



## Self-Serving Bias across Strategic and Non-Strategic Dictator Games with Production

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# Self-Serving Bias across Strategic and Non-Strategic Dictator Games with Production

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## ABSTRACT

This paper investigates behavior across strategic and non-strategic dictator games with a preceding production phase. In both treatments subjects remain paired and play a trust game immediately following the dictator game. In the strategic condition subjects are informed about the subsequent trust game, while in the non-strategic condition they are not. Dictators in our non-strategic condition display a self-serving bias. On the other hand, dictators in our strategic condition are more generous and display no self-serving bias. Despite the increased generosity, transfers and earnings in the trust game are lower in the strategic condition. Results suggest that generosity, perceived as having a strategic motivation, can undermine trust.

Keywords: real effort; dictator; distributive preferences; trust

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## 1. Introduction

Dictator games with a preceding production phase enable researchers to investigate how earned endowments affect perceptions of fairness and how, in turn, those perceptions alter distributional preferences. When dictators generate the endowment, splits tend to be more selfish; when receivers generate the endowment, splits tend to be more equal (Cherry et al., 2002; Oxoby & Spraggon, 2008). These findings suggest that production of the endowment provides a social context that invokes particular normative responses (Frohlich et al., 2004).

When participants jointly contribute towards production, relative contributions impact perceptions of fairness (Cappelen et al., 2007; Konow, 2000). Although equal splits remain a norm, relative contributions introduce a notion of fairness in which each participant receives an allocation proportional to their contribution (Frohlich et al., 2004). This context allows researchers to explore behavior for self-serving bias, which is the tendency to choose between competing distribution norms in a way consistent with one's self-interest (Babcock & Loewenstein, 1997; Campbell & Sedikides, 1999; Messick & Sentis, 1979). For example, in Ubeda (2014) contributions toward the endowment are determined through a real effort task and non-selfish participants are observed to be self-serving, choosing the fairness norm that benefitted them.<sup>4</sup>

Here we investigate how strategic considerations impact distributive preferences and self-serving bias when production is jointly determined. To alter the strategic nature of the dictators' choice we adopt an experimental design similar to Johnsen & Kvaløy (2016) in which participants played a two-period trust game (Berg et al., 1995) under one of two conditions. In

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<sup>4</sup> Empirical evidence regarding self-serving bias is mixed. Cappelen et al. (2007) find no evidence that participants were systematically self-serving. However, contributions towards production in Cappelen et al. (2007) is varied through rates of return on individual investments rather than through real effort tasks, in contrast to Ubeda (2014) and the design presented in this paper.

their strategic condition each pair knew that they would play with the same partner, in the same role, twice. In their equivalent, non-strategic condition, the second trust game remained unknown until after the completion of the first trust game. The authors observe that both trust and reciprocity are higher in the first period of their strategic condition. However, the level of trust is significantly lower in the strategic condition. These results are striking, suggesting that the interpretation of prosocial behavior as having a strategic motivation (even if unfounded) may reduce potential gains from social interactions.

In our design, participants remain paired for the duration of the experiment with the dictator (receiver) becoming the trustee (truster) in the subsequent trust game. In our strategic (non-strategic) condition, participants are informed (not informed) that they will play a trust game immediately following the dictator game. This is the first study to investigate strategic considerations of distributional preferences and self-serving bias. Results suggest that dictators in the non-strategic condition display self-serving bias. In contrast, dictators in the strategic condition are more generous and display no self-serving bias. Despite this generosity, trust and earnings are significantly lower in the strategic condition. Put another way, generosity when perceived as being strategically motivated undermines trust.

## **2. Experimental Design**

Each experimental session consisted of 2 parts. The instructions used neutral language, referring only to player A (the dictator and trustee) and player B (the receiver and truster).<sup>5</sup> During each part, participants were informed that they would have the opportunity to earn money and that each part was independent such that their earnings in part 1 would not carry over to part

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<sup>5</sup> Experimental instructions available in supplementary online materials.

2. Their total earnings were the sum of their part 1 and part 2 earnings. All decisions remained anonymous and they were paid confidentially.

Part 1 consisted of two stages. In stage 1 each participant completed the slider task that was developed by Gill and Prowse (2012), earning 1 experimental dollar (ED) for each slider completed. After stage 1, the number of EDs earned by each pair were combined to determine the endowment to be split. One member of the pair was then randomly selected to be player A (the dictator) and the other to be player B (the receiver). The dictator would then divide the endowment between themselves and the receiver.

During part 2 each subject remained paired as they were in part 1. Both players started part 2 with a 10 ED endowment. Player B was told that they could transfer any portion,  $x$ , of their endowment to player A and that for each ED transferred, player A would receive  $5x$ . After receiving the transferred amount, player A was able to transfer any amount,  $y$ , up to  $5x$  back to player B. Earnings in part 2 were  $10 - x + y$  and  $10 + 5x - y$  to players B and A, respectively.

In our *Partner Known* condition, the rules for part 1 and part 2 were explained at the beginning of the experiment whereas in our *Partner Unknown* condition, the rules concerning part 2 remained unknown to all players until part 1 concluded. Following Johnsen and Kvaløy (2016), we consider *Partner Known* and *Partner Unknown* as our strategic and non-strategic conditions, respectively.

### **3. Results**

Data was collected at the University of Massachusetts Lowell in November and December of 2018. Across 6 sessions, we collected 66 and 62 observations in *Partner Known* and *Partner Unknown*, respectively. Each session lasted approximately 30 minutes and

participants earned an average of \$12.13 (including their \$5 show up payment). Table 1 displays the average effort and earnings in part 1 as well as the average transfers, proportion of amount received returned (the back transfer), and earnings in part 2.<sup>6</sup>

Partner Known	Part 1		Part 2		
	<u>Effort</u>	<u>Earnings</u>	<u>Transfer</u>	<u>Back Transfer</u>	<u>Earnings</u>
Player A (Dictator/Trustee)	12.58 (3.83)	12.33 (4.65)	5.98 (3.64)		27.88 (12.41)
Player B (Receiver/Truster)	10.82 (4.13)	11.06 (4.65)		0.359 (0.263)	16.06 (9.02)
<b>Partner Unknown</b>					
Player A (Dictator/Trustee)	10.90 (4.50)	14.23 (5.59)	8.06 (3.31)		31.03 (11.76)
Player B (Receiver/Truster)	12.42 (3.58)	9.10 (4.43)		0.486 (0.213)	21.23 (9.58)

*Note:* Amounts presented in Experimental Dollars. Standard deviations in parentheses

**Table 1: Averages from part 1 and part 2 across treatments**

### 3.1. Part 1: Effort Task and Distributive Preferences

In aggregate, an average of 11.70 and 11.66 sliders were completed, creating average endowments of 23.4 and 23.3 EDs in *Partner Known* and *Partner Unknown*, respectively. In *Partner Known*, dictators behavior can be seen as strategic (Johnsen & Kvaløy, 2016). The proportion of the endowment that the dictator kept in *Partner Known* was lower than in *Partner Unknown* (0.524 v. 0.613;  $t = 1.983$ ,  $p = 0.052$ ;  $z = 1.675$ ,  $p = 0.094$ ).<sup>7</sup>

<sup>6</sup> Throughout the paper, unless otherwise noted, two-sided t-tests and Wilcoxon ranksum tests are used with 66 and 62 observations evenly split across dictators and receivers in *Partner Known* and *Partner Unknown*, respectively.

<sup>7</sup> To provide further support we regress the proportion of the endowment that the dictator kept on a *Partner Unknown* indicator, the size of the endowment generated, and indicators for whether the dictator was more, less, or equally productive as the receiver. The *Partner Unknown* indicator is positive and significant (0.091 (0.045)  $p = 0.047$ ). Neither the size of the endowment nor the productivity indicators effect the proportion kept. Details available in the online supplementary materials.

To discern distributional preferences, we follow Ubeda (2014) and characterize distributions strictly for the following: Equality (adhering to splitting the endowment evenly), proportionality (adhering to splitting the endowment consistent with respective effort), and selfish (the dictator keeping the entire endowment). First we note, consistent with Frohlich et al. (2004), that the rate of selfishness is quite low in both conditions with one observation in *Partner Known* and two in *Partner Unknown*. Table 2 displays the incidence of distributions consistent with equality and proportionality overall and by dictator productivity. Note that 1 observation was removed from each condition where the dictator and receiver were equally productive and the distribution was both proportional and equal (to avoid double counting).

	Total	More Productive	Less Productive
<u>Partner Known</u>			
Proportional	7	4 (0.57)	3 (0.43)
Equal	8	5 (0.63)	3 (0.38)
<u>Partner Unknown</u>			
Proportional	9	7 (0.78)	2 (0.22)
Equal	7	0 (0.00)	7 (1.00)

Note: Proportion of observed distributions in parentheses

**Table 2: Observed distributions across treatments**

Self-serving bias suggests that one's distributional preferences depend on one's relative productivity. That is, a more (less) productive dictator who is concerned with fairness will prefer the proportional (equal) fairness norm. To investigate, we run Chi-Squared tests to determine whether one's productivity is independent of one's distributive preference across treatments. In *Partner Known* we cannot reject independence ( $X^2 = 0.045$ ,  $p = 0.833$ ). In *Partner Unknown* we reject independence ( $X^2 = 9.679$ ,  $p < 0.01$ ).

Further, following Ubeda (2014), one-sided binomial tests examine whether the observed distributions are proportional across more and less productive dictators. Specifically, in the absence of self-serving bias we should expect observations of each fairness norm to be proportionally equal across more and less productive dictators. On the other hand, with self-serving bias, we should expect that more than half of proportional (equal) distributions stem from more (less) productive dictators. In *Partner Known* we cannot reject proportionality, 4 of 7 proportional ( $p = 0.50$ ) and 3 of 8 equal ( $p = 0.855$ ) distributions are self-serving. In *Partner Unknown* we reject proportionality, 7 of 9 proportional ( $p = 0.09$ ) and 7 of 7 ( $p < 0.01$ ) equal distributions are self-serving.

### 3.2. Part 2: Trust Game

Across both conditions players remained paired and participated in payoff equivalent trust games during part 2. Results from Johnsen and Kvaløy (2016) suggest that prosocial behavior that could be perceived as strategic was discounted and actually undermined subsequent trust. We observe similar behavior.

Despite dictators being more generous in *Partner Known*, the transfer is larger in *Partner Unknown* (5.98 v. 8.06:  $t = 2.389$ ,  $p = 0.020$ ;  $z = 2.539$ ,  $p = 0.011$ ).<sup>8</sup> Further, the proportion sent back to trusters in *Partner Unknown* is also larger (0.359 v. 0.486:  $t = 2.038$ ,  $p = 0.046$ ;  $z = 1.736$ ,  $p = 0.083$ ).<sup>9</sup> As a result, the average earnings in the trust game are higher in *Partner Unknown* (26.13 v. 21.97:  $t = 1.956$ ,  $p = 0.053$ ;  $z = 2.112$ ,  $p = 0.034$ ). This overall difference is

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<sup>8</sup> To provide further support we regress the transfer on a *Partner Unknown* indicator and the proportion of the endowment kept by the dictator. The *Partner Unknown* indicator is positive and significant (2.68 (0.849)  $p < 0.01$ ) and the proportion kept is negative and significant (-6.76 (2.34)  $p < 0.01$ ). Details available in the online supplementary materials.

<sup>9</sup> However, results in a regression controlling for the transfer amount suggest that the *Partner Unknown* indicator is not significant. Details available in the online supplementary materials.

driven by difference across roles; we observe that trustees' earnings are similar (27.88 v. 31.03:  $t = 1.042, p = 0.301; z = 1.257, p = 0.209$ ) while trusters earn more in *Partner Unknown* (16.06 v. 21.23:  $t = 2.222, p = 0.030; z = 2.036, p = 0.042$ ).

This suggests that when generosity is perceived (correctly or not) as being strategically motivated trust is sufficiently depressed and earnings in an otherwise equivalent trust game are significantly reduced.

## 5. Concluding Remarks

We show that distributional preferences and self-serving bias are sensitive to strategic considerations. Participants in our non-strategic condition display a self-serving bias. Importantly, in our strategic condition, dictators are more generous and display no self-serving bias. However, the strategic nature of this generosity undermines trust and, as a result, earnings are lower in the trust game.

Future research is warranted to understand the mechanisms underlying dictator generosity and the lack of trust observed from receivers in the strategic condition. While it is intuitive to suggest that the generosity observed in *Partner Known* was an attempt to signal one's trustworthiness and that this signal was simply discounted by the receivers, this cannot be determined with the current data. To understand the dictators' motivation future research could elicit beliefs concerning subsequent transfers. Similarly, eliciting receivers' beliefs, concerning the intent of this generosity, would further reveal the underlying mechanisms of the results observed.

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