Backward Elicitation of Preferences in Strategy-Proof Mechanisms

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Abstract

We study whether a minimal change in preference-elicitation order alone can affect behavior and outcomes in strategy-proof matching mechanisms. In a laboratory school choice setting, we vary the matching rule (Serial Dictatorship vs. Random Serial Dictatorship) and the order in which participants rank schools (standard procedure vs. backward procedure that elicits the least-preferred option first). Across both mechanisms, backward elicitation yields mixed effects on truth-telling—it decreases truthfulness under Random Serial Dictatorship but increases it under Serial Dictatorship. Analysis of the decision-making process shows that participants respond to both payoff differences and perceived school competitiveness. However, backward elicitation fails to significantly alter participants' sensitivity to either payoffs or competitiveness.

Keywords: school choice, matching, strategy-proof mechanisms, preference elicitation, choice architecture

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1 Introduction

Strategy-proof mechanisms such as Serial Dictatorship (SD), Random Serial Dictatorship (RSD), Deferred Acceptance (DA), and Top Trading Cycles (TTC) occupy a central role in modern market design, particularly in school choice and related matching applications. A key appeal of these mechanisms is that they render truthful reporting a weakly dominant strategy, thereby ideally eliminating incentives for participants to misrepresent their preferences (Roth, 1982). This should reduce the cognitive burden on participants, who need only submit their actual preferences without considering others' choices or admission probabilities.

However, a substantial body of experimental evidence reveals a gap between theory and practice. Laboratory studies consistently demonstrate that a significant proportion of participants misreport their preferences under DA and TTC, i.e., submit rankings that do not coincide with the preference order implied by the induced payoffs. For instance, Chen and Sönmez (2006) document misreporting rates of 28%-57%, and subsequent DA experiments document comparably high levels of nontruthful reporting (Calsamiglia *et al.*, 2010; Klijn *et al.*, 2013; Featherstone and Niederle, 2016; Guillen and Hakimov, 2018; Ding and Schotter, 2019). Importantly, this discrepancy is not limited to the laboratory. In the U.S. National Resident Matching Program, which uses DA, 17% of respondents report submitting nontruthful rankings, and 5% explicitly attribute this to deliberate strategic behavior (Rees-Jones, 2018). Likewise, studies of school choice systems in Israel, Australia, and Hungary document that roughly 17%-35% of participants make "obvious misrepresentations," such as ranking an identical school without scholarship above the same school with scholarship (Rees-Jones and Shorrer, 2023).

The behavioral origins of this misreporting are multifaceted. First, some participants fail to recognize the dominant strategy, especially as the description of the mechanism becomes more complex (Chen and Sönmez, 2006; Rees-Jones, 2018). The cognitive demands of understanding why truth-telling is optimal may exceed participants' analytical capabilities or patience. Additionally, misrepresentation appears systematically related to priority—the assigned rank of students over schools. Low-

priority applicants misrepresent their preferences more frequently when they perceive low admission probabilities to preferred choices (Chen and Sebastián Pereyra, 2019; Fack *et al.*, 2019). Moreover, both the provision and the quality of advice matter substantially. While credible expert guidance increases truth-telling rates, peer advice often fails to help or may even exacerbate mistakes (Hassidim *et al.*, 2017; Rees-Jones and Skowronek, 2018). These findings suggest that misreporting arises from a combination of limited understanding, pessimistic beliefs about admission probabilities, and reliance on incorrect guidance.

Most existing responses to this puzzle focus on altering the mechanism or the information environment. Pais and Pintér (2008) examine how different information environments affect truthful reporting under DA and TTC, showing that increased availability of others' preference information may encourage non-truthful behavior. Meanwhile, Li (2017) introduce obvious strategy-proofness as a refinement of strategic dominance that requires the dominant action to be transparent at each decision point, and show that satisfying this criterion generally requires different game forms (mechanisms) rather than merely reframing existing dominant strategies. More recently, Bó and Hakimov (2020) compare a standard DA mechanism with an iterative version in which students apply to schools one at a time and report that a larger share of participants play the equilibrium truthful strategy under the iterative variant than follow the dominant truthful strategy under standard DA.

In contrast to these approaches, this paper keeps both the matching mechanism and the informational environment fixed and instead asks whether a minimal change in the order of preference elicitation can improve truthful reporting and realized payoffs in strategy-proof environments. Specifically, we compare the "standard" procedure, in which participants rank options in any order they prefer, with a bottom-up, "backward" procedure that requires them to start from their least-preferred alternatives and proceed upward.

More importantly, we move beyond estimating average treatment effects to examine the underlying behavioral mechanisms. We decompose ranking decisions into pairwise comparisons and quantify how participants trade off payoff sensitivity against school competitiveness sensitivity when determining which school to rank

more highly.

Our motivation builds on evidence that participants disproportionately pay more attention to the top-ranked options relative to the lower-ranked options in their lists. For example, Payzan-LeNestour and Woodford (2022) propose and document "outlier blindness," whereby people are less attuned to outcomes they rarely expect to encounter, implying neglect of tail risk in decision making. Relatedly, Troyan and Kloosterman (2026) provide evidence that utility depends not only on the assigned object but also on its position in the reported ranking: agents receive greater utility from identical objects when they rank them higher.

This "neglected tail" of preferences may be critically important. In many matching markets, low-priority participants realistically have little chance of obtaining their top choices, making their lower-ranked preferences particularly relevant for final allocations. Systematic neglect of this portion of the preference list can result in failure to accurately signal true preferences, potentially producing suboptimal outcomes. Our central hypothesis is that a simple backward elicitation procedure can mitigate this neglected tail by forcing participants to articulate their least-preferred alternatives first, thereby encouraging a more complete and internally consistent construction of preferences over the entire choice set.

We ground our hypothesis through two key behavioral channels: cognitive effort and anchoring. First, cognitive effort interacts with both task complexity and familiarity. When a task is unconventional or departs from familiar routines, it imposes higher cognitive demands, which can disrupt reliance on automatic heuristics and encourage more deliberate, analytical decision-making (Caplin and Dean, 2015; Westbrook and Braver, 2015). Backward elicitation, by violating the natural standard ranking convention, imposes increased cognitive demands compared to the intuitive, low-effort standard of ranking from best to worst. Consequently, the increased cognitive demands may force participants to engage in more deliberate processing and to systematically evaluate their entire preference distribution, thereby reducing the neglect of lower-ranked choices.

Second, anchoring can substantially alter behavior as the initial information disproportionately influences subsequent judgments and decisions (Tversky and Kah-

neman, 1981; Furnham and Boo, 2011). Under the standard preference elicitation procedure, participants may anchor on their most-preferred option, creating a positive anchor that may foster unwarranted optimism about obtaining top choices. This optimism can reduce incentives to evaluate lower-ranked alternatives. In contrast, backward elicitation initiates the ranking from the least-preferred alternative, establishing a negative anchor. Starting from the worst outcomes may induce more cautious and comprehensive reasoning, as individuals first aim to avoid the lowest-payoff alternatives and then progressively consider more attractive options, thereby enhancing attention to the entire ranking.

To empirically examine these behavioral mechanisms, we employ a 2×2 experimental design that interacts the elicitation order (standard versus backward) with two strategy-proof matching mechanisms. The first mechanism is Serial Dictatorship (SD), where participants are informed of their exact priorities. In this context, if participants know the preferences reported by other players, they can determine their allocation with certainty. The second mechanism is Random Serial Dictatorship (RSD), in which priorities are randomly determined. Under RSD, while priorities are random—arguably making it more challenging for participants—truthful reporting is the only strategy that is always a best-response for all players. By comparing behavior across these environments, we assess how preference elicitation order and mechanisms jointly shape truthful reporting and payoffs in strategy-proof mechanisms.

Our experimental results show that backward elicitation has mixed effects on truth-telling: it increases truthfulness under SD but decreases it under RSD. However, these behavioral shifts do not translate into robust changes in absolute payoffs or in payoff ratios—the share of each participant's attainable payoff that is actually realized—in either mechanism. Building on these findings, we develop a simple approach to study the determinants of individual decision-making in each treatment by relating pairwise ranking decisions to payoff and competitiveness differences between schools, and then linking these behavioral primitives to payoffs. We find that participants systematically place higher-payoff schools above lower-payoff alternatives, but also tend to rank more competitive schools lower. However, backward elicitation fails

to significantly alter participants' sensitivity to either payoffs or competitiveness.

The remainder of the paper is organized as follows. Section 2 presents the experimental design and procedures. Section 3 reports the main results on truth-telling, payoffs, and the drivers of the decision-making process, and Section 5 concludes.

2 Experimental Design

The experiment uses a one-sided matching market with 8 schools and 8 students. Each student has complete and strict preferences over schools, while all schools share a common "priority" order over students. Students' preferences are generated in two steps: (i) each school is assigned a baseline quality drawn independently from a uniform distribution on $[0, 1]$, common across all students; (ii) for each student-school pair, an idiosyncratic taste shock is drawn independently from a uniform distribution on $[0, 1]$. A student's utility for a given school is constructed as a weighted average of these two components, placing the weight 0.3 on the common quality and 0.7 on the idiosyncratic term.[1] Students' preference rankings are obtained by sorting schools in descending order of utility. Finally, a common priority order of students, shared by all schools, is drawn uniformly at random.

The experiment employs a 2×2 design that manipulates the type of matching mechanism (RSD vs. SD) and the preference elicitation procedure (standard vs. backward).

Matching Mechanism. Either SD with known priorities, or RSD where priorities remain unknown at the time of preference submission is used. Both mechanisms assign students sequentially according to priority: the highest-priority student receives her top available school, followed by the next highest-priority student receiving her most-preferred school among the remaining schools, and this process continues until all students are assigned.

[1] For example, suppose there are three schools A, B, C with common quality components $q_A = 10$, $q_B = 8$, $q_C = 6$. For a student with idiosyncratic components $\varepsilon_A = 5$, $\varepsilon_B = 1$, $\varepsilon_C = 4$, utilities are: $u(A) = 0.3 \times 10 + 0.7 \times 5 = 6.5$, $u(B) = 0.3 \times 8 + 0.7 \times 1 = 3.1$, $u(C) = 0.3 \times 6 + 0.7 \times 4 = 4.6$, yielding ranking $A \succ C \succ B$.

Preference Elicitation. In the standard treatment, participants view a single screen with eight blank fields labeled from first to eighth choice, which they can fill in any order before submitting a complete ranking. Once submitted, the ranking cannot be revised. By contrast, the backward treatment requires participants to construct their ranking sequentially from the bottom up: the interface first prompts for the eighth (least-preferred) school, displays it once submitted, then asks for the seventh choice, and continues until all eight positions are filled. At each step, previously submitted positions are fixed and cannot be changed.

In both treatments, participants face the identical set of available ranking options, payoff information, and matching rules, differing only in the sequential procedure used to elicit the rankings. As a result, the backward elicitation procedure alters the process of preference reporting but does not change the optimality of truthful reporting under either SD or RSD. This design produces four treatment conditions: RSD-Standard ($n = 64$ participants), RSD-Backward ($n = 64$ participants), SD-Standard ($n = 64$ participants), and SD-Backward ($n = 64$ participants).

2.1 Experimental Procedure

We conduct a laboratory experiment at Southwestern University of Finance and Economics in November 2024.[2] The experiment consists of 16 independent sessions with 16 participants per session (8 in each fixed matching group), yielding a total of 256 participants. Each session lasts approximately one hour. The average payment is 47.4 RMB per participant, and the experiment is programmed and implemented using "oTree". We pre-register the experimental protocol and main hypotheses on AsPredicted (#196321) prior to data collection.

Each participant completes eleven rounds of the matching game, with the first round serving as an unpaid practice round. In each round, both schools' priority orderings and participants' payoff lists (and thus induced preferences) are reset.

[2]The instructions are provided in the Appendix. Data are available upon request. To ensure that all participants understand the procedures, they have to complete comprehension questions at the end of each part, which they can revise until answered correctly before proceeding to the experiment proper.

Specifically, the priority order is generated by drawing an independent random permutation of the eight participant labels, so that each participant is equally likely to occupy any priority position in any round. Payoff lists are provided in all treatments, while the preference-elicitation procedure (standard vs. backward) and the information about priorities (known vs. unknown) vary by treatment and are specified in the written instructions. Importantly, within each round, all treatments face identical markets: the same payoff tables and priority orderings, and same order of markets.

Table 1 presents an example of the payoff list. For example, S_1 receives 200 points if assigned to school C, 180 if assigned to B, and so on. To reduce the length of the table and ensure clear competition for specific schools, we assign identical payoff lists to pairs of students (e.g., S_1 and S_2).[3] Points are converted to cash at a rate of 3 points = 1 RMB, with one randomly selected round determining each participant's final payment.

Table 1: Example Payoff List

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1, S_2}$	C	B	E	H	D	F	A	G
$\mathbf{S_3, S_4}$	A	B	C	D	E	F	G	H
$\mathbf{S_5, S_6}$	A	E	G	C	H	F	B	D
$\mathbf{S_7, S_8}$	B	A	C	D	F	E	H	G

Participants receive no feedback on match outcomes or earnings until after all eleven rounds are completed. This no-feedback design limits learning about the mechanism and others' behavior across rounds, helping to keep decisions in each round independent. After completing the experiment, participants fill out a post-experiment questionnaire that includes a demographic survey.

2.2 Outcome Measures

Since truthful reporting is a weakly dominant strategy under both strategy-proof mechanisms, we first evaluate treatment effects on the truthfulness of submitted

[3]The ordinal preferences for each pair were generated using the method we described in Section 2.

rankings.

Truthfulness Index. This index measures the alignment between submitted rankings and true preferences. We employ two measures: (1) *Fully Truthful*, a binary indicator equal to one if the submitted ranking is identical to the true preference order–capturing perfect adherence to the dominant strategy; and (2) *Truthful up to Priority*, a binary indicator equal to one if the participant's reported top-k choices match her true top-k preferences, where k is her priority.[4] The second measure captures strategically relevant truthfulness, as a participant with priority k is guaranteed to be assigned to one of her top-k choices; thus, misreporting below the k-th position cannot affect her allocation.

Truthfulness, however, provides only a partial determinant of welfare, since even a fully truthful low-priority participant may receive an unfavorable assignment. We therefore also analyze payoff-based outcomes.

Optimality Index. This index evaluates the material outcomes of participants' decisions. We measure (1) *Absolute payoff*, the payment (in points) earned by the participant based on their assignment, and (2) *Payoff ratio*, the ratio of actual payoff to the payoff that would result if this participant reports truthfully while others submit their actual rankings. This isolates the individual welfare cost of strategic deviation, holding others' behavior fixed.

2.3 Hypotheses

We investigate whether a change in preference elicitation can nudge participants toward more deliberate decision-making and, in turn, more optimal outcomes in strategy-proof matching mechanisms.

[4]For example, suppose a participant's true preferences are $A \succ B \succ C \succ D$ and her priority is $k = 2$. If she reports $A \succ B \succ D \succ C$, *Fully Truthful* equals 0 because the entire ranking does not coincide with her true order, but *Truthful up to Priority* equals 1 because her reported top two schools, A and B, match her true top two in the correct order. This illustrates that the two measures capture different dimensions of reporting behavior.

By compelling participants to rank options from least to most preferred, the backward elicitation procedure departs from the intuitive convention and imposes higher cognitive demands that might promote more deliberate processing across the full preference list. This reduces neglect of lower-ranked options, resulting in submitted rankings that better approximate participants' optimal strategies and yield improved payoff outcomes. This motivates our first hypothesis:

Hypothesis 1a. *Under both Serial Dictatorship and Random Serial Dictatorship mechanisms, we observe more optimal behavior with the backward preference elicitation procedure than the standard procedure.*

Under SD, multiple strategies can be best responses for certain priorities. For example, the top-ranked participant is guaranteed her first choice regardless of how she ranks the remaining options—any reported ranking with the same first choice is a best response. Under RSD, however, participants face uncertainty about their priority, which complicates incentive reasoning and often induces deviations from truthful reporting. In this setting, truth-telling is the only strategy that is always a best response. Hence, any move toward optimality in RSD should manifest as increased truth-telling. This yields our second hypothesis:

Hypothesis 1b. *We observe more truthful behavior in the RSD-Backward treatment than the RSD-Standard treatment.*

Under SD, participants have complete information about their priority rank before submitting preferences. Lower-priority participants, aware that they face limited chances of receiving their top choices, might strategically focus on realistically feasible options. Backward elicitation redirects attention toward the lower-ranked but more attainable alternatives, potentially helping lower-priority participants better optimize over the less-preferred schools they are likely to receive given their priority position. In contrast, higher-priority participants are relatively confident of securing their top choices, face weaker incentives to refine lower-ranked options, and therefore benefit less from the backward intervention. Consequently, we expect the

behavioral gains from backward elicitation to be concentrated among lower-priority participants.

Hypothesis 2. *The increase in optimal behavior in the SD-Backward relative to the SD-Standard treatment is larger for students at the lower half of the priority list relative to their counterparts in the higher half of the priority list.*

3 Experimental Results

Table 2 reports descriptive statistics for the main outcome measures (truth-telling and payoff outcomes) by treatment.

Table 2: Summary Statistics of Truth-Telling and Payoff Outcomes by Treatment

	RSD		SD	
	Standard	Backward	Standard	Backward
Fully Truthful	422	368	335	402
	(65.9%)	(57.5%)	(52.3%)	(62.8%)
Truthful up to Priority	451	403	356	416
	(70.5%)	(63.0%)	(55.6%)	(65.0%)
Absolute payoff	162.438	162.656	164.469	163.000
	(38.080)	(37.776)	(36.335)	(38.530)
Payoff ratio	0.972	0.967	0.987	0.975
	(0.108)	(0.109)	(0.069)	(0.104)
N	640	640	640	640

Notes: Cells report frequencies (with percentages in parentheses) for binary variables and means (with standard deviation in parentheses) for continuous variables.

3.1 The Effects of Backwards Elicitation of Truth-telling

We begin by examining whether backward preference elicitation affects the truthfulness of preferences reported. Panel A of Table 3 presents the logit specifications where the dependent variable is a binary indicator of fully truthful reporting (i.e.,

whether the submitted ranking exactly matches each participant's stated true preferences). The estimates reveal weak evidence that backward elicitation influences the likelihood of full truth-telling in opposite directions: the effect is negative (less truth-telling) under RSD ($p = 0.065$) but positive (more truth-telling) under SD ($p = 0.041$). The interaction between backward treatment and high priority (an indicator equal to 1 for priority ranks 1–4 and 0 for ranks 5–8) is not statistically significant ($p = 0.732$), suggesting that the effect of backward elicitation does not vary systematically with priority.

While priority is unknown to participants under RSD by design, it plays a crucial role under SD. We find that priority affects truth-telling: higher-priority students are more likely to report truthfully ($p < 0.001$). A potential explanation is that high-priority students face lower admission risk to preferred schools and thus perceive less incentive to deviate from truth-telling. By contrast, low-priority students, having limited chances at top choices, may feel compelled to strategically report their lists to improve matching prospects, despite this being a strategy-proof mechanism.

Panel B of Table 3 presents analogous results for truthfulness up to priority rank, where a report is coded as truthful if the top-k submitted choices match the true top-k preferences, with k equal to the realized priority rank. All coefficients preserve the same directional patterns and significance levels observed in Panel A.

Finding 1: *Backward elicitation produces mixed effects on truth-telling: it decreases truthfulness under the Random Serial Dictatorship mechanism but increases it under the Serial Dictatorship mechanism.*

These opposing effects persist across both the *fully truthful* and the *truthful up to priority* measures. The results provide only partial support for Hypothesis $H1$, suggesting that changing the order of preference elicitation alone is insufficient to generate systematic improvements in truth-telling.

Table 3: Marginal Effects of Logit Models for Truthfulness

Panel A
Dependent variable: Fully Truthful

	RSD	SD	
	(1)	(2)	(3)
Backward	-0.936*	0.766**	0.788*
	(0.507)	(0.376)	(0.460)
High Priority			1.193***
			(0.184)
Backward × High Priority			0.097
			(0.284)
Constant	1.408	1.048	0.476
	(4.731)	(3.335)	(3.599)
N	1280	1280	1280

Panel B
Dependent variable: Truthful up to Priority

	RSD	SD	
	(1)	(2)	(3)
Backward	-0.736*	0.734**	0.845*
	(0.410)	(0.316)	(0.432)
High Priority			1.539***
			(0.242)
Backward × High Priority			-0.026
			(0.337)
Constant	2.610	2.450	1.928
	(3.428)	(3.151)	(3.497)
N	1280	1280	1280

Notes: Standard errors in parentheses, clustered at the session level. All specifications include controls for gender and age.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.2 The Effects of Backwards Elicitation of Payoffs

Our next set of results concerns the effect of backward preference elicitation on absolute payoffs. The estimates in Table 4 show that the backward elicitation procedure yields no significant improvement in participant payoffs under either RSD ($p = 0.962$) or SD ($p = 0.140$), indicating that changing the order of preference elicitation does not translate into higher earnings for participants.

Priority position substantially boosts payoffs across both mechanisms. High-priority participants earn 45%-51% more than low-priority participants (RSD: $p < 0.001$; SD: $p < 0.001$). This pattern is consistent with the fact that priority determines access to more preferred schools and thus drives most of the variation in realized payoffs.

We also examine whether the backward procedure benefits participants differently based on their priority. As shown in Column 2 of Table 4, the interaction between backward elicitation and high-priority is not statistically significant under RSD ($p = 0.492$). This result is expected, as participants in the RSD treatment cannot observe their priorities and therefore cannot condition their strategy on them. Similarly, in the SD treatment (Column 4 of Table 4), where priorities are observable, the interaction term remains statistically insignificant ($p = 0.254$). This suggests that the backward elicitation method does not differentially benefit participants at specific points in the priority ranking.

While absolute payoffs provide a direct measure of welfare, they involve comparisons across different priority endowments. To assess efficiency relative to each participant's individual optimum, we examine the *payoff ratio*—defined as the ratio of actual payoff to the payoff that would result if this participant reported truthfully while others submitted their actual rankings. Table 5 shows that, consistent with the analysis of absolute payoffs, the backward elicitation treatment has no meaningful effect on the payoff ratio under either RSD ($p = 0.391$) or SD ($p = 0.212$), indicating that using the backward preference elicitation does not make participants capture a larger share of their attainable payoff. Under RSD, high-priority participants exhibit a significantly lower payoff ratio, indicating that their misreporting imposes greater

Table 4: Pooled OLS Estimates of the Effects on Absolute payoff

Dependent variable: Payoffs

	RSD		SD	
	(1)	(2)	(3)	(4)
Backward	0.073	1.276	-2.852	-1.434
	(1.529)	(1.973)	(1.933)	(1.028)
High Priority		46.329***		51.502***
		(1.643)		(1.285)
Backward × High Priority		-2.561		-2.309
		(3.724)		(2.022)
Constant	168.199***	146.899***	147.430***	120.338***
	(18.926)	(17.896)	(8.837)	(10.289)
N	1280	1280	1280	1280

Notes: Standard errors in parentheses, clustered at the session level. All specifications include controls for gender and age.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

individual welfare costs relative to what they would get under truth-telling.

Finding 2: *Backward elicitation yields no significant improvements in absolute payoffs or payoff ratios. Instead, priority position is the primary determinant of welfare outcomes, though high-priority participants capture a smaller share of their attainable payoffs.*

The behavioral shifts in truth-telling observed in Investigation 1 do not translate into systematic changes in earnings. A possible interpretation is that, in a multi-person matching environment, improvements from truthful reporting by some participants can be offset by misallocation generated by others' mistakes. Furthermore, high priority provides absolute advantages that dominate any treatment effects. However, high-priority participants' lower relative efficiency suggests they may not fully optimize, perhaps due to reduced stakes—when multiple strategies lead to acceptable outcomes, careful optimization becomes less critical.

Table 5: Pooled OLS Estimates of the Effects on Payoff ratios

Dependent variable: Payoff ratios

	RSD		SD	
	(1)	(2)	(3)	(4)
Backward	-0.006	-0.006	-0.016	-0.013
	(0.007)	(0.010)	(0.012)	(0.011)
High Priority		-0.026***		-0.004
		(0.006)		(0.005)
Backward × High Priority		0.000		-0.004
		(0.018)		(0.006)
Constant	1.004***	1.016***	0.898***	0.900***
	(0.081)	(0.081)	(0.054)	(0.054)
N	1280	1280	1280	1280

Notes: Standard errors in parentheses, clustered at the session level. All specifications include controls for gender and age.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4 The Drivers of the Decision-Making Process

The previous analysis reveals that backward elicitation has limited impacts on payoffs and mixed effects on truth-telling. To understand this apparent disconnect, we examine the decision-making process by analyzing how participants construct their full rankings. In a strategy-proof mechanism, a participant who fully understands the rules and incentives should rank schools based solely on relative payoffs, without strategizing over beliefs about others' behavior. A natural way to organize departures from this benchmark is to distinguish two potential forces that influence ranking decisions.

- **Payoff sensitivity** captures how strongly ranking decisions respond to a school's payoff. A positive coefficient indicates that as a school's payoff increases, its probability of being ranked higher increases. In a strategy-proof mechanism, monotone strategy-proofness implies that shifting any comparison toward the true payoff ordering weakly improves the agent's outcome, holding others' reports fixed (Haeringer and Hałaburda, 2016), so higher payoff

sensitivity is aligned with the theoretical benchmark.

- **Competitiveness sensitivity** captures how ranking decisions respond to a school's competitiveness index. A negative coefficient indicates a tendency to relegate "crowded" schools to the bottom of the list. This reflects participants' attempts to avoid competitive options to reduce rejection risk, even though such behavior offers no benefit in a strategy-proof mechanism.[5]

To empirically identify these behavioral drivers and evaluate whether backward elicitation shifts their weights, we estimate Rank-Ordered Logit (ROL) models using the strict rankings submitted in each round. Conceptually, the ROL framework treats the construction of a ranking as a sequence of discrete choices: a participant selects their top school from all available options, their second choice from the remaining set, and so forth. At each step of this sequential choice process, the probability of selecting a particular school is modeled as a function of two attributes: the induced payoff to the participant and a competitiveness index capturing the school's attractiveness to the rest of the market.[6]

Table 6 reports the coefficient estimates from the ROL models, illustrating how payoff and perceived competitiveness jointly shape ranking decisions, and whether backward elicitation modifies these forces. We observe two main patterns. First, participants exhibit significant payoff sensitivity—a positive coefficient indicates that as a school's payoff increases, its probability of being ranked higher increases (RSD: $p < 0.001$; SD: $p < 0.001$). This is consistent with optimal behavior in a strategy-proof mechanism. Second, participants respond to perceived competition by placing schools that appear more competitive systematically lower in their rankings (indicated by the negative coefficient; RSD: $p < 0.001$; SD: $p < 0.001$). This reflects

[5] A growing literature documents that applicants often strategically avoid oversubscribed schools in strategy-proof mechanisms, perceiving them as "competitive" (Chen and Sönmez, 2006; Agarwal and Somaini, 2018). Empirical measures typically proxy competitiveness using the volume of applications or the quality of competing applicants (Hastings *et al.*, 2005).

[6] For example, suppose 3 participants (S_1, S_2, S_3) have preferences over 3 schools (A, B, C), where S_1: $A \succ B \succ C$, S_2: $A \succ C \succ B$, and S_3: $B \succ C \succ A$. Using weights of 3 for a first preference, 2 for a second preference, and 1 for a third preference, school A's competitiveness index is $3+1=4$ for S_1, $3+1=4$ for S_2, and $3+3=6$ for S_3, etc.

attempts to reduce the risk of rejection, even though such behavior offers no benefit in this setting.

To evaluate the effect of the backward preference elicitation procedure, Columns 2 and 4 of Table 6 include interaction terms. Across both mechanisms, the interaction terms for payoff sensitivity (RSD: $p = 0.507$; SD: $p = 0.219$) and competitiveness sensitivity (RSD: $p = 0.436$; SD: $p = 0.791$) are small and statistically insignificant, indicating that the backward elicitation procedure has no significant impact on how participants weigh either payoffs or competitiveness.

Table 6: Rank-Ordered Logit: Effects on Payoff and Competitiveness Sensitivity

Dependent variable: Reported rank of school (1 = best, 8 = worst)

	RSD		SD	
	(1)	(2)	(3)	(4)
Payoff	0.064***	0.068**	0.036***	0.032***
	(0.006)	(0.010)	(0.003)	(0.004)
Competitiveness	-0.017***	-0.014**	-0.014***	-0.014***
	(0.004)	(0.007)	(0.003)	(0.004)
Backward × Payoff		-0.009		0.008
		(0.013)		(0.007)
Backward × Competitiveness		-0.006		-0.001
		(0.008)		(0.005)
Observations	10240	10240	10240	10240

Notes: Standard errors in parentheses, clustered at the participant level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Finding 3: *Ranking decisions respond systematically to both payoff and perceived competitiveness: higher-payoff schools are more likely to be ranked higher, while schools viewed as more competitive tend to be ranked lower. However, the backward elicitation procedure does not significantly alter participants' sensitivity to either dimension under the Random Serial Dictatorship or Serial Dictatorship mechanism.*

5 Conclusion

This study investigates whether backward preference elicitation—an unconventional choice architecture requiring participants to rank options from least to most preferred—could improve truth-telling and optimal outcomes in strategy-proof matching mechanisms. Across both Serial Dictatorship (SD) and Random Serial Dictatorship (RSD), backward elicitation produces mechanism-dependent shifts in behavior: it increases truth-telling under SD but reduces it under RSD. Despite these behavioral shifts, average payoffs and payoff ratios remain statistically unchanged across both mechanisms.

This apparent disconnect reflects two structural features of our environment. First, exogenous priorities largely determine access to high-payoff schools, leaving limited scope for behavioral changes to affect realized outcomes. Second, in a multi-person matching environment, improvements in reporting behavior by some participants can be offset by mistakes made by others, so that aggregate outcomes remain essentially unchanged.

A key finding is that participants' choices reflect a systematic trade-off between two forces: payoff sensitivity, whereby higher-payoff schools are more likely to be ranked above lower-payoff alternatives, and competitiveness sensitivity, whereby schools perceived as more attractive to others are ranked lower. Backward elicitation procedure fails to significantly alter participants' sensitivity to either dimension.

These findings suggest that the backward elicitation is insufficient to influence how participants construct rankings in strategy-proof environments.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work the authors used ChatGPT in order to rephrase sentences and find grammatical/orthographical mistakes. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Appendix A. Instructions for the Experiment

Thank you for participating in this experiment on decision-making. In this experiment, we simulate a procedure to allocate students to schools. The procedure, payments rules, and student allocation method are structured as follows. Do not communicate with other participants until the end of this session. If you have any questions during this experiment, feel free to ask at any point by raising your hand. One of the experimenter will come to your desk to assist you.

In **Section 1**, we will first describe the allocation procedure. To ensure that all participants understand the allocation procedure, please complete the questions at the end of Section 1.

In **Section 2**, we will detail how you will make decisions in this experiment and how your decisions will affect your payoffs. Again, to ensure that all participants understand the experiment, please complete the questions at the end of Section 2.

A.1. General Description

Section 1

- There are 8 students (including yourself), student $S_1, S_2, S_3, S_4, S_5, S_6, S_7$, and S_8, that would like to be matched to a school.
- There are 8 schools (A, B, C, D, E, F, G, and H) and one position available for each school. Each school slot will be allocated to one student, based on the rankings submitted by all 8 students.
- **Student's School Rankings.** Each student will submit a ranking over all 8 schools. You will only know the choices that you have made and you will not observe the choices made by the other students. An example of school ranking is as follows:

Student	**1st Choice**	**2nd Choice**	**3rd Choice**	**4th Choice**	**5th Choice**	**6th Choice**	**7th Choice**	**8th Choice**
S_1	C	B	A	F	E	D	H	G

- **Schools' Priority Ordering.** The schools will have a priority ordering over all students. To do so, each student will randomly receive a **unique lottery-number**: 1, 2, 3, 4, 5, 6, 7 or 8.
  Note that no two students will receive the same number. The lottery number

determines the students' priority: a lower number denotes a higher priority. An example of schools' priority ordering is as follows:

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	2	3	8	5	6	7	1	4
Schools' Priority	2	3	8	5	6	7	1	4

S_7 has the highest priority over all schools, S_1 has the second-highest priority, S_2 has the third-highest priority, S_8 has the fourth-highest priority, S_4 has the fifth-highest priority, S_5 has the sixth-highest priority, S_6 has the seventh-highest priority, and S_3 has the eighth-highest priority.

Section 1.1. The allocation procedure

Based on the submitted rankings of students S1, S2, S3 up to S8 and the priority orderings, the matching procedure proceeds as follows:

- Initially all positions are available for allocation.
- Once a student has been assigned to a school, that school will no longer be available for the remaining students.
- All students are ordered in a queue based on the priority ordering.
  - Step 1: The highest priority student is assigned to the school that he/she ranks the highest.
  - Step 2: The 2nd highest priority student is assigned to the school that he/she ranks the highest if it is available. If that school is not available, the student will be assigned to his/her second-highest ranked school.
  - Step 3: The 3rd highest priority student is assigned to the school that he/she ranks the highest if it is available. If that school is not available, the student will be assigned to his/her second-highest ranked school if it is available. If that school is also not available, the student will be all assigned to his/her third-highest ranked school.

– Step 4: The 4th highest priority student is assigned to the school that he/she ranks the highest if it is available. If that school is not available, the student will be assigned to his/her second-highest ranked school if it is available. If that school is also not available, the student will be assigned to his/her third-highest ranked school. If that school is again not available, the student will be assigned to his/her fourth-ranked school.

⋮ ⋮

The above steps will continue till all students are assigned to a school.

Section 1.2. An Example

We will go through an example to illustrate how the assignment method works.

Students and Schools: In this example, there are 8 students $(S_1, S_2, S_3, S_4, S_5, S_6, S_7, S_8)$ and 8 schools (A, B, C, D, E, F, G, H).

Priority: The lottery produces the following order for all schools:

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	3	2	1	4	6	5	7	8
Schools' Priority	3	2	1	4	6	5	7	8

Submitted School Rankings: The students submitted the following rankings:

Step	**Student**	**1st Choice**	**2nd Choice**	**3rd Choice**	**4th Choice**	**5th Choice**	**6th Choice**	**7th Choice**	**8th Choice**
Step 1	$\mathbf{S_3}$	A	B	H	G	C	D	E	F
Step 2	$\mathbf{S_2}$	A	C	F	D	B	E	H	G
Step 3	$\mathbf{S_1}$	C	B	A	G	F	E	D	H
Step 4	$\mathbf{S_4}$	C	A	E	B	H	D	F	G
Step 5	$\mathbf{S_6}$	E	B	A	D	F	C	H	G
Step 6	$\mathbf{S_5}$	B	A	C	D	F	E	H	G
Step 7	$\mathbf{S_7}$	A	F	C	H	B	G	E	D
Step 8	$\mathbf{S_8}$	E	B	H	F	A	D	G	C

Note that the yellow highlights indicate the assigned school for each student. The underlined schools indicate the schools that the student ranked higher than his/her assigned school (highlighted school) but were unavailable to her/him.

Allocation: This allocation method consists of the following steps.

- Step 1: Student S_3 is the highest priority student. Student S_3's highest-ranked school (School A) is available, and thus S1 is assigned to School A.
- Step 2: Student S_2 is the second-highest priority student. Student S_2's highest-ranked school (School A) is not available, and thus S_2 is assigned to the his/her second-highest ranked school (School C).
- Step 3: Student S_1 is the third-highest priority student. Student S_1's highest-ranked school (School C) is not available, and thus S_1 is assigned to the his/her second-highest ranked school (School B).
- Step 4: Student S_4 is the forth-highest priority student. Student S_4's highest-ranked and second-ranked school (School C and A) are not available, and thus S_4 is assigned to the his/her third-highest ranked school (School E).
- Step 5: Student S_6 is the fifth-highest priority student. Student S_6's highest-ranked, second-ranked, and third-ranked school (School E, B, and A) are not available, and thus S_6 is assigned to the his/her fourth-highest ranked school (School D).
- Step 6: Student S_5 is the sixth-highest priority student. Student S_5's highest-ranked, second-ranked, third-ranked, and fourth-ranked school (School B, A, C, and D) are not available, and thus S_5 is assigned to the his/her fifth-highest ranked school (School F).
- Step 7: Student S_7 is the seventh-highest priority student. Student S_7's highest-ranked, second-ranked, and third-ranked school (School A, F and C) are not available, and thus S_7 is assigned to the his/her fourth-highest ranked school (School H).
- Step 8: Student S_8 is the eighth-highest priority student. Student S_8's highest-ranked, second-ranked, third-ranked, fourth-ranked, fifth-ranked and sixth-ranked school (School E, B, H, F, A, and D) are not available, and thus S_8 is assigned to the his/her seventh-highest ranked school (School G).

The final assignment is (S_1 to B), (S_2 to C), (S_3 to A), (S_4 to E), (S_5 to F), (S_6 to D), (S_7 to H), and (S_8 to G).

Section 1.3. Control Questions

Please answer the following questions on the computer.

1. Each school can only accept one student. (True/False)
2. The schools' priority order is determined randomly. (True/False)
3. Each student must rank all the schools. (True/False)
4. There are 8 students ($S_1, S_2, S_3, S_4, S_5, S_6, S_7, S_8$) and 8 schools (A, B, C, D, E, F, G, H). The priority list for the schools is as follows:

Student	**S_1**	**S_2**	**S_3**	**S_4**	**S_5**	**S_6**	**S_7**	**S_8**
Lottery Number	4	7	3	2	6	5	1	8
Schools' Priority	4	7	3	2	6	5	1	8

The students submit the following rankings over the schools:

Student	**1st Choice**	**2nd Choice**	**3rd Choice**	**4th Choice**	**5th Choice**	**6th Choice**	**7th Choice**	**8th Choice**
S_1	C	B	D	E	F	H	G	A
S_2	H	C	A	D	F	E	G	B
S_3	C	D	A	B	F	H	G	E
S_4	B	C	H	E	A	D	G	F
S_5	F	C	B	D	E	H	G	A
S_6	E	D	C	F	A	H	B	G
S_7	B	C	D	F	H	E	G	A
S_8	A	E	D	H	B	C	G	F

(a) Student S_1 will be assigned to School _____.

(b) Student S_2 will be assigned to School _____.

(c) Student S_3 will be assigned to School _____.

(d) Student S_4 will be assigned to School _____.

(e) Student S_5 will be assigned to School _____.

(f) Student S_6 will be assigned to School _____.

(g) Student S_7 will be assigned to School _____.

(h) Student S_8 will be assigned to School _____.

Section 2

The experiment will consist of 1 practice round and 10 formal rounds. At each round, you will perform a decision-making task. The task will simulate a procedure of assigning students to schools.

Your payoffs for the round will depend on your decision and the decisions of the other participants that you interact with. Your earnings in each round will be denoted in "points". At the end of the experiment, **one** random round will be selected for payment and your payoffs in that will be converted into cash at the exchange rate of:

$$3 \text{ points} = 1 \text{ RMB}$$

Note: This does not include the practice round.

Section 2.1 Design of Each Round

- The schools' priority ordering will be randomly regenerated at the beginning of every round.
- The students' payoff list indicates how many points a student will receive if he/she is assigned to a particular school. The students' payoff list will be regenerated at each round, and you can observe your payoff list, and the payoff list for all other students.
  Note that at each round:
  - Students S_1 and S_2 will always have the same payoff list.
  - Students S_3 and S_4 will always have the same payoff list.
  - Students S_5 and S_6 will always have the same payoff list.
  - Students S_7 and S_8 will always have the same payoff list.

Student	200	180	160	140	120	100	80	60
$\mathbf{S_1}, \mathbf{S_2}$	C	B	E	H	D	F	A	G
$\mathbf{S_3}, \mathbf{S_4}$	A	B	C	D	E	F	G	H
$\mathbf{S_5}, \mathbf{S_6}$	A	E	G	C	H	F	B	D
$\mathbf{S_7}, \mathbf{S_8}$	B	A	C	D	F	E	H	G

The following table contains the example students' payoff list.

Your assigned school and your payoff have the following relation:
If you are S_1:
You will be paid 200 if you are assigned to school C.
You will be paid 180 if you are assigned to school B.
You will be paid 160 if you are assigned to school E.
You will be paid 140 if you are assigned to school H.
⋮ ⋮
The same goes for other students.

Section 2.2 Information About the Other Participants You Interact With

You will be grouped with seven other participants in this experiment and you will interact with the same seven other participants for all 10 rounds.

Section 2.3 Other Information

We will begin with 1 non-paying practice round to ensure you understand the experiment design. Thereafter, we will proceed to the experiment proper, that will consist of 10 rounds.

We have included in this instruction the **School Priority Lists** and **Payoff Lists** for each round. To ensure that you are referring to the correct list, you must enter the special 4-digit number found on the top right of the list at the start of the relevant round.

Note: In the RSD treatment, the School Priority List is not provided to participants.

A.2. Instructions for Backward * SD

Section 2.4 Experiment Screen Display Example

For example, if your label is S_1 and you are in the first formal round, the following content will be displayed on the screen:

This is round 1 of 10.

You are student S_1.

Please enter the 4-digit special number corresponding to the round: ____.

What is your 8^{th} choice?

1^{st}choice	2^{nd}choice	3^{th}choice	4^{th}choice	5^{th}choice	6^{th}choice	7^{th}choice	8^{th}choice
■	■	■	■	■	■	■	□

Note: The underlined areas are where you need to enter the corresponding codes for the school priority and student payoff lists tables of this round. The white boxes indicate the dropdown areas for selecting the school.

If you choose E as your lowest-ranked school, after you submit, you will see:

You are student S_1.

What is your 7^{th} choice?

1^{st}choice	2^{nd}choice	3^{th}choice	4^{th}choice	5^{th}choice	6^{th}choice	7^{th}choice	8^{th}choice
■	■	■	■	■	■	□	E

If you choose D as your second lowest-ranked school, after you submit, you will see:

You are student S_1.

What is your 6^{th} choice?

1^{st}choice	2^{nd}choice	3^{th}choice	4^{th}choice	5^{th}choice	6^{th}choice	7^{th}choice	8^{th}choice
■	■	■	■	■	□	D	E

⋮ ⋮

A.3. Instructions for Standard × SD

Section 2.4 Experiment Screen Display Example

For example, if your label is S_1 and you are in the first formal round, the following content will be displayed on the screen:

This is round 1 of 10.

You are student S_1.

Please enter the 4-digit special number corresponding to the round: ____.

Please submit your 1^{st} choice to your 8^{th} choice:

1^{st}choice	2^{nd}choice	3^{th}choice	4^{th}choice	5^{th}choice	6^{th}choice	7^{th}choice	8^{th}choice
□	□	□	□	□	□	□	□

Note: The underlined areas are where you need to enter the corresponding codes for the school priority and student payoff lists tables of this round. The white boxes indicate the dropdown areas for selecting the school.

Section 2.5. Control Questions

Please answer the following questions on the computer.

1. Each school can only accept one student. (True/False)
2. There are 8 Students and 8 Schools at each round. (True/False)
3. The schools' priority ordering is fixed for all rounds. (True/False)
4. The other students you interact with are actual participants. (True/False)

Priority list and payoff lists tables for the **practice round**.

The 4-digit special number for this round: **3213**

Table 7: School Priorities for the Practice Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	3	2	6	1	4	5	8	7
Schools' Priority	3	2	6	1	4	5	8	7

Table 8: Student Payoff Lists for the Practice Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	H	C	D	F	A	E	B	G
$\mathbf{S_3}$, $\mathbf{S_4}$	C	A	E	G	B	H	D	F
$\mathbf{S_5}$, $\mathbf{S_6}$	B	G	F	H	C	E	A	D
$\mathbf{S_7}$, $\mathbf{S_8}$	E	H	A	C	F	D	B	G

Priority list and payoff lists tables for the **first round**.

The 4-digit special number for this round: **4325**

Table 9: School Priorities for the First Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	7	8	2	5	4	3	1	6
Schools' Priority	7	8	2	5	4	3	1	6

Table 10: Student Payoff Lists for the First Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	B	F	A	C	E	G	H	D
$\mathbf{S_3}$, $\mathbf{S_4}$	C	D	E	G	F	A	H	B
$\mathbf{S_5}$, $\mathbf{S_6}$	E	B	C	A	G	H	F	D
$\mathbf{S_7}$, $\mathbf{S_8}$	C	G	D	A	E	H	B	F

Priority list and payoff lists tables for the **second round**.

The 4-digit special number for this round: **8570**

Table 11: School Priorities for the Second Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	5	7	2	1	6	3	8	4
Schools' Priority	5	7	2	1	6	3	8	4

Table 12: Student Payoff Lists for the Second Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	A	E	F	H	C	G	D	B
$\mathbf{S_3}$, $\mathbf{S_4}$	D	G	E	H	A	B	C	F
$\mathbf{S_5}$, $\mathbf{S_6}$	H	D	A	E	B	F	C	G
$\mathbf{S_7}$, $\mathbf{S_8}$	D	C	E	G	H	A	B	F

Priority list and payoff lists tables for the **third round**.

The 4-digit special number for this round: **3956**

Table 13: School Priorities for the Third Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	5	3	7	8	6	4	2	1
Schools' Priority	5	3	7	8	6	4	2	1

Table 14: Student Payoff Lists for the Third Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	H	A	B	G	F	D	E	C
$\mathbf{S_3}$, $\mathbf{S_4}$	B	A	G	E	H	D	F	C
$\mathbf{S_5}$, $\mathbf{S_6}$	A	B	C	F	H	E	D	G
$\mathbf{S_7}$, $\mathbf{S_8}$	B	G	A	F	H	C	D	E

Priority list and payoff lists tables for the **fourth round**.

The 4-digit special number for this round: **9834**

Table 15: School Priorities for the Fourth Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	1	8	3	6	7	2	5	4
Schools' Priority	1	8	3	6	7	2	5	4

Table 16: Student Payoff Lists for the Fourth Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	A	H	C	D	G	B	F	E
$\mathbf{S_3}$, $\mathbf{S_4}$	A	D	B	H	G	F	C	E
$\mathbf{S_5}$, $\mathbf{S_6}$	G	B	D	A	C	F	E	H
$\mathbf{S_7}$, $\mathbf{S_8}$	E	G	A	F	H	D	B	C

Priority list and payoff lists tables for the **fifth round**.

The 4-digit special number for this round: **2741**

Table 17: School Priorities for the Fifth Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	7	2	5	6	3	8	4	1
Schools' Priority	7	2	5	6	3	8	4	1

Table 18: Student Payoff Lists for the Fifth Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	H	B	A	C	D	F	G	E
$\mathbf{S_3}$, $\mathbf{S_4}$	G	H	E	A	D	C	B	F
$\mathbf{S_5}$, $\mathbf{S_6}$	G	H	E	F	C	B	A	D
$\mathbf{S_7}$, $\mathbf{S_8}$	H	E	F	G	C	A	B	D

Priority list and payoff lists tables for the **sixth round**.

The 4-digit special number for this round: **6549**

Table 19: School Priorities for the Sixth Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	8	3	6	7	5	1	2	4
Schools' Priority	8	3	6	7	5	1	2	4

Table 20: Student Payoff Lists for the Sixth Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	D	G	A	B	E	C	F	H
$\mathbf{S_3}$, $\mathbf{S_4}$	G	E	D	C	F	A	H	B
$\mathbf{S_5}$, $\mathbf{S_6}$	C	D	B	F	E	H	G	A
$\mathbf{S_7}$, $\mathbf{S_8}$	G	F	D	C	H	B	E	A

Priority list and payoff lists tables for the **seventh round**.

The 4-digit special number for this round: **2547**

Table 21: School Priorities for the Seventh Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	3	8	4	1	7	5	2	6
Schools' Priority	3	8	4	1	7	5	2	6

Table 22: Student Payoff Lists for the Seventh Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	C	D	E	F	A	H	G	B
$\mathbf{S_3}$, $\mathbf{S_4}$	D	B	A	F	H	E	C	G
$\mathbf{S_5}$, $\mathbf{S_6}$	A	F	C	G	B	E	H	D
$\mathbf{S_7}$, $\mathbf{S_8}$	A	F	B	C	H	D	G	E

Priority list and payoff lists tables for the **eighth round**.

The 4-digit special number for this round: **7351**

Table 23: School Priorities for the Eighth Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	1	8	6	3	4	2	7	5
Schools' Priority	1	8	6	3	4	2	7	5

Table 24: Student Payoff Lists for the Eighth Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	H	C	F	B	D	E	A	G
$\mathbf{S_3}$, $\mathbf{S_4}$	C	B	D	E	G	H	A	F
$\mathbf{S_5}$, $\mathbf{S_6}$	D	B	C	A	G	F	E	H
$\mathbf{S_7}$, $\mathbf{S_8}$	C	D	G	B	A	F	H	E

Priority list and payoff lists tables for the **ninth round**.

The 4-digit special number for this round: **1945**

Table 25: School Priorities for the Ninth Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	4	6	7	1	3	8	5	2
Schools' Priority	4	6	7	1	3	8	5	2

Table 26: Student Payoff Lists for the Ninth Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	F	E	C	B	A	H	G	D
$\mathbf{S_3}$, $\mathbf{S_4}$	H	C	D	F	B	E	G	A
$\mathbf{S_5}$, $\mathbf{S_6}$	F	C	H	E	B	G	D	A
$\mathbf{S_7}$, $\mathbf{S_8}$	E	H	A	C	B	D	F	G

Priority list and payoff lists tables for the **tenth round**.

The 4-digit special number for this round: **5704**

Table 27: School Priorities for the Tenth Round

Student	$\mathbf{S_1}$	$\mathbf{S_2}$	$\mathbf{S_3}$	$\mathbf{S_4}$	$\mathbf{S_5}$	$\mathbf{S_6}$	$\mathbf{S_7}$	$\mathbf{S_8}$
Lottery Number	7	3	5	1	2	8	6	4
Schools' Priority	7	3	5	1	2	8	6	4

Table 28: Student Payoff Lists for the Tenth Round

Student	**200**	**180**	**160**	**140**	**120**	**100**	**80**	**60**
$\mathbf{S_1}$, $\mathbf{S_2}$	B	H	E	G	A	F	D	C
$\mathbf{S_3}$, $\mathbf{S_4}$	H	B	F	D	G	E	C	A
$\mathbf{S_5}$, $\mathbf{S_6}$	F	H	D	C	G	A	B	E
$\mathbf{S_7}$, $\mathbf{S_8}$	B	E	C	G	F	D	H	A