

Literature Review for Incentive Design in Experiments

Presentation for

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- ① Monetary Incentive
- ② Without Performance-Based Incentives
- ③ Non-Monetary Incentives

Show up fee

- Krawczyk (2011) conducts a field experiment, in which the researcher sends two types of invitations to register in an experimental economics subject database. The invitation that emphasized financial advantages of participation (3.6 EUROS/hr) resulted in a higher response rate than the other invitation which emphasized non-financial advantages.

Treatment	Academic major and gender			
	Econ		Non-econ	
	Male	Female	Male	Female
Pecuniary	20.0%	16.0%	2.0%	1.6%
Non-Pecuniary	12.1%	12.4%	1.1%	1.0%

Figure 1: Response rates within 72 hours, by gender, academic major and treatment

Comparison with Willingness to Help Research

- Abeler and Nosenzo (2015) send first-year students an email inviting them to register in the subject pool for lab experiments using three email types: (1) email that mentions the monetary reward associated with participation in experiments; (2) email that addresses the importance of helping research; and (3) email that describes both the monetary reward and the importance of helping research. Without mentioning the monetary reward the sign-up rate drops by two-thirds. Comparing the sign-up rates of only monetary rewards and both motivations, there is no effect of appealing to subjects' willingness to help research on sign-up.

Monetary Incentives May Not Increase Participation

- KER (2012) finds in field experiments in rural Mexico and Tanzania that payments help to raise participation where people are otherwise uninterested, but that participation in communal tasks can be high irrespective of the incentives if social norms favor participation. High individual payment is statistically significantly different from: Low payment ($p \leq 0.01$), *Nopayment* ($p \leq 0.10$), *Paymenttoschool* ($p \leq 0.05$).

Treatments	Willing to participate ^b
1. Payment neither mentioned nor offered; n=39	32 (82%)
2. Mention that no payment will be made; n=39	29 (74%)
3. Individual payment of Tshs 200; n=39	25 (64%)
4. Individual payment of Tshs 1000; n=39	38 (97%)
5. No individual payment but Tshs 1000 for each participant awarded to the village school; n=38	29 (76%)
Total:	153 (79%)

Figure 2: Results of stated choice experiment about participation in communal work to maintain village schoolyard under various reward types and levels

Performance-Based Incentives Motivate Careful Decision Making

- Offering monetary incentives is perceived as a method of simulating a real-world setting, which is needed for obtaining accurate and meaningful results in experimental economics, for guaranteeing the validity of the experiment and testing the economic theory. Incentivizing participants will guarantee that they will act “normally”.(Madsen and Stenheim, 2015)
- Burke et al. (1996) find that in an Allais-paradox environment, the sensitivity to monetary incentives is significantly lower with real lotteries than with hypothetical lotteries, that is, adheres to expected utility theory
- Clot et al. (2018) finds that under the hypothetical-payment treatment, players are much less egoistic and far more egalitarian.

Paying for All Rounds or Only One Round in Multi-Round Experiments

- One method is to pay for every round and another is to pay only for one randomly chosen round. Between these two extreme options, it is also possible to choose a middle way of paying a subset of the rounds.
- Charness et al. (2016) provide an extensive literature review on experimental methods of paying for a subset or for all decisions made by a participant in an experiment. When paying for only one decision the researcher should compensate for the decreased likelihood of that choice's outcome being drawn for payoff by multiplying the amount. The “pay one” method can possibly help to avoid wealth effects, hedging, and bankruptcy considerations. The authors discuss mixed evidence on differences across payment methods and suggest that in general paying for a subset of decisions is at least as effective as paying for all decisions and can be even more effective. The authors also discuss how to choose the best incentive method when designing an experiment.

Paying All Participants or A Subset

- Clot et al. (2018) conduct an experiment of a standard dictator game and compare subjects' choices of two payment conditions: when only a percentage of subjects (e.g., 1 out of 10) are paid, and when every subject receives a payment. Their results show no significant difference between the “subset” and the “full” payment methods.
- Gajic et al. (2012) examine response rates for a stated-preference survey under four types of incentives: (1) no incentive, (2) prepaid cash incentive, (3) many low lottery prizes, and (4) a few high lottery prizes. They find that the highest rate of completed surveys was for the few high lottery prizes group.

Conversion Rates of Experimental Currency to Real Money

- Experimental currency unit can be converted into cash at some announced conversion rate. For example, when researchers conduct an experiment which has a pie to be divided (e.g., in ultimatum or dictator games), using experimental coins with some conversion rate allows to present to the participants a 100-coins pie, and therefore, the amounts in the game look like percentages. This makes the offers easier to understand and interpret both for the participants and later for the article readers.
- Davis and Holt (2021) recommend not to use nominal money unless the researcher has some specific reason to do so, because a currency filter can increase incentives and mask or even dilute financial incentives”.

Application with Conversion Rates of Experimental Currency to Real Money

- To change the tasks accordingly, Cox et al. (1982) fit the experimental design to the number of participants by changing the upper end of value draws in accordance with the number of bidders in the auction, to hold constant the expected gain per bidder despite the variable number of bidders in the session.

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Without Performance-Based Incentives

- Madsen and Stenheim (2015) argue that incentives affect behavior through their influence on one or more of three factors: (1) cognitive exertion; (2) motivational focus; (3) emotional triggers, and monetary incentives are not required to achieve these effects. Moreover, requiring the use of incentives in experiments has disadvantages and suggests that using real incentives in experimental economics is not necessary.
- Camerer and Hogarth (1999) examine the effects of increased incentives on experimental results in 74 different experiments, conclude that no replicated study has made rationality violations disappear purely by raising incentives.

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Equivalent (Quid Pro Quo)

- Becker et al. (2019) compare the effect of three different prepaid incentives on cooperation and response rate in an online survey: a ballpoint-pen (worth approximately 2 Swiss Francs = 2 USD), a gift card voucher (of 10 Swiss Francs = 10 USD) and cash (10 Swiss Francs = 10 USD). They find that cash provides the strongest direct, positive effect on the overall response rate and also on the latency until response after first contact. Additionally, cash minimizes social selectivity in response compared to the other two incentives they used.

Degree Requirements

- In certain institutions (such as the psychology department) degree requirements include participation in experiment, such as a certain accumulated time spent in experiments. Then, the requirement can provide an incentive to participate, but will not provide incentives to make careful decisions in the experiment.
- However, potentially departments that have such a requirement to participate in experiments can require to accumulate not a certain time in hours, but rather to accumulate a certain number of experimental points. Then researchers can give different points based on performance, making it worthwhile for participants to be careful in their decisions, mimicking the ability of cash payments to provide pay-for-performance incentives.

Credits

- Ding et al. (2018) find that comparing bubbles in experimental asset markets, bubble measures in the extra credit treatment are not significantly different from bubble measures in the cash treatment.
- Dickinson (2009) conducts dictator games designed to elicit preferences for fairness using extra-credit points as a reward medium. He compares his results with the results found in Andreoni and Miller (2002), who incentivized subjects using cash. He finds that classroom points are a salient reward medium relative to cash.

Bonus Points

- King and Scullin (2018) conduct an experiment seven days before the final project due date, issuing students following extra credit opportunity via email: 12 POINTS EXTRA CREDIT on final project by maintaining an average of eight or more hours/night of sleep for 5 nights and 0 nights of sleep less than 7 hours. No change to grade for average between 7.0-7.99 hours per night, minus 5 points if average less than 7 hours/night.

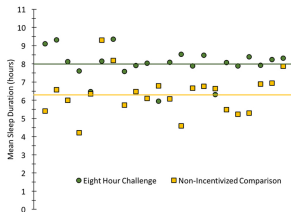


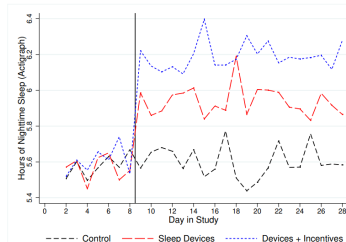
Figure 3: Mean Sleep Duration Preceding Submitting a Final/Term Project.

Bonus Points Plans

- Cruz et al. (2023) find that extra credit incentives “to sleep 8 hours” encouraged longer sleep durations in small-sized classes. At the end of the semester, students could opt to take a time-in-bed challenge to earn large-sized (8 points; Study 1) or medium-sized (5 points; Study 2) extra credit on their final exam if they maintained an average time-in-bed of nine hours (or average total sleep time of eight hours). A smaller-sized extra credit (2 points) could be earned if the overall benchmarks were not met but one still improved on their baseline sleep duration by 20 minutes or sleep efficiency by 3%. The interaction with incentive size was non-significant, with similar sleep efficiency across timepoints in Study 1 and 2. Students with higher sleep efficiencies performed better on their final exams ($r=.28$, $p \leq .05$).

Encouragement and Device

- Bessone et al. (2021) conduct a 3-week RCT. Information, encouragement, and improvements to home sleep environments increased sleep duration by 27 minutes per night by inducing more time in bed. Interventions include (i) night sleep treatments that offered participants information about sleep, verbal and/or financial encouragement to increase night sleep and items to improve their home-sleep environments, and (ii) a nap treatment that offered daily opportunity for a half-hour nap in the afternoon in a quiet space.



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