Assignment Feedback in School Choice Mechanisms*

Daniel Graydon Stephenson
stephensod@vcu.edu

Abstract

Conventional school choice mechanisms reveal assignments to participants only after all preference reports have been finalized. Adaptive models predict that providing assignment feedback during the preference reporting period could promote rational preference revelation. To test this prediction, we conduct an experiment comparing conventional implementations with novel implementations where subjects receive assignment feedback during the preference reporting period. In line with the adaptive predictions, novel implementations consistently achieved more equilibrium assignments than conventional implementations. These results suggest that the provision of assignment feedback during the preference reporting period would improve the performance of school choice mechanisms in the field.

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1 Introduction

Children in the United States have traditionally been assigned to public schools based on where they live. More recently, a growing number of school districts allow parents to indicate their preferences over schools. As each school can support only a limited number of students, it is often infeasible to place every student at her most preferred school. To resolve these shortages, policy makers employ mechanisms that assign students to schools based on reported student preferences and legally determined student priorities. Some of these mechanisms give participants an incentive to strategically misreport[1] their preferences. Misreported preferences can distort assignments and prevent mechanisms from reliably achieving policy goals. To encourage truthful preference reports, economists often recommend strategy-proof assignment mechanisms where participants have no incentive to misreport their preferences.

Recent studies[2] have found that even strategy-proof mechanisms often fail induce truthful preference revelation from boundedly rational participants. Conventional implementations of these mechanisms reveal assignments to participants only at the end of the preference reporting period, after all reports have been finalized. Adaptive models indicate that the provision of assignment feedback during the preference reporting period could promote rational preference reporting by providing participants with increased opportunity for learning and adjustment. In contrast, such feedback has no effect on equilibrium. To test these predictions, we conduct experiments comparing conventional implementations with novel implementations where subjects receive assignment feedback during the preference reporting period.

We consider three widely employed school choice mechanisms: the deferred acceptance mechanism, the top trading cycles mechanism, and the Boston mechanism. In all three mechanisms, subjects achieved significantly more equilibrium assignments under novel implementations where they received as-

[1] Some parent groups have even explicitly recommended particular misreporting strategies. See Abdulkadiroglu et al. (2006) for more details. [2] For example, Chen and Sönmez (2006) find that subjects misrepresent their preferences 50% of the time under a top trading cycles mechanism. Similarly, Pais and Pintér (2008) find that subjects misrepresent their preferences 33% of the time under a full information deferred acceptance mechanism.

signment feedback during the preference reporting period. In the top trading cycles mechanism, subjects were significantly more likely to obtain their most preferred school under novel implementations. In the deferred acceptance and Boston mechanisms, subjects were significantly less likely to exhibit justified envy under novel implementations.

In strategy proof mechanisms, truth telling is a weakly dominant strategy, so truthful reports are always optimal but optimal reports are not always truthful. In general, several distinct preference report profiles may yield the exact same assignment profile. Consequently, agents may learn to submit optimal preference reports without learning to submit truthful preference reports. Adaptive models predict that strategy proof mechanisms will converge on equilibrium assignments without reliably inducing truthful preference reports. Consistent with these predictions, novel implementations achieved more equilibrium assignments, but did not exhibit significantly more truthful preference reports.

Computational advances have largely eliminated the technical barriers to provision of assignment feedback during the preference reporting period. Many school districts already utilize online interfaces for on-demand preference reporting. The Wake County public school system provided on-demand feedback regarding the first choices of other participants (Dur et al., 2015) in a Boston Mechanism. Inner Mongolia provided feedback in a dynamic queuing mechanism where subjects only reported their first choices (Gong and Liang, 2016). It is now feasible to provide participants with assignment feedback during the reporting period in strategy-proof preference reporting mechanisms. The experimental results suggest that such feedback would help school choice mechanisms more reliably achieve policy goals in the field.

The remainder of this paper is organized as follows. Section 2 discusses the related literature. Section 3 describes the mechanisms and environments under consideration. Section 4 presents the experimental design. Section 5 covers the hypotheses. Section 6 presents the results and section 7 concludes.

2 Related Literature

This study connects two strands of literature: mechanism design and adaptive dynamics. Mechanism design provides an axiomatic analysis of rational preference revelation behavior under school choice mechanisms. The present paper investigates three mechanisms: the deferred acceptance mechanism, the top trading cycles mechanism, and the Boston mechanism. Gale and Shapley (1962) describe the deferred acceptance mechanism, Shapley and Scarf (1974) describe the top trading cycles mechanism, and Ergin and Sönmez (2006) provide a powerful characterization of the Nash equilibria of the Boston mechanism. Abdulkadiroglu and Sönmez (2003) discuss the fundamental tradeoff between Pareto efficiency and the elimination of justified envy in school choice mechanisms.

Previous experimental studies, such as Chen and Sönmez (2006), conducted school choice mechanisms with feedback provided at the end of each reporting period. Fudenberg et al. (1998) describes adaptive dynamics and their relationship with equilibrium. Other studies have investigated adaptive dynamics in a variety of strategic settings. Oprea et al. (2011) experimentally investigates adaptive dynamics in Hawk-Dove games. Cason et al. (2013) experimentally investigates adaptive dynamics in rock-paper-scissors games. Stephenson (2019) experimentally investigates adaptive dynamics in attacker-defender games. Stephenson and Brown (2020) experimentally investigates adaptive dynamics in all-pay auctions. These studies provided feedback throughout the decision making period and allowed subjects to adjust their actions at will. The present paper employs this experimental methodology to investigate preference reporting behavior in school choice mechanisms.

3 Theory

School choice mechanisms face a fundamental tradeoff between Pareto efficiency and the elimination of justified envy. Section 3.1 illustrates[3] this trade-

[3] A similar environment with only one student of each type is discussed by Abdulkadiroglu and Sönmez (2003) and Roth (1982).

off. Section 3.2 describes the school choice mechanisms under consideration and their respective equilibria. Section 3.3 considers adaptive models and their theoretical predictions.

3.1 The School Choice Environment

Consider a school choice environment where each of three schools can accept up to n students and each student can be assigned to only one school. Each student has strict preferences over schools and each school has a strict priority ranking over students. There are three types of students and n students of each type. Student preferences over schools are given by

Student Type	1	2	3
	b	a	a
Preference	a	b	b
	c	c	c

Here higher vertical position indicates a higher preference ranking. Type 1 students prefer school b over school a and school a over school c. Similarly, schools have strict priority rankings over students that satisfy

School	a	b	c
	1	2	2
Priority	3	1	1
	2	3	3

Here school a always give higher priority to type 1 students than type 3 students and always gives higher priority to type 3 students than type 2 students. A student x is said to have justified envy towards another student y if student x prefers the school assigned to y and student x is also has a higher priority than y at this school. If no student has justified envy under a particular assignment we say that this assignment eliminates justified envy. In this environment, the only assignment that eliminates justified envy is given by

$$\mu = \begin{pmatrix} 1 & 2 & 3 \\ a & b & c \end{pmatrix} \tag{1}$$

Here all type 1 students are assigned to school a, all type 2 students are assigned to school b, and all type 3 students are assigned to school c. Yet μ is Pareto dominated by the assignment

$$\lambda = \begin{pmatrix} 1 & 2 & 3 \\ b & a & c \end{pmatrix} \tag{2}$$

Here all type 1 students are assigned to school b, all type 2 students are assigned to school a, and all type 3 students are assigned to school c. The assignment λ Pareto dominates the assignment μ because type 1 students and type 2 student both prefer the schools they receive under λ to the schools they receive under μ and type 3 students receive the same school under both assignments.

The assignment λ is Pareto optimal but it fails to fully eliminate justified envy because it gives type 3 students justified envy towards type 2 students. Type 3 students would prefer school a over school c, and school a ranks type 3 students higher than type 2 students. Since μ uniquely eliminates justified envy but is Pareto dominated by λ, no Pareto optimal assignment can eliminate justified envy in this environment. In general, no assignment mechanism can guarantee both Pareto optimality and the elimination of justified envy.

3.2 Student Assignment Mechanisms

School choice mechanisms take as input the reported student preferences over schools and the legally determined student priorities at each school. The output they produce is an assignment that satisfies the capacity constraints faced by each each school. This paper considers three widely employed assignment mechanisms: the Boston mechanism, the top trading cycles mechanism, and the student optimal deferred acceptance mechanism. The deferred acceptance mechanism and the top trading cycles mechanism are both strategy proof. The dominant strategy Nash equilibrium of the deferred acceptance mechanisms always eliminates justified envy. The dominant strategy Nash equilibrium of the top-trading cycles mechanism always achieves Pareto efficiency. The Boston mechanism is manipulable, but every Nash equilibrium of the Boston mechanism eliminates justified envy. The following paragraphs describe the algorithm performed by each mechanism.

3.2.1 The Boston Mechanism

Under the Boston mechanism, each student initially applies to her top choice of schools according to her reported preferences. Each school accepts applicants in priority order until it runs out of seats. The remaining students apply to their second choice of schools according to their reported preferences. Again, each school accepts students in priority order until it runs out of seats. This process repeats until every student is assigned to a school. If students report truthfully, the Boston mechanism will select a Pareto optimal assignment. However, students can often benefit by misreporting their preferences. Ergin and Sönmez (2006) show that the set of Nash equilibrium assignments for the Boston Mechanism coincide exactly with the set of assignments that eliminate justified envy under the true preferences.

3.2.2 The Deferred Acceptance Mechanism

Under the student optimal deferred acceptance mechanism, each student initially applies to her top choice of schools according to her reported preferences. Each school tentatively accepts applicants in priority order until it runs out of seats. The remaining applications are rejected. Students whose applications were rejected then apply to their next highest choice of schools. Each school then considers its new applicants alongside those it has already tentatively accepted. It tentatively accepts its top priority students among this group until it run out of seats and rejects the remaining students. This process repeats until every student is assigned to a school.

3.2.3 The Top Trading Cycles Mechanism

The top trading cycles mechanism constructs a directed graph based the priorities and reported preferences. Each school points to it's highest priority student and each student points to her most preferred school according to her reported preferences. Since there are a finite number of schools and students, the directed graph will have at least one cycle. Students who are part of a cycle are assigned to the school they point at. Each of the remaining students point to their most preferred school according to their reported preferences among those schools that still have open seats. Each school points to their highest priority student among those students that remain unassigned. Students who are part of a cycle are assigned to the school they point to. This process repeats until every student is assigned to a school.

3.3 Adaptive Dynamics

Adaptive dynamics describe the decision making process of boundedly rational agents. The best response dynamic describes agents who asynchronously switch to their myopic best responses. It is closely related to the fictitious play dynamic discussed by Brown (1951). Each agent reevaluates her strategy at points in time generated by an independent Poisson process. An agent i who reevaluates her previous preference report $r_i \in R_i$ under the report profile $r \in R$ selects the new report $q_i \in R_i$ with probability $P_i\left(q_i|r\right)$ as given by

$$P_i\left(q_i|r\right) = \frac{f\left(q_i|r\right)}{\sum\limits_{x_i \in R_i} f\left(x_i|r\right)} \qquad \text{where} \tag{3}$$

$$f\left(x_i|r\right) = \begin{cases} 1 & \text{if } x_i \in \underset{y_i \in R_i}{\operatorname{argmax}}\ \pi_i\left(y_i, r_{-i}\right) \\ 0 & \text{otherwise} \end{cases} \tag{4}$$

Figures 1 and 2 depict the mean path of the best response dynamic in school choice mechanisms. The vertical axis in figure 1 denotes the percentage of participants receiving their equilibrium assignment. The vertical axis in figure 2 depicts the percentage of participants sending truthful preference reports. Each line depicts the mean path of a mechanism in the environment described by section 3.1. The horizontal axes denotes time. Over successive iterations of feedback and adjustment, strategy proof mechanisms reliably converge to equilibrium assignments, but not to truthful preference reports.

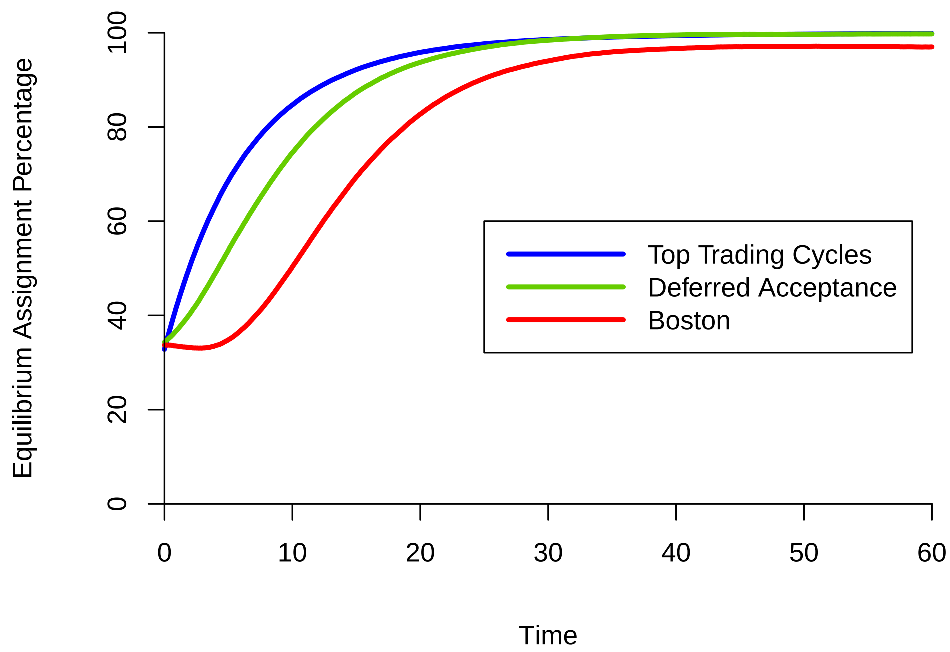


Figure 1: Equilibrium assignment percentages for the best response dynamic

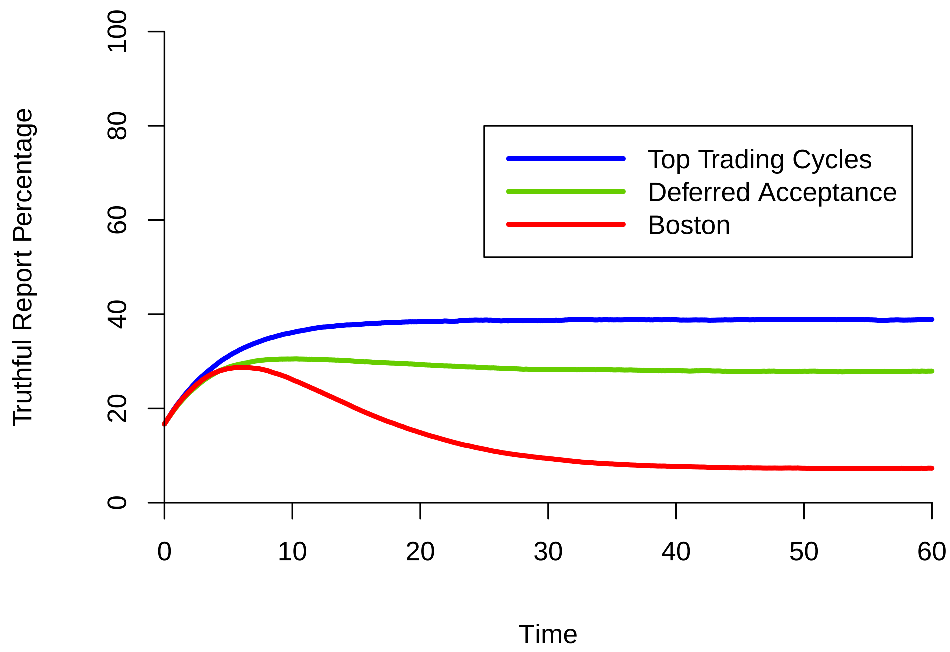


Figure 2: Truthful report percentages for the best response dynamic

	Top Trading Cycles	Deferred Acceptance	Boston
Conventional Implementation	3 Sessions	3 Sessions	3 Sessions
Novel Implementation	3 Sessions	3 Sessions	3 Sessions

Table 1: 3x2 Experimental Design with Three Sessions Per Block

4 Experimental Design and Procedures

This study implements a 2x3 experimental design with six treatment conditions as illustrated by table 1. Each column denotes one of three mechanisms: the deferred acceptance mechanism, the top trading cycles mechanism, and the Boston mechanism. Under the conventional feedback treatment, subjects could observe their assignment at the end of each reporting period. Under the novel feedback treatment, subjects could also observe their assignments under the currently selected preference reports throughout the reporting period.

A total of eighteen experimental sessions were conducted, three for each of the six treatment blocks. During each experimental session, subjects were divided into three groups of eight participants. Each group was assigned one of the three student types described in section 3.1. These priorities and induced values were used across all six experimental treatment conditions. Each experimental session consisted of twelve reporting periods and each reporting period lasted for exactly one minute.

At the beginning of each reporting period, subjects were informed about the earnings they would receive from being assigned each of the three possible options: a, b, or c. This information remained visible to subjects for the duration of the experimental session. To avoid the possibility of introducing any psychological ordering or labeling bias, the labeling for each school and the order in which the options were presented was randomly reassigned at the beginning of each period.

During each period, subjects selected a preference report. In every report-

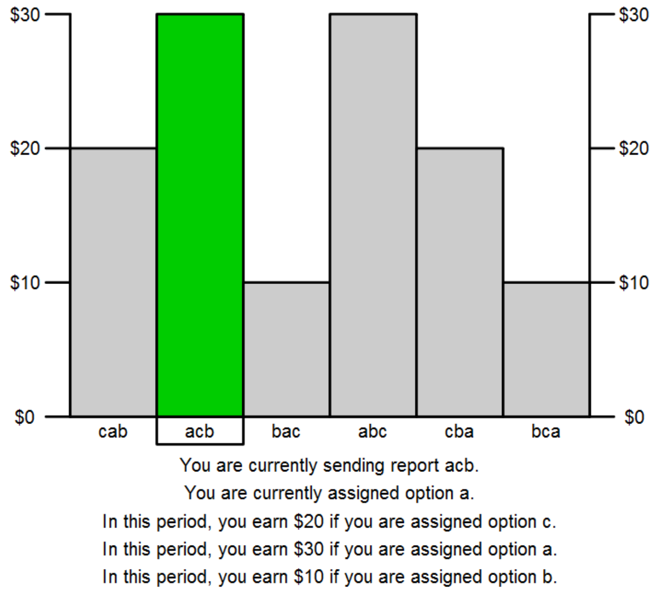


Figure 3: Screenshot of the Experimental Interface

ing period of every treatment condition, subjects were free to adjust their preference reports. At the end of every reporting period, preference reports were finalized and assignments were made based on the finalized preference reports. Figure 3 depicts the experimental interface. At the end of each session, subjects received their average earnings over all twelve periods plus a five dollar participation bonus. Each experimental session was conducted with twenty-four subjects for a total of 432 experimental subjects. All sessions were conducted with at the Texas A&M Economic Research Laboratory.

5 Hypotheses

The best response dynamic predicts that all three of the school choice mechanisms under consideration will exhibit an increasing proportion of equilibrium assignments as participants receive successive opportunities for feedback and adjustment. The novel implementations considered by this paper accelerate this process by providing participants with opportunities for feedback and adjustment during the preference reporting period.

Hypothesis 1. *School choice mechanisms will achieve equilibrium assignments more often under novel feedback implementations.*

The top trading cycles mechanism is strategy proof and its dominant strategy Nash equilibrium always achieves Pareto efficiency. In the experimental environment, the dominant strategy Nash equilibrium of the top trading cycles mechanism yields an assignment under which all students of types 1 and 2 are assigned to their most preferred school. School a is the favorite of both type 2 and type 3 students, so it is impossible to assign more than two thirds of the student population to their most preferred school. In equilibrium, the top trading cycles mechanism achieves this upper bound.

Hypothesis 2. *The top trading cycles mechanism will assign more students to their most preferred school under novel feedback implementations.*

The student optimal deferred acceptance mechanism is strategy proof and its dominant strategy Nash equilibrium always eliminates justified envy. Its dominant strategy Nash equilibrium completely eliminates justified envy under the true preferences. The Boston mechanism's set of Nash equilibrium assignments is equal to the set of assignments that eliminate justified envy. In the experimentally implemented school choice environment, the Nash equilibrium assignment of the Boston mechanism uniquely eliminates justified envy under the true preferences.

Hypothesis 3. *The deferred acceptance and Boston mechanisms will eliminate more justified envy under novel feedback implementations.*

No mechanism can guarantee both Pareto efficiency and the elimination of justified envy in equilibrium. The assignment that uniquely eliminates justified envy in the experimental setting is Pareto dominated and it does not give any of the students their most preferred school. We hypothesize that the novel feedback implementations will eliminate more justified envy in the in the deferred acceptance mechanism and achieve greater efficiency in the top trading cycles mechanism.

	Feedback		t-test	Rank-Sum Test
	Conventional	Novel	p-value	p-value
Top Trading Cycles	0.762	0.921	<0.001	<0.001
Deferred Acceptance	0.690	0.981	<0.001	
Boston	0.202	0.892	<0.001	

Table 2: Means and hypothesis tests regarding the proportion of equilibrium assignments. The unit of observation for the t-test is one period. The unit of observation for the Mann-Whitney-Wilcoxon rank-sum test is one session.

	Feedback		t-test	Rank-Sum Test
	Conventional	Novel	p-value	p-value
Top Trading Cycles	0.53241	0.62963	<0.001	0.200
Deferred Acceptance	0.82755	0.98843	<0.001	0.004
Boston	0.59259	0.94097	<0.001	

Table 3: Hypothesis tests regarding the elimination of justified envy. The unit of observation for the t-test is one period. The unit of observation for the Mann-Whitney-Wilcoxon rank-sum test is one session.

	Feedback		t-test	Rank-Sum Test
	Conventional	Novel	p-value	p-value
Top Trading Cycles	0.48727	0.59722	<0.001	0.100
Deferred Acceptance	0.18750	0.01042	<0.001	0.002
Boston	0.52431	0.06134	<0.001	

Table 4: Hypothesis tests regarding the proportion most preferred assignments. The unit of observation for the t-test is one period. The unit of observation for the Mann-Whitney-Wilcoxon rank-sum test is one session.

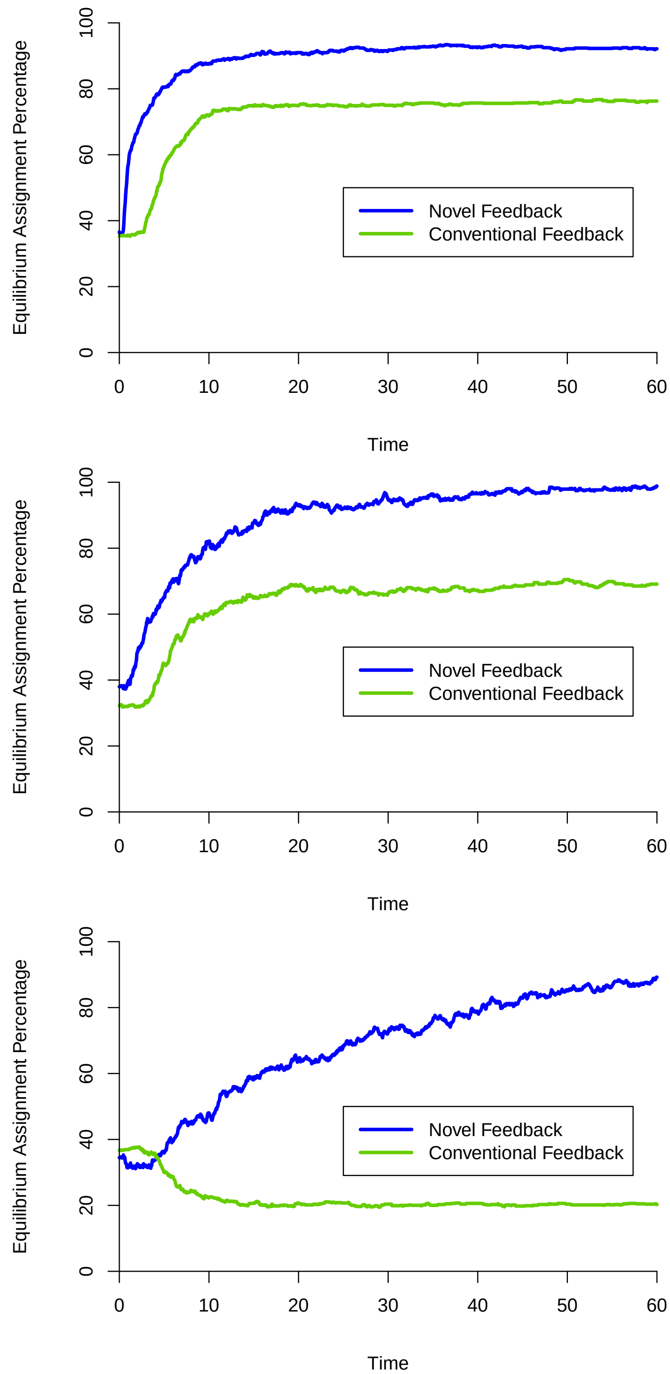
6 Results

Table 2 presents hypothesis tests for the effect of novel assignment feedback on the proportion of equilibrium assignments. A non-parametric Mann-Whitney-Wilcoxon rank-sum test finds that novel feedback implementations produce significantly more equilibrium assignments at the one percent level. A t-test finds that each mechanism achieves equilibrium assignments significantly more often under novel feedback than under conventional feedback at the one percent level.

Result 1. *All three mechanisms achieved equilibrium assignments significantly more often when participants received assignment feedback during the preference reporting period.*

Figures 4 and 5 illustrate the empirical assignment dynamics. The horizontal axis in figure 4 indicates seconds within each reporting period. The horizontal axis in figure 5 indicates periods within each session. The vertical axis of each graph indicates the average percentage of participants receiving their equilibrium assignment. The first graph illustrates the empirical results under the top trading cycles mechanism. The second graph illustrates the empirical results under the student optimal deferred acceptance mechanism. The third graph illustrates the empirical results under the Boston mechanism. The blue line illustrates the mean path under novel feedback implementations and the green line illustrates the mean path under conventional feedback implementations. The percentage of equilibrium assignments was consistently higher under novel feedback implementations. The percentage of equilibrium assignments decreased over the preference reporting period in conventional feedback implementations of the manipulable Boston mechanism, suggesting that conventional feedback was insufficient for many subjects to develop strategic preference reports.

Table 3 presents hypothesis tests for the effect of novel assignment feedback on the elimination of justified envy. A non-parametric Mann-Whitney-Wilcoxon rank-sum test finds that novel implementations of the the deferred acceptance and Boston mechanisms eliminated significantly more justified envy at the one percent level. This result is consistent with the observed increase in

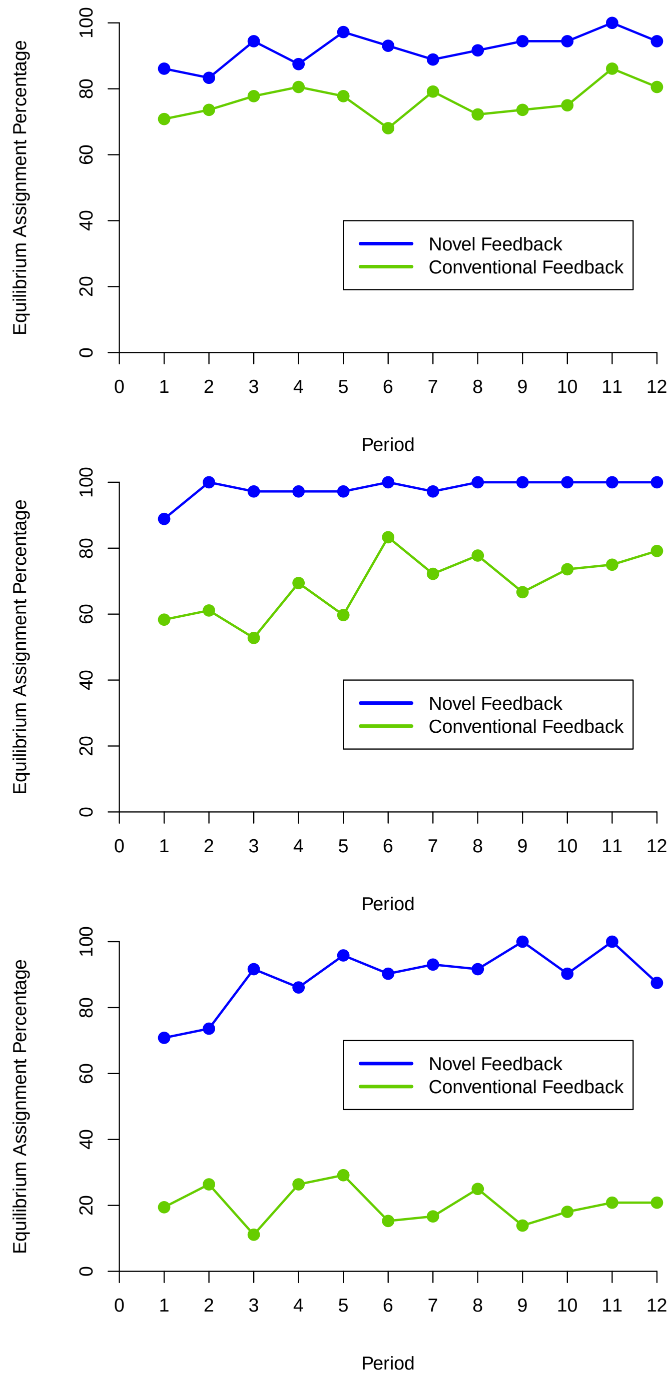


(a) Top Trading Cycles

(b) Deferred Acceptance

(c) Boston

Figure 4: Percentage of equilibrium assignments over time in all periods. Subfigures (a), (b), and (c) illustrate the empirical results for the the top trading cycles, deferred acceptance, and Boston mechanisms respectively.



(a) Top Trading Cycles

(b) Deferred Acceptance

(c) Boston

Figure 5: Percentage of equilibrium assignments by period in all sessions. Subfigures (a), (b), and (c) illustrate the empirical results for the the top trading cycles, deferred acceptance, and Boston mechanisms respectively.

equilibrium assignments under novel implementations as the assignment that uniquely eliminates justified envy in the experimental environment is also the equilibrium assignment for the deferred acceptance and Boston mechanisms.

Result 2. *Both the deferred acceptance mechanism and the Boston mechanism eliminated significantly more justified envy when participants received assignment feedback during the preference reporting period.*

The dominant strategy Nash equilibrium outcome of the top trading cycles mechanism eliminates justified envy among type 1 and type 2 students, but it gives type 3 students justified envy towards type 2 students. Consistent with this prediction, about 63% of subjects avoided justified envy under novel implementations of the top trading cycles mechanism. In contrast, only 53% of subjects avoided justified envy under conventional implementations of the top trading cycles mechanism.

Since school a is the favorite for both type 2 and type 3 students, it is impossible to assign more than two thirds of the student population to their most preferred school. In equilibrium, the top trading cycles mechanism achieves this upper bound, but the Boston and deferred acceptance mechanisms do not assign any participant to her most preferred school. Table 4 presents hypothesis tests for the effect of novel assignment feedback on the percentage of students receiving their most preferred assignment. A non-parametric Mann-Whitney-Wilcoxon rank-sum test finds that novel implementations of the deferred acceptance and the Boston mechanisms were significantly less likely to assign subjects to their most preferred school at the one percent level. A t-test finds that novel implementations of the the top trading cycles mechanism assigned subjects to their most preferred school significantly more often at the 1% level.

Result 3. *The top trading cycles mechanism gave subjects their most preferred option significantly more often when subjects received assignment feedback during the preference reporting period.*

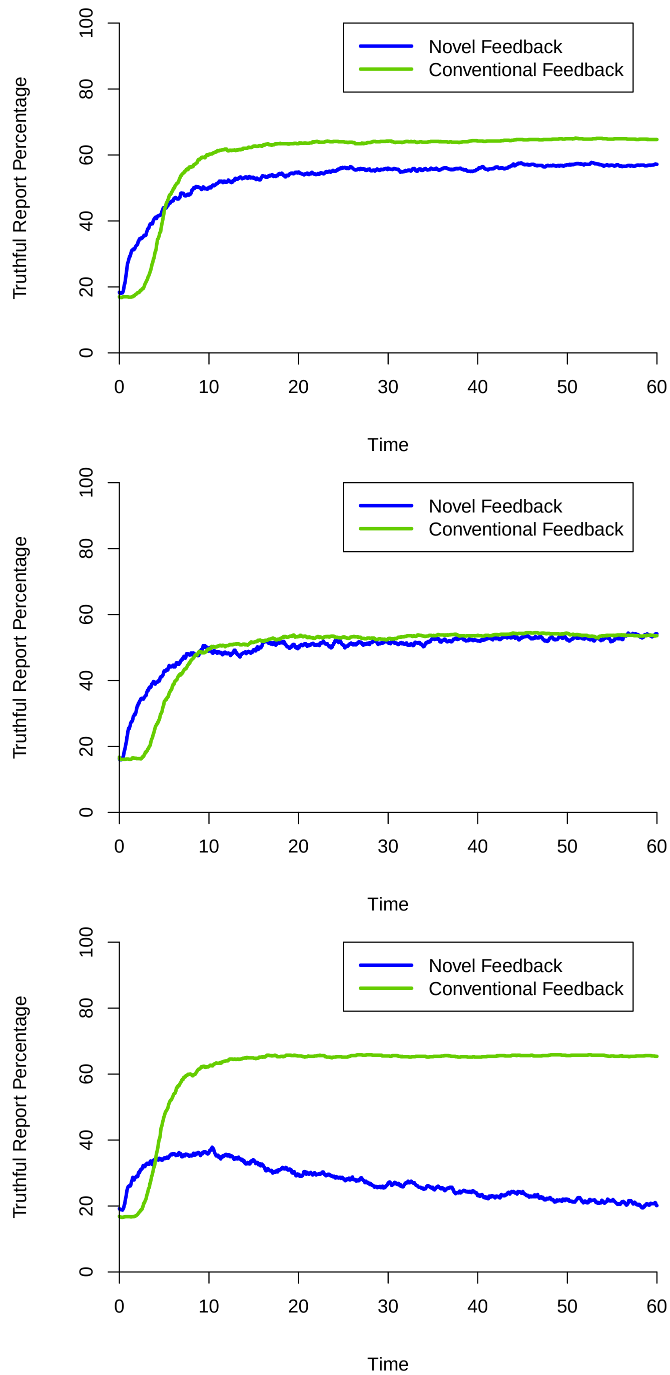
School choice mechanisms face a fundamental tradeoff between Pareto efficiency and the elimination of justified envy. Eliminating justified envy can sometimes necessitate inefficient assignments. The dominant strategy Nash equilibrium assignment of the deferred acceptance mechanism eliminates justified envy but does not assign any participants to their most preferred school in the experimental environment. The dominant strategy Nash equilibrium assignment of the top trading cycles mechanism does not eliminate justified envy, but it is Pareto efficient, assigning both type 2 and type 3 students to their most preferred school. Increasing the proportion of equilibrium assignments effects efficiency in differently in different mechanisms.

Figures 6 and 7 illustrate the percentage of subjects who accurately reported their preferences. The horizontal axis in figure 6 indicates seconds within each preference reporting period. The horizontal axis in figure 7 indicates reporting periods within a session. The first graph illustrates the empirical results under the top trading cycles mechanism. The second graph illustrates the empirical results under the student optimal deferred acceptance mechanism. The third graph illustrates the empirical results under the Boston mechanism. The vertical axis of each graph indicates the percentage of participants who accurately reported their preferences. In all three graphs, the blue line illustrates the mean path under novel feedback implementations and the green line illustrates the mean path under conventional feedback implementations.

While truthful reports are always optimal in strategy proof mechanisms, optimal preference reports are not always truthful as distinct report profiles can often yield identical assignment profiles.[4] Accordingly, the adaptive best response dynamic predicts that strategy proof mechanisms will exhibit convergence to equilibrium assignments but not to truthful preference reports.

In the deferred acceptance mechanism, subjects selected truthful preference reports about equally often under both treatments. In the top trading cycles mechanism, subjects were slightly less likely to truthfully report their preferences under the novel feedback treatment. Under both mechanisms, the best response dynamic predicts convergence to equilibrium assignments but not to truthful preference reports. In line with these predictions, subjects

[4] In the deferred acceptance mechanism, if type 1 and type 2 students report truthfully then type 3 students will be assigned to school c regardless of their preference report. In the top trading cycles mechanism, if type 2 and type 3 students report truthfully then type 1 students will be assigned to school b so long as they list it as their first choice.



(c) Top Trading Cycles

(a) Deferred Acceptance

(b) Boston

Figure 6: Percentage of truthful preference reports over time within a period. Subfigures (a), (b), and (c) illustrate the empirical results for the the top trading cycles, deferred acceptance, and Boston mechanisms respectively.

(a) Top Trading Cycles

(b) Deferred Acceptance

(c) Boston

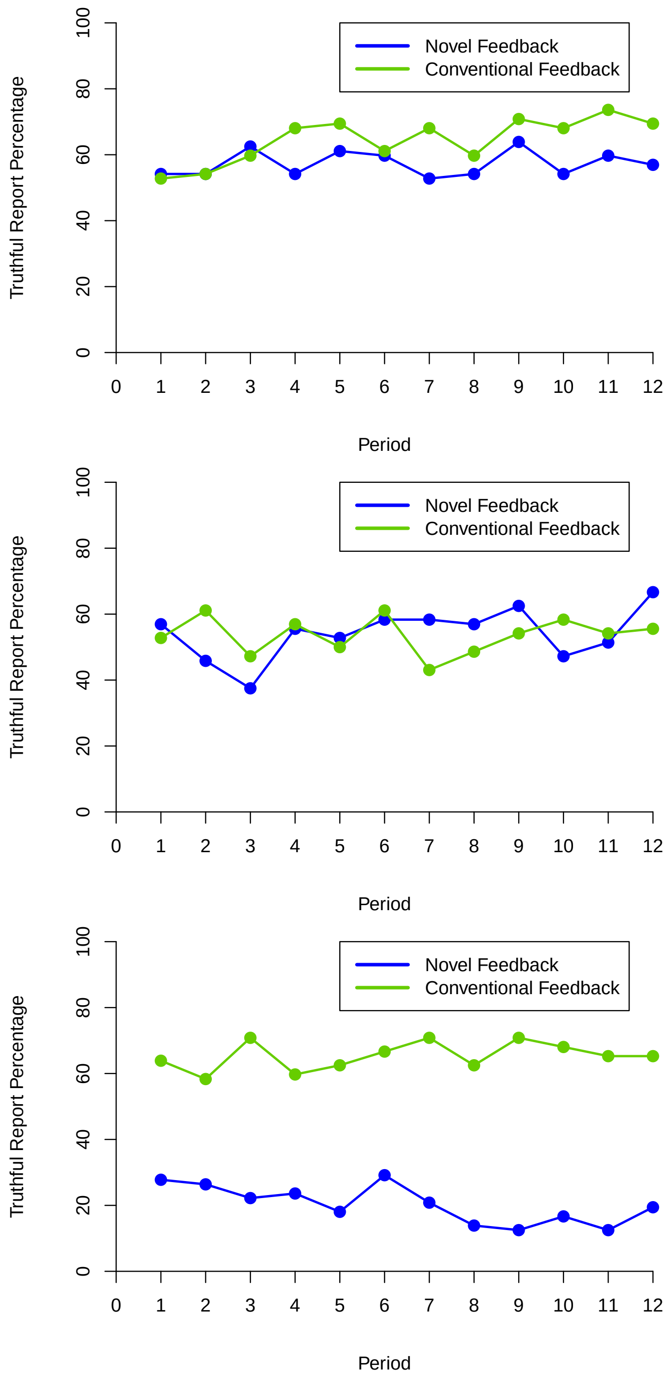


Figure 7: Percentage of truthful preference reports by period in all sessions. Subfigures (a), (b), and (c) illustrate the empirical results for the the top trading cycles, deferred acceptance, and Boston mechanisms respectively.

were significantly more likely to achieve equilibrium assignments under novel feedback implementations, but they were not significantly more likely to report their preferences accurately. Less than one-fourth of the subjects selected accurate preference reports in novel feedback implementations of the manipulable Boston mechanism, yet over 80% of these subjects achieved equilibrium assignments. Nash equilibria of the Boston mechanism generally involve inaccurate preference reports, so this observation is consistent with equilibrium predictions.

Novel feedback implementations that provided assignment feedback during the preference reporting period achieved significantly more equilibrium assignments, but they did not induce more accurate preference reports. While truthful reports are always optimal in strategy proof mechanisms, optimal preference reports are not always truthful. The top trading cycles mechanism achieved Pareto efficiency in equilibrium and novel feedback implementations achieved significantly greater efficiency. The deferred acceptance and Boston mechanisms eliminate justified envy in equilibrium and novel feedback implementations eliminated more justified envy.

7 Conclusion

Classical mechanism design theory often operates under the assumption that strategy proof mechanisms induce truthful preference reports. This assumption can be difficult to verify in the field where preferences are rarely observable and mechanisms rarely match theory exactly. Experimental investigations can help test such assumptions in a controlled environment. The adaptive best response dynamic predicts that strategy proof mechanisms will exhibit an increasing proportion of equilibrium assignments over successive iterations of feedback and adjustment. This process can be accelerated by providing participants with more frequent opportunities for feedback and adjustment.

To test this hypothesis, we experimentally investigate novel implementations of school choice mechanisms that provide participants with assignment feedback throughout the reporting period. These novel implementations achieved significantly more equilibrium assignments than conventional implementations that only provide feedback at the end of each reporting period. Novel implementations of the top trading cycles mechanism assigned significantly more participants to their most preferred school. Novel implementations of the deferred acceptance and Boston mechanisms eliminated significantly more justified envy. While truthful preference reports are always optimal in strategy proof mechanisms, optimal preference reports are not always truthful. Consistent with adaptive models, novel implementations of strategy proof mechanisms achieved significantly more equilibrium assignments, but they did not induce significantly more truthful preference reports.

Student assignment mechanisms impact the well being of children throughout the world. The Boston mechanism was used in the Boston public school system. The New Orleans recovery school district used an algorithm based on the top trading cycles assignment mechanism (Vanacore, 2012). A variation of the student optimal deferred acceptance mechanism was employed in New York City (Roth, 2008). Our experimental results suggest that the provision of assignment feedback during the preference reporting period would help such mechanisms more reliably achieve policy goals.

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