

ARTICLE

If you've earned it, you deserve it: ultimatums, with Lego

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(Received 1 July 2021; accepted 19 August 2021)

Abstract

The ultimatum and dictator games were developed to help identify the fundamental motivators of human behavior, typically by asking participants to share windfall endowments with other persons. In the ultimatum game, a common observation is that proposers offer, and responders refuse to accept, a much larger share of the endowment than is predicted by rational choice theory. However, in the real world, windfalls are rare: money is usually earned. I report here a small study aimed at testing how participants react to an ultimatum game after they have earned their endowments by either building a Lego model or spending some time sorting out screws by their length. I find that the shares that proposers offer and responders accept are significantly lower than that typically observed with windfall money, an observation that is intensified when the task undertaken to earn the endowment is generally less enjoyable and thus perhaps more effortful (i.e., screw sorting compared to Lego building). I suggest, therefore, that considerations of effort-based desert are often important drivers behind individual decision-making, and that laboratory experiments, if intended to inform public policy design and implementation, ought to mirror the broad characteristics of the realities that people face.

Keywords: desert; dictator game; earnings; ultimatum game; windfalls

Windfalls versus earnings

As readers of this journal will be well aware, the ultimatum game was designed to try to shed light on the fundamental motivators of human behavior. To recap, in a typical ultimatum game, a proposer is asked to offer some share of an endowment that he has been given to a responder. If the responder accepts the offer the proposer is left with the remainder of his endowment, but if the responder rejects the offer then both the responder and the proposer get nothing. Standard rational choice theory predicts that the responder will accept whatever is offered – because anything is better than nothing – and thus that the proposer will offer next to nothing. Those who have undertaken tests of the ultimatum game have concluded that the predictions of rational choice theory are wrong: proposers' mean offers tend to exceed 40% of their endowments, and offers of less than 20%, although rare, are

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rejected half of the time (e.g., see Camerer & Thaler, 1995; Roth, 1995; Henrich *et al.*, 2005).

It has been suggested that these seemingly high offers by proposers are motivated by a concern for fairness in the distribution of final outcomes. The dictator game was created to test this hypothesis, where an allocator is asked to give some share of his endowment to a recipient and that is the end of the game. Rational choice theory predicts that the allocator will give the recipient nothing, but mean allocations still tend to hover at 20–30% of the endowment, albeit with around 20–30% of allocators typically giving nothing (e.g., Camerer, 2003; Falk & Fischbacher, 2006; Engel, 2011). The dictator game results therefore imply that although people are in general motivated by considerations of fairness in final outcomes to some degree, a concern for the possibility of being punished for perceived greed in the ultimatum game appears to explain much of the high proposer offers. In short, ultimatum game offers are driven in large part by a strategic form of self-interest.

In most studies that apply the ultimatum and dictator games, however, the endowments are simply given to the proposers and allocators – that is to say, the endowments are windfalls. In our daily lives, most of us are rarely fortunate enough to receive such windfalls; rather, our endowments are more likely to be earned. Therefore, one may legitimately question whether economic games with windfall endowments really reveal that much about people's motivations in their actual real-world decisions. If players in the ultimatum and dictator games had to undertake tasks to earn the endowments, then their perception of property rights might substantively influence their responses. As summarized in Table 1, there is some evidence that this is indeed the case.

Specifically, the studies listed in Table 1 found that if allocators earn the endowments in dictator games then they tend to give a lower share to recipients than that typically observed with windfall endowments, while if recipients earn the endowments the allocators will give them more. That is, if people earn the endowments a perception that they are deserving influences the players' responses, which dominates any consideration of equality in final outcomes. There is less evidence on earned endowments in the ultimatum game, but what evidence there is appears to point towards the same conclusion.

I therefore undertook a small study to try to test whether proposers and responders in the ultimatum game make decisions over earned endowments that are more consistent with the predictions of rational choice theory than those typically observed with respect to windfall endowments.

A small study

The participants were required to either build a Lego model or to spend some time sorting out screws into their various lengths, and were informed that they would be paid for completing these tasks. The reason why they were exposed to either Lego building or screw sorting was because I wanted to test whether their responses depended on what I thought were qualitatively different tasks (I expected the Lego building task to be the less arduous of the two, on which more later). One hundred and twenty participants, comprised of university staff and students, built the Lego

Table 1. Studies with earned endowments in the dictator and ultimatum games.

Authors	Game	Earners	Results
Cherry <i>et al.</i> (2002)	Dictator	Allocators answered a quiz to earn \$10–40	>95% of allocators gave nothing
Carlsson <i>et al.</i> (2013)	Dictator	Allocators answered a survey on the use of supermarket bags for 50 yuan	Mean allocation (to charity) = 19% of endowment
Oxoby and Spraggon (2008)	Dictator	Allocators answered a test to earn \$10–40	Allocators gave nothing
Oxoby and Spraggon (2008)	Dictator	Recipients answered a test to earn \$10–40 for the allocator	Mean allocation >50% of endowment (when recipients did well on test)
Bekkers (2007)	Dictator	Allocators earned \$9 for completing a questionnaire	They could give all earnings or nothing to charity; 94.3% gave nothing
Ruffle (1998)	Dictator	Recipients answered a test and earned \$4–10 for the allocator	Recipients who did well were given a higher share of the endowment than if endowment size was not determined by performance
Ruffle (1998)	Ultimatum	Responders answered a test and earned \$4–10 for the proposer	Responders who did well were given a higher share of the endowment than if endowment size was not determined by performance

model and took a mean time of 23 minutes (mode: 20 minutes) to complete their task. A different group of 120 university staff and students each spent 20 minutes sorting out screws by their sizes. Perhaps consistent with my expectation that the screw sorting was the more arduous, 52 participants stated that they enjoyed that task, compared to 114 participants who stated that they enjoyed building the Lego model.

After the respondents had completed their tasks they were told that they had earned £10 for their efforts. They were then asked how much of their earnings they would be willing to share with an anonymous person who had done nothing. The participants were told that they would be left with their earnings minus their offer if the other person accepted their offer, and would be left with nothing if the other person rejected their offer. They were not told that the other person would actually receive their offer if they were to accept it, although most respondents probably implicitly believed that to be the case. The participants thus assumed the position of proposers in an ultimatum game with earned endowments. In addition to their earnings from the ultimatum game, the respondents were paid a take-home fee of £5, which resulted in 227 of the 240 respondents leaving with more than the £10 that they initially earned from the task that they undertook.

After acting as proposers, the participants were also placed in the position of responders in the earnings-related ultimatum game summarized above. That is,

they were asked to imagine that they knew someone who had been paid £10 for undertaking the Lego building or screw sorting task that they had themselves done. They were then asked to state the minimum share of the £10 that they would be prepared to accept if a person who had undertaken the task were asked to share their earnings with them, in the knowledge that a refusal to accept the offer would leave the proposer with nothing. These responses were used to determine whether another participant's offer, when placed in the position of a proposer, was accepted. For example, if participant n 's answer when assuming the position of a proposer was $\pounds x$ and participant $(n-1)$'s answer when assuming the position of a responder $\leq \pounds x$, participant n received $\pounds(10-x)$; if participant $(n-1)$'s answer was $> \pounds x$, participant n received nothing from the ultimatum game.

I appreciate that many might object to the fact that responders in this study were not financially incentivized. The reason why the proposers were also asked to serve as responders was because by having actually undertaken the task that was required to earn the endowment they would be able to fully identify with all that the task entails. Had separate financially incentivized participants been used to serve as responders, they could have merely been informed of the tasks without having to undertake them, but that would have come with the possible limitation of them failing to appreciate the work that the tasks required. Alternatively, separate participants could have been asked to undertake the tasks without payment, but this may have led to much difficulty in securing sufficient participants, and, moreover, proposers could not then have been asked to share their earnings with people who had not undertaken the task. Or the respondents could have been financially incentivized when placed in the position of both proposers and responders, but this would have necessitated a complicated experiment design and may have confounded the proposer-responder answers. On balance, parsimony and task appreciation were prioritized over the possible influence of financial incentives on participant answers in this study, but I acknowledge that this is not the last word on these matters and I welcome further studies that use different methods to test the influence of proposer-earned endowments in the ultimatum game.

The participants were also asked to respond to a number of other hypothetical unincentivized scenarios. The possible problems of using non-incentivized questions in these types of economic games are acknowledged – for example, one might legitimately expect that in a hypothetical dictator game, people may express more generosity than if they faced real financial incentives. One could counter by claiming that the temporal proximity of the hypothetical games to the incentivized game may have made it quite likely for the participants to relate psychologically to the later games also being incentivized, but their responses to these are reported here only for secondary consideration by those who might find some value in them, perhaps as inputs for hypothesis building.

The hypothetical games were as follows. After answering the question from the perspective of an ultimatum game proposer, the respondents were asked how much of their £10 earnings they would have offered to a responder if the responder had undertaken a task identical to the one that they had done but had been paid nothing for doing so (i.e., an ultimatum game where the responder had undertaken the same task). Next, the participants were asked how much of their earnings they would have

Table 2. Results.

	Ultimatum proposer (responder not worked)	Responder	Ultimatum proposer (responder worked)	Dictator allocator (recipient not worked)	Dictator allocator (recipient worked)
Lego					
Mean	£3.31	£0.93	£4.62	£0.90	£3.35
SE	£0.15	£0.12	£0.11	£0.14	£0.19
SD	£1.58	£1.26	£1.17	£1.50	£2.11
Variance	£2.49	£1.59	£1.38	£2.24	£4.46
Mode	£3.00	£0.00	£5.00	£0.00	£5.00
Median	£3.00	£0.15	£5.00	£0.00	£4.00
Range	£0–£10	£0–£5	£0–£10	£0–10	£0–£10
Screws					
Mean	£2.92	£0.50	£4.66	£0.85	£3.75
SE	£0.13	£0.09	£0.10	£0.13	£0.17
SD	£1.46	£0.86	£1.04	£1.40	£1.85
Variance	£2.12	£0.73	£1.08	£1.95	£3.41
Mode	£3.00	£0.00	£5.00	£0.00	£5.00
Median	£3.00	£0.00	£5.00	£0.00	£5.00
Range	£0–£5	£0–£4	£0–£7	£0–£5	£0–£7

offered to a recipient who had not done the task and had no authority to refuse the offer (i.e., a dictator game where the recipient had done nothing), and finally, they were asked the same question under the assumption that the recipient had done the same task as them but had been paid nothing for doing so (i.e., a dictator game where the recipient had done the same task).

The results of the study are summarized in [Table 2](#).

As noted earlier, the common observation in the literature is that in the ultimatum game with windfall endowments, mean offers exceed 40% and modal offers are typically 50% of the endowment. Since the literature is quite large, these results are taken as the control. For the Lego building task, the mean and modal offers were 33% and 30% of the endowment, respectively. The comparable figures for the screw sorting task were 29% and 30%, respectively. With respect to responders, the common observation over windfall endowments is that offers less than 20% are rejected about 50% of the time; in this study offers of less than 20% were rejected 24% of the time in the Lego building task (with the mean and modal acceptable shares at 9% and 0% of the endowments, respectively), and 12% of the time in the screw sorting task (with mean and modal acceptable shares at 5% and 0%, respectively). Thus, for both tasks, earned endowments appear to have prompted substantially lower proposer offers and a

greater willingness from responders to accept low offers than that typically reported with windfall endowments.

Moreover, the results show that the Lego building task produced higher proposer offers and higher required acceptable offers from responders than the screw sorting task, both to statistically significant levels (with 1-tailed Z-scores, $p = 0.024$ and 0.001 , respectively; with multiple hypothesis tests, $p = 0.047$ and $p = 0.005$, respectively – see List *et al.*, 2016). As aforementioned, the participants who sorted screws generally perceived their task as less enjoyable, and thus perhaps more effortful, than those who built the Lego model. Therefore, it is possible that the lower offers and lower required offers in the screw sorting task were the consequence of proposers wanting to be compensated for greater effort, a willingness by responders to compensate for greater effort, and an expectation by proposers that responders would be willing to compensate for greater effort. (NB. Some of the studies summarized in Table 1 used performance rather than effort to determine endowment levels, and their results suggest that participants also consider that characteristic as relevant in considerations of desert.) If that is the case, then there may be no significant difference between proposer offers and responder demands between tasks if differences in effort could be removed as a relevant consideration. This conclusion can be extended to the differences observed when using windfall versus earned endowments in that in the former the proposers have done little to nothing – in relation to effort, performance, or any other relevant consideration – to deserve their endowment, which perhaps explains their relatively high offers and the responders' relatively high demands.

The non-incentivized results summarized in Table 2 allow us to test two further hypotheses (skeptics of non-incentivized responses can skip to the next section). First, by comparing the offers from the ultimatum game proposers with those of the dictator game allocators (in both cases where the responder/recipient has done nothing), we can confirm that strategic self-interest over and above any concern with equality in final outcomes appears to substantially drive ultimatum game offers, in that those offers were significantly higher than the dictator game allocations both for the Lego building and the screw sorting tasks ($p < 0.001$). Second, for both tasks, the proposer/allocator in the ultimatum/dictator game gave significantly higher offers/allocations when it was assumed that the responder/recipient had also done the Lego/screw task (and were paid nothing for doing so) than when it was assumed that they had done nothing ($p < 0.001$ both for Lego and screw sorting). This provides some further, albeit largely unincentivized, evidence that the responses were driven substantively by considerations of the effort-based desert.

The policy relevance

My small study of course has many limitations, several of which have already been acknowledged. The participants, for example, were chosen for their convenience, and are hardly representative of the general population. Moreover, to reiterate, some of the questions were not financially incentivized – sometimes, it is argued, after considering the merits and demerits of different methods, but nonetheless the potential problems with the approach adopted are fully appreciated.

Limitations aside, I contend that the results suggest that effort-based desert matters to people, and that if, rather than receiving windfalls, they have to earn their endowments, then, if asked, they will be willing to share, and be expected to share, a lower proportion of their endowments with others. This general conclusion applies not only to windfall versus earned endowments but also across different earnings-related tasks. For example, a task (or indeed a job) that is perceived to be generally more effortful (or less enjoyable) may provoke lower levels of generosity and less punishment for an apparent lack of generosity than those that generally require less effort. Or at least this will be the observation at face value, for if the different levels of effort are controlled for, we may find that generosity and punishment remain quite stable.

The recognition of the importance of effort-based desert leads me to propose that rewarding people for their effort sustains their effort. This was reflected in Akerlof's (1982) contention that a wage higher than the minimum necessary is met by employee effort that is higher than egoism dictates, because employees now think that employers deserve a fair return. In real work scenarios, there is a general acceptance of desert-based rewards that results in unequal distributions (Starmans *et al.*, 2017), but, as noted above, the voluminous literature on the dictator and ultimatum games that uses windfall endowments fails to acknowledge the importance of desert. That being the case, this body of research lacks real-world policy relevance in relation to peoples' propensities to share their resources with others or, in the case of the ultimatum game, propensities to punish others for perceived insufficiencies in sharing, at least beyond the limited circumstances where one might experience windfalls. At most, this research offers only very general conclusions that might be relevant to policy design, principally that people often appear to be strategically self-interested when they are aware that they may be punished for blatant acts of selfishness, but, at the same time, many people like to see an element of distributional fairness over final outcomes if no party can claim property rights over an endowment.

In short, the research using windfall endowments decontextualises decision-making too much, which is a little ironic if one is interested in real-world implications, given that the essence of behavioral public policy is that context matters. Of course, the research that uses earned outcomes also in many ways departs from the circumstances that people actually face – in terms of the small study reported in this article, for instance, there are very few people who earn an income from constructing Lego models. (NB. Sorting screws might be different – quite a few participants asked me if I was paying them to tidy up my garage.) But by requiring participants to at least do something to earn their endowments the study – like those principally focussed on the dictator game summarized in Table 1 – took them one step closer to reality. The policy lesson emerging from this body of work is that people respect property rights and that there is broad recognition and acceptance of effort-based desert. Consequently, when considering an endowment that one party to an exchange has earned, the willingness of that party to share, and the tendency for other parties to punish a perceived lack of generosity by that person, are much closer to the predictions of rational choice theory than the evidence using windfall endowments, where close to no effort is expended by participants, typically implies.

More generally, for laboratory studies of human motivations to hold relevance for policy design and implementation the context of the study ought to match, as far as possible, the circumstances that people actually face. I fear that insufficient attention is sometimes paid to this basic premise. For instance, in the real world, some people suffer extreme shortages, others face moderate scarcity, and still others enjoy abundance, and different motivational forces will come to the fore to facilitate flourishing, or even survival, in these different circumstances. Behavioral experiments ought to aim to reflect these (and other) circumstances to enable their results to offer better insights into what drives people as they navigate their way through life.

Acknowledgements. I am grateful to Michael Cuna for statistical support.

Conflict of interest. The research reported in this article was funded by the LSE's Marshall Institute. I have no conflicts of interest.

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Cite this article: Oliver A (2021). If you've earned it, you deserve it: ultimatums, with Lego. *Behavioural Public Policy* 1–8. <https://doi.org/10.1017/bpp.2021.29>