Online Appendix: Report-dependent utility and strategy-proofness

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In this online appendix, we very briefly discuss experimental evidence that is consistent with our predictions.

Low priority and truthfulness: Prediction 1
A subject in Li (2017, treatment SP-RSD) privately observes a priority score, an integer $i \in [\![1, 10]\!]$, and submits a complete ROL over four options with common values $\mathbf{v}$ for all participants.[1] Indeed, only 61.1% of proposers with (the worst) priority score 1 submit the true ROL (1,2,3,4), and 17.8 % submit the dominated ROL (4,3,2,1) with the lowest possible payoff in the report-independent dimension. Since all proposers have the same $\mathbf{v}$, ranking options worst to best corresponds to the order of their likelihood of being left over. Additionally, around 6.7% submit ROL (3,2,1,4), which can be explained similarly with an additional effect that in some settings $v_4 = \$0$ which participants may want to avoid.

As delineated in the main text, the popular ROL $(4, 3, 2, 1)$ is top-choice monotone, and, therefore, this evidence is also consistent with EBLA. An alternative design can disentangle the theories. Since top-choice monotonicity only depends on vector $\mathbf{v}$, one could induce a preference vector $\mathbf{v}$ for the lowest-priority participant such that ranking from most to least attainable is not top-choice monotone. Li (2017) imposes common values, implying that it is reasonable that the lowest-priority agent believes the others will most likely leave option 4 for her and least likely leave option 1. If instead this agent receives information that the other participants draw their assigned valuations from a distribution such that the popularity order is, say, $(2, 4, 3, 1)$, then a the lowest-priority agent with report-dependent utility would optimally submit ranking $(1, 3, 4, 2)$. This ROL is not top-choice monotone and therefore could not be explained by an aversion to disappointment as in Meisner and von Wangenheim (2021).

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[1] To be precise, this design does not exactly impose the beliefs required for Prediction 1. Since ties are possible and broken randomly, a participant with priority score 1 does not choose last with certainty.

Common values and priorities and truthfulness: Prediction 2
If we consider the non-truthful ROLs for each priority score separately, the data by Li (2017) are suggestive evidence for Prediction 2. The most common misrepresentation for scores 1 and 2 is $(4, 3, 2, 1)$; for score 3, it is $(3, 2, 1, 4)$; and for scores above 4, it is $(2, 1, 3, 4)$. Similarly, the most common option ranked first among the misrepresentation for scores 1 and 2 is 4; for score 3 it is $2, 3$ and 4; for score 4 it is 4 and 2; and for better scores it is 2. While a similar pattern would emerge if participants believed they played the Boston IA mechanism, such a theory cannot explain why participants rank their least-preferred option first unless they believe that this manipulation is inconsequential.

Preference intensities and truthfulness: Prediction 3
Klijn et al. (2013) design an experiment with three teachers and three schools with one opening. For all teachers, $v_1 = 30$ and $v_3 = 10$, but the relabeling of schools $\{X, Y, Z\}$ into $\{1, 2, 3\}$ is individual for each teacher. Their setting is competitive because every teacher has bottom priority at her school 1, medium priority at her school 2, and top priority at her least-preferred school 3. Taken together, there is no asymmetry in capacities or popularity, but each teacher has a higher priority at option 2 compared to 1. In three treatments, they vary $v_2 \in \{20, 13, 27\}$. All preferences and priorities are common knowledge. In line with the prediction, they report the frequency of ROL $(2, 1, 3)$ as 19%, 41%, and 43% in the treatments 13, 20, and 27, respectively.

Information and truthfulness: Prediction 4
Prediction 4 is difficult to test with real subjects in the lab because we cannot observe their beliefs. Subjects may incorrectly believe that other participants' $\mathbf{v}$ is correlated to their own preferences (Chen and Sönmez, 2006, similar-preference bias). Therefore, it might be best to study this prediction with real subjects who are told that they play against computers who randomize uniformly over ROLs.

Because the experiment of Pais and Pintér (2008) is an imperfect test for Prediction 4, we now state Prediction 5 directly tailored to their setting. They let five participants rank three options (schools) with capacities $\mathbf{q} = (q_A, q_B, q_C) = (2, 2, 1)$, and for each participant $\mathbf{v} = (15, 9, 3)$, where options $(1, 2, 3)$ are a privately known relabeling of (A, B, C). There are four information treatments. In "zero," participants know $\mathbf{q}$ and their own $\mathbf{v}$ with their true ROL. In "low," they additionally learn an option where they are among the favorite q_i candidates. In "partial," they additionally learn the full priority vector of all options. In "full," they learn the full priority vector of all options and all participants' individual $\mathbf{v}$.

It is the knowledge of $\mathbf{q}$ in the zero-information treatment that makes the design imperfect to test Prediction 4. However, our model can still help to explain the truthfulness rates listed in Table 1. In line with our intuition, the priority-option bias accounts for most of the difference between the zero-information treatment and others. Under low information, the revealed option essentially becomes an outside option because it is attainable regardless of what others report. Hence, (4) of Proposition 2 is violated whenever the revealed priority is not the most-preferred

Mechanism	Info	Truth	POB	SOB	POB&SOB	Other
DA	Zero	82.20%	—	4.40%	—	13.30%
	Low	75.60%	4.40%	0.00%	6.70%	13.30%
	Partial	66.70%	13.30%	0.00%	20.00%	0.00%
	Full	66.70%	17.80%	2.20%	8.90%	4.40%
TTC	Zero	95.60%	—	2.20%	—	2.20%
	Low	82.20%	6.70%	0.00%	6.70%	4.40%
	Partial	75.60%	4.40%	0.00%	11.10%	8.90%
	Full	86.70%	6.70%	2.20%	2.20%	2.20%

Table 1: Data on truthfulness from Pais and Pintér (2008, Table 1). Priority-option bias (POB) occurs when the option where a participant has priority is ranked better than according to $\mathbf{v}$. Small-option bias (SOB) occurs when the small option is ranked worse than according to $\mathbf{v}$. These data are consistent with Prediction 5. The difference in truthfulness between the zero-information treatment and all others is significant, but the differences between treatments with some information is not.

option. If the participant ranks the revealed option o first, the assignment is settled for her and all ROLs ranking this option first yield an equivalent payoff of $v_o + \rho(1)$. In keeping with Lemma 1, some participants want to increase match probabilities by ranking the low-capacity option worse if they do not have any other information. Similarly, they can prefer to rank the priority-option better if they have this information.

Prediction 5. *Consider a participant in Pais and Pintér (2008).*
a) Consider the zero-information treatment in DA or TTC. Participants with irrelevant report-dependent payoff components report truthfully with respect to their $\mathbf{v}$. *Participants with relevant report-dependent payoff components submit a non-truthful ROL that is subject to the small-option bias.*
b) Consider the low-information and the partial-information treatment in DA or TTC. All participants who observe priority at their most-preferred option with respect to their $\mathbf{v}$ *truthfully rank this option first. Other participants who also have relevant report-dependent payoff components submit a non-truthful ROL that is subject to the priority-option bias.*

A prediction in the full-information treatment is a bit more complicated. Clearly, we predict that a participant who observes priority at her most-preferred school ranks it first. However, she may also rank it first otherwise if this option's favored participants prefer other options and have priority there as well. In contrast, if a participant observes that other participants have the same favorite while having priority over her, she will not truthfully rank it first. In general, report-dependent utility with full information provides incentives to iteratively compute the final allocation and then rank the corresponding assignment first.

References

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