the clarity of the instructions on destruction seems, if anything, to increase rather than decrease destruction,[7] suggesting that confusion was not a problem in our experiment.

SDS17xSocialInfo has a statistically significant positive coefficient. Subjects with a higher value of SDS17 are more socially sensitive to social pressure, vertical – i.e., experimenter demand – and horizontal – i.e., peer pressure. When social information is provided, this provides greater clarity on the social demands of the situation and subjects who are more sensitive to social pressure are then more responsive to destroy more; though, as there is no average effect of social information, this clarity would also seem to yield less destruction from subjects who are less sensitive to social pressure.

3. Conclusions

Altruism towards the experimenter is unable to explain the key finding of destruction of coupons by roughly one subject out of three, the same as the fraction of subjects who returned money to the experimenter. While the latter can be explained by altruism, the former cannot; the strong positive correlation between coupons destroyed and money returned to the experimenter is also left unexplained by an explanation based on altruism towards the experimenter. Confusion is unlikely to be behind this as the tasks were simple, subjects' understanding was checked, and variables for clarity of the instructions on the destruction task

[6] This is centred about the mean to reduce multicollinearity when interacted (Marquardt, 1980).
[7] In regression 2, the only one not achieving at least $p<0.1$ significance, $p=0.106$.

were either statistically non-significant or positively rather than negatively correlated with destruction. Subjects valued the coupons (see footnote 4) and our analysis also controlled for the pleasure of physical destruction by ensuring that the same physical destruction activity took place regardless of how many coupons were destroyed; and for the possibility of benefiting the café coupon providers by having a relevant question that went into our regression analysis.

Social information provided clarity on the experimental norm and, where present, our measure of sensitivity to social pressure predicted the amount of destructive activity. The heterogeneity in degrees to which subjects are sensitive to social pressure is still largely a neglected variable in economic research, and it should not be.

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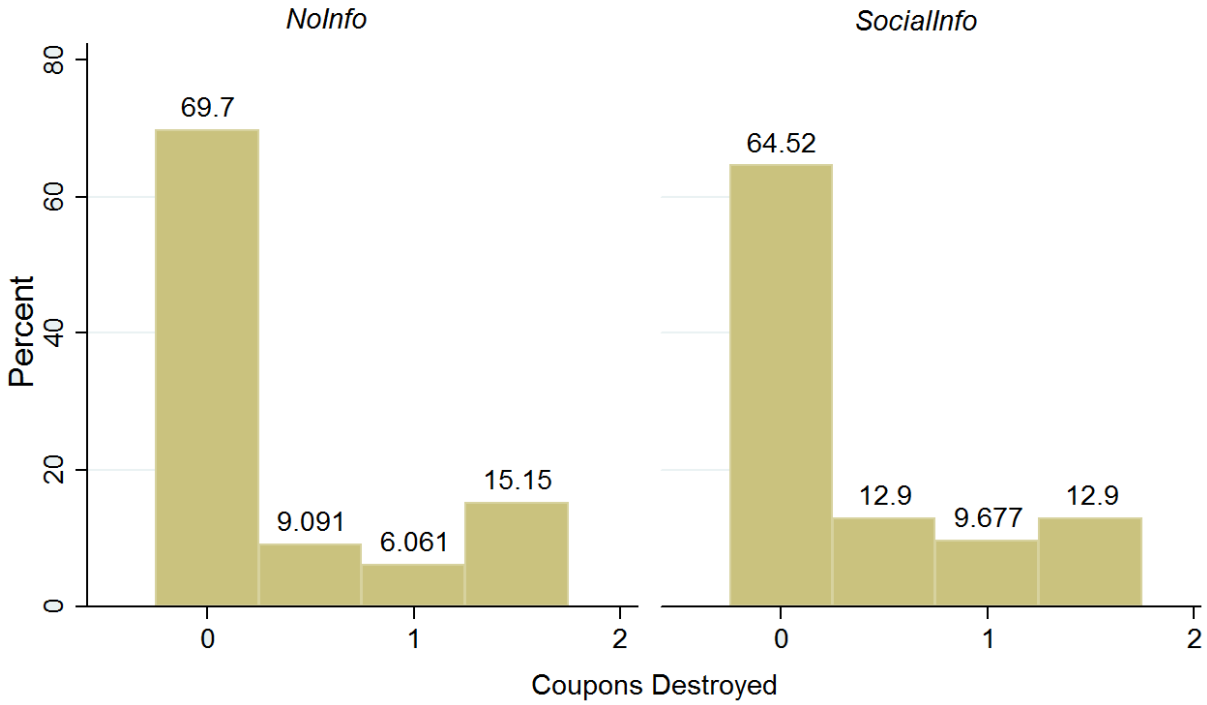
Figure 1. Histograms of Destruction and Return Choices in the NoInfo and SocialInfo Treatments

(a) Destruction Task



(b) Return Task

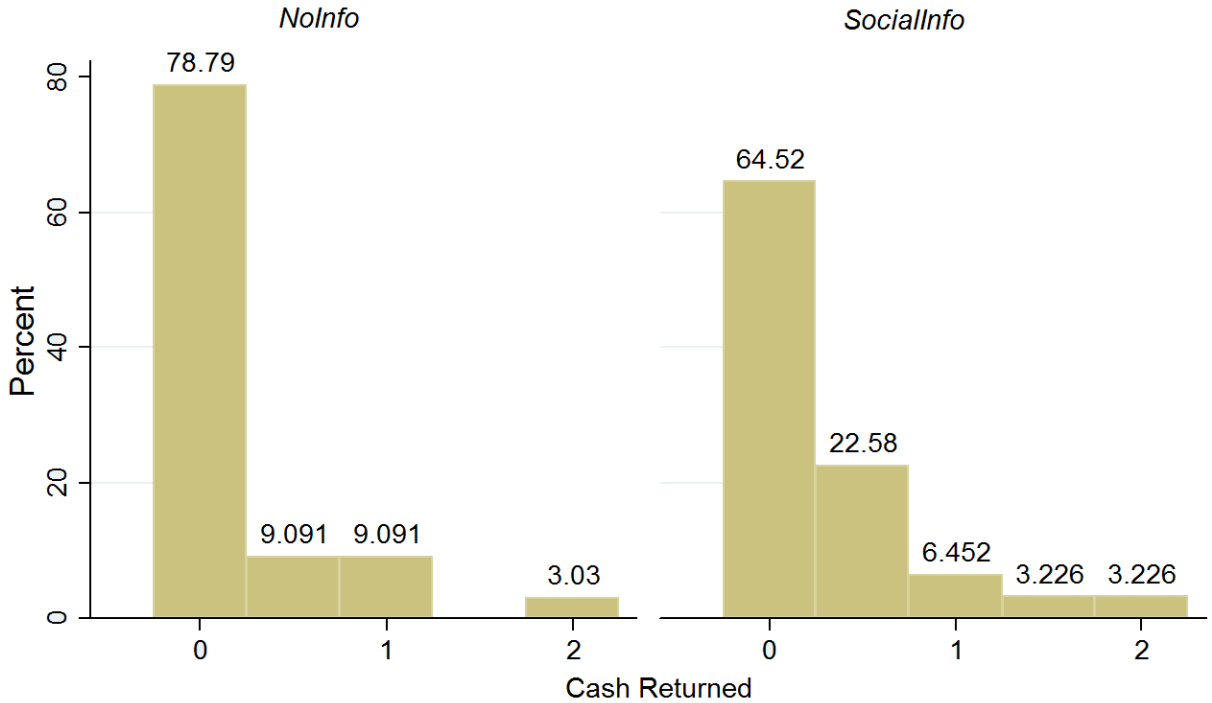


Table 1. Regressions on Amount Destroyed

	Ordered Probit		OLS	
	(1)	(2)	(3)	(4)
CashReturned	1.389***		0.528***	
	(0.452)		(0.126)	
SocialInfo	0.005	0.130	0.029	0.069
	(0.346)	(0.340)	(0.121)	(0.138)
SocialDes	-0.108	-0.125	-0.046	-0.051
	(0.082)	(0.083)	(0.029)	(0.032)
SocialDesxSocialInfo	0.253**	0.270**	0.092**	0.114**
	(0.121)	(0.117)	(0.040)	(0.045)
Beneficial	0.202**	0.212**	0.086**	0.093**
	(0.103)	(0.101)	(0.037)	(0.042)
ClearIDestruction	0.416**	0.299	0.147**	0.128*
	(0.198)	(0.185)	(0.065)	(0.074)
ClearIReturn	-0.259	-0.188	-0.121*	-0.110
	(0.185)	(0.187)	(0.065)	(0.074)
Constant			-0.214	-0.089
			(0.334)	(0.378)
R^2 (pseudo for models 1 and 2)	0.196	0.059	0.400	0.208

n=63 for all regressions (one subject failed to answer the questions on the clarity of instructions). Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.