Online Appendix to:

Correlation Neglect in Student-to-School Matching

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A. PROOFS

Proposition 1. *For any school choice environment and for any undominated ROL r,* $V_s(r) \leq V_n(r)$.

Proof. The proof proceeds by induction on the size of the ROL. The case $k = 1$ is obvious as correlation in admission decisions is irrelevant for students' subjective expected utility. For the case $k > 1$, let $r^{2:k}$ denote the continuation ROL from the second to the k-th ranked schools. Then, we have that for all $x \in \{s, n\}$,

$$V_x(r) = (1 - F(c_{r^1}))\, u\left(r^1\right) + F(c_{r^1})\, V_x(r^{2:k} \mid \text{rejected by } r^1).$$

For the neglectful type, $V_n(r^{2:k} \mid \text{rejected by } r^1) = V_n(r^{2:k})$. For the sophisticated type, $V_s(r^{2:k} \mid \text{rejected by } r^1) \leq V_s(r^{2:k})$, as the absence of information results in a first order stochastically higher distribution of outcomes (mass is reduced proportionally from all options and added to r^2).[1]

By induction, $V_n(r^{2:k}) \geq V_s(r^{2:k})$. Altogether we have that

$$V_n(r^{2:k} \mid \text{rejected by } r^1) = V_n(r^{2:k}) \geq V_s(r^{2:k}) \geq V_s(r^{2:k} \mid \text{rejected by } r^1),$$

and hence

$$V_n(r) \geq V_s(r).$$

$\square$

[1] Here we use the fact that undominated ROLs are ordered according to true preferences.

Proposition 2. *For any integer k, and any decision environment where the agent is constrained to (costlessly) apply to up-to-k schools, the price of neglect for the neglectful type is bounded above by* $1-\frac{1}{k}$*. Furthermore, this bound is tight—for any k, there exist school choice environments where the price of neglect is arbitrarily close to* $1-\frac{1}{k}$*.*

Proof. To begin, note that the optimal size-1 ROL is identical for all types, as correlation only matters when applying to multiple schools. Next, observe that the neglectful type believes that admissions decisions across schools are independent. Thus, by Theorem 1 of Chade and Smith (2006), any subjective-optimal ROL of size-k of the neglectful type includes a subjective-optimal singleton ROL, which is also an objective optimal singleton ROL by the first observation. Thus, subjective-optimal ROLs of size-k achieve at least as much experienced utility as the optimal size-1 ROL (the fact that the ROL of the neglectful type includes more schools can only improve the utility he will experience, as he will attend the best school that accepts him). Finally, by Theorem 2 of Shorrer (2019), the expected utility of a sophisticated agent from an optimal size-1 ROL is greater than or equal to $\frac{1}{k}$ of the expected utility from an optimal size-k ROL.

To see that the lower bound is tight, consider an arbitrarily small $\epsilon > 0$. For $m \in \{1, 2, ..., k-1\}$, let $u_m := \epsilon^{-m}$ and let $c_m := 1-\epsilon^m$, and let $u_k := \epsilon^{-k}(1+\delta)$ and $c_k := 1-\epsilon^k$. Let X consists of k copies of each type of school, (u_i, c_i). Then the full correlation neglectful type will choose the k copies of the most desired school, u_k, and get utility of $1+\delta$ (see, e.g. Chade and Smith 2006). But by choosing one school of each type the expected utility is approximately k for sufficiently small ϵ and δ. □

Proposition 3. *For any constraint on the size of the ROL k, the neglectful type is at least as likely to be unassigned as the sophisticated type.*

Our leading example shows that this comparison may be strict.

Proof. The case of $k=1$ is obvious since correlation plays no role when students can only apply to one school. Next, recall from Shorrer (2019) that options that are more selective and less desirable than other options are dominated and do not appear on an optimal ROL of a sophisticated agent. A consequence of this statement is that when considering the sophisticated type's ROL, there is no loss in focusing on a subset of undominated alternatives $X' \subset X$ such that for any $x, y \in X'$, $u(x) > u(y) \iff c_x > c_y$.

Consider the subjective-optimal size-k ROL of the neglectful type, $r_n(k)$. Since options in $X \backslash X'$ are dominated, they can only appear on ROLs that include choices that dominate them. Thus, the least selective school on $r_n(k)$ belongs to X'. Hence,$|r_n(k) \cap (X \backslash X')| = m < k$.

Consider the choice problem where an agent needs to choose optimal ROLs of size $k-m$ from X' with the stochastic outside option of m independent lotteries, one for each $i \in r_n(k) \cap (X \backslash X')$, where the probability of realization of lottery i is $1-c_i$ and its utility from attending is $u(i)$ (but the student still can only attend one school). The outside option is how the neglectful type subjectively perceives $r_n(k) \cap (X \backslash X')$. Note that since optimal ROLs rank schools according to desirability, in this problem, the lowest-ranked school is the least selective option in the ROL (ignoring the outside options).

We now claim that the last (i.e., $k-m$-th ranked) school on the neglectful type's ROL is associated with a weakly more selective threshold than that of the sophisticated type. Towards contradiction, assume the opposite. Then the last choice on the neglectful type's ROL is less selective and thus less desirable than the sophisticated type's last choice (since choices are from X'). This means that the choice does not appear on the ROL of the sophisticated type, thus he can deviate and replace his last choice with the neglectful type's last choice. But because both agents choose their last school conditional on rejection by all higher ranked schools (Shorrer 2019, Lemma 2), the sophisticated type's beliefs are MLRP-lower and this is a contradiction to Proposition 2 of Shorrer (2019), which states that sophisticated agents with higher beliefs apply more aggressively (as the lack of sophistication does not play a role in ROLs of size 1 – except, of course, for the effect of false beliefs from conditioning on previous rejections).

Next, note that the neglectful type's subjective optimal ROL must be identical to his optimal ROL in the original problem (the outside option and the constraint on the size of the ROL were chosen to mimic a situation where his strategy space was restricted to include certain options which appear on his subjective optimal ROL anyway and to not include certain school that did not appear on his subjective optimal ROL anyway).

Lastly, note that if we remove the sophisticated type's access to the outside option, his ROL becomes less aggressive (Shorrer 2019, Theorem 3). And the least selective school on his ROL of size k in this problem is even less selective than the least selective school on his optimal ROL of size $k-m$ (Shorrer 2019, Theorem 1). But the optimal ROL of size k from X' coincides with the optimal ROL of size k from X (Shorrer 2019, Lemma 1). Together with the fact that the least selective school on $r_n(k)$ belongs to X', this completes the proof. $\square$

B. Supplemental Tables Referenced in Text

Table A1. Demographic Information from Experiment 1

	Mean	Standard Deviation	25^{th} Pctile	Median	75^{th} Pctile
Female	62.4%				
Graduated High-School in the USA	90.3%				
Degree Involves Math	75.2%				
Age	21.2	3.0	20.0	21.0	22.0
High-School GPA	3.74	0.40	3.60	3.87	4.0
College GPA	3.45	0.37	3.25	3.50	3.70
Nb. Correct Raven's Matrices	5.0	1.2	4.0	5.0	6.0
Correlation-Neglect Measure	0.75	0.51	0.53	0.89	1.03

TABLE A2. Choices in the Correlated and Uncorrelated Settings by Order of Module.

Scenario		Uncorrelated Module First $(A \succ B)$	$(A \succ C)$	$(B \succ C)$	Other	Correlated Module First $(A \succ B)$	$(A \succ C)$	$(B \succ C)$	Other	Test of Equality p-value
1.	C: (50, 45, 0)	45.9	48.2	4.7	1.2	51.3	41.3	3.8	3.8	0.66
	U: (50, 90, 0)	8.2	87.1	0.0	4.7	13.8	81.3	0	5.0	0.65
2.	C: (50, 45, 10)	52.9	42.4	3.5	1.2	47.5	46.3	2.5	3.8	0.80
	U: (50, 90, 20)	9.4	90.6	0.0	0.0	11.3	85.0	0.0	3.8	0.22
3.	C: (50, 20, 0)	72.9	21.1	5.9	0.0	76.3	16.3	6.3	1.3	0.71
	U: (50, 40, 0)	52.9	38.8	5.9	2.4	46.3	42.5	6.3	5.0	0.89
4.	C: (50, 20, 10)	78.8	12.9	7.1	1.2	85.0	12.5	2.5	0.0	0.44
	U: (50, 40, 20)	75.3	20.0	1.2	3.5	60.0	30.0	6.3	3.8	0.02**
5.	C: (50, 55, 0)	21.2	76.5	1.2	1.2	32.5	61.3	1.3	5.0	0.14
	U: (50, 100, 0)	9.4	87.1	1.2	2.4	6.3	88.8	0.0	5.0	0.52
6.	C: (75, 60, 0)	20.0	50.6	25.9	3.5	30.0	40.0	20.0	10.0	0.20
	U: (75, 80, 0)	12.9	77.7	1.2	8.2	12.5	75.0	6.3	6.3	0.24
7.	C: (75, 60, 30)	28.2	42.4	22.4	3.7	32.5	33.8	28.8	5.0	0.76
	U: (75, 80, 40)	14.1	77.7	1.2	7.2	15.0	75.0	0.0	10.0	0.97
8.	C: (80, 60, 0)	21.2	34.1	38.8	5.9	27.5	23.8	41.3	7.5	0.39
	U: (80, 75, 0)	15.3	55.3	20.0	9.4	13.8	60.0	17.5	8.8	0.95
9.	C: (80, 60, 40)	31.8	25.9	40.0	2.4	28.8	21.3	38.8	11.3	0.19
	U: (80, 75, 50)	25.9	41.2	21.2	11.8	18.8	50.0	21.3	10.0	0.73

Notes: Using data from Experiment 1, this table summarizes the ROLs chosen in each matched pair of scenarios by which module subjects saw first. All numbers presented (with the exception of the last column) are percentages of responses seen within a module. Columns $(A \succ B)$, $(A \succ C)$, and $(B \succ C)$ present the fractions of subjects reporting each of those ROLs, and column "other" reports the fraction of subjects reporting one of the (dominated) strategies $(B \succ A)$, $(C \succ A)$, or $(C \succ B)$. The final column present the p-value associated with Fisher's exact test for differences across populations who saw the uncorrelated or correlated module, using the full distribution of choices without aggregating dominated ROLs. $^{**}p < 0.05$.

TABLE A3. Choices in the Correlated and Uncorrelated Settings (Using First Module Only).

Scenario		Rank-Order List				Test of Equality (p-values)		
		$(A \succ B)$	$(A \succ C)$	$(B \succ C)$	Other	Full Dist.	$(A \succ B)$	$(A \succ C)$
1.	C: (50, 45, 0)	51.3	41.3	3.8	3.8	<0.01***	<0.01***	<0.01***
	U: (50, 90, 0)	8.2	87.1	0.0	4.7			
2.	C: (50, 45, 10)	47.5	46.3	2.5	3.8	<0.01***	<0.01***	<0.01***
	U: (50, 90, 20)	9.4	90.6	0.0	0.0			
3.	C: (50, 20, 0)	76.3	16.3	6.3	1.3	<0.01***	<0.01***	<0.01***
	U: (50, 40, 0)	52.9	38.8	5.9	2.4			
4.	C: (50, 20, 10)	85.0	12.5	2.5	0.0	0.17	0.12	0.19
	U: (50, 40, 20)	75.3	20.0	1.2	3.5			
5.	C: (50, 55, 0)	32.5	61.3	1.3	5.0	<0.01***	<0.01***	<0.01***
	U: (50, 100, 0)	9.4	87.1	1.2	2.4			
6.	C: (75, 60, 0)	30.0	40.0	20.0	10.0	<0.01***	<0.01***	<0.01***
	U: (75, 80, 0)	12.9	77.7	1.2	8.2			
7.	C: (75, 60, 30)	32.5	33.8	28.8	5.0	<0.01***	<0.01***	<0.01***
	U: (75, 80, 40)	14.1	77.7	1.2	7.1			
8.	C: (80, 60, 0)	27.5	23.8	41.3	7.5	<0.01***	0.06*	<0.01***
	U: (80, 75, 0)	15.3	55.3	20.0	9.4			
9.	C: (80, 60, 40)	28.8	21.3	38.8	11.3	0.02**	0.68	<0.01***
	U: (80, 75, 50)	25.9	41.2	21.2	11.8			

Notes: This table summarizes the ROLs chosen in each matched pair of scenarios from Experiment 1. All numbers presented (with the exception of the final three columns) are percentages of responses seen within a module using the first module of each treatment only. Columns $(A \succ B)$, $(A \succ C)$, and $(B \succ C)$ present the fractions of subjects reporting each of those ROLs, and column "other" reports the fraction of subjects reporting one of the (dominated) strategies $(B \succ A)$, $(C \succ A)$, or $(C \succ B)$. The final 3 columns present p-values associated with tests for differences across the correlated and uncorrelated presentations. The column marked "Full Dist." presents the results of Fisher's exact tests of differences in the distribution of the six possible ROLs by correlation condition. The following two columns present two-sample difference-of-proportions tests, comparing the proportion picking each of the focal strategies across correlation conditions. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

TABLE A4. Within-Subject Application Behavior in Matched Pairs.

Scenario	Not Influenced by Correlation		Influenced by Correlation				
	C: $(A \succ C)$ U: $(A \succ C)$	C: $(A \succ B)$ U: $(A \succ B)$	C: $(A \succ B)$ U: $(A \succ C)$	C: $(A \succ C)$ U: $(A \succ B)$	Included $(B \succ C)$	Inc. Reverse Alphabetical	Frac choosing U: $(A \succ C)$ given C: $(A \succ B)$.
1. C: (50, 45, 0) U: (50, 90, 0)	41.2	8.5	37.6	2.4	4.2	6.1	77.5
2. C: (50, 45, 10) U: (50, 90, 20)	43.6	7.9	41.2	0.6	3.0	3.6	81.9
3. C: (50, 20, 0) U: (50, 40, 0)	12.7	42.4	25.5	6.1	9.7	3.6	34.1
4. C: (50, 20, 10) U: (50, 40, 20)	7.9	60.6	14.6	4.9	7.9	4.2	17.8
5. C: (50, 55, 0) U: (50, 100, 0)	64.9	4.9	21.2	3.0	1.2	4.9	79.5
6. C: (75, 60, 0) U: (75, 80, 0)	41.8	9.7	13.3	1.8	21.8	11.5	53.7
7. C: (75, 60, 30) U: (75, 80, 40)	33.9	10.9	17.6	3.0	22.4	12.1	58.0
8. C: (80, 60, 0) U: (80, 75, 0)	22.4	10.3	8.5	1.8	45.5	11.5	35.0
9. C: (80, 60, 40) U: (80, 75, 50)	17.6	13.9	10.9	2.4	40.6	14.6	36.0
Average	31.8	18.8	21.1	2.9	17.4	8.0	52.6

Notes: This table summarizes the within-subject patterns of ROLs submitted for each matched pair of scenarios in Experiment 1. We focus on characterizing the use of the two focal application strategies, the aggressive application strategy ($(A \succ B)$) and the diversified application strategy ($(A \succ C)$). The first two columns present the fraction of subjects pursuing the diversified or the aggressive strategies, respectively, under both correlation conditions. These are the subjects who pursue a focal strategy and are not influenced by correlation. The next two columns present the fraction of subjects who switch from one focal strategy to the other based on the correlation condition—i.e., the subjects who are influenced by correlation. The next two columns characterize the fraction of subjects for whom at last one submitted ROL was a non-focal strategy: either $(B \succ C)$ or one in which programs are submitted in reverse-alphabetical order. The final column presents the fraction of subjects who chose the diversified strategy in the uncorrelated-admissions module conditional on choosing the aggressive strategy in the correlated-admissions module.

TABLE A5. Choices of Lotteries In Experiment 1.

Lottery question	% chose ($A \succ C$) in lottery	% chose ($A \succ B$) in lottery cond. on ROL responding to correlation	% chose ($A \succ C$) in lottery cond. on ($A \succ C$) in both ROLs
1. ($A \succ B$) : \$10 w/50%, \$5 w/5% ($A \succ C$): \$10 w/50%, \$2.5 w/50%	92.7	10.6	92.6
2. ($A \succ B$) : \$10 w/50%, \$5 w/5% ($A \succ C$): \$10 w/50%, \$2.5 w/40%	97.6	1.4	98.6
3. ($A \succ B$) : \$10 w/50%, \$5 w/30% ($A \succ C$): \$10 w/50%, \$2.5 w/50%	68.5	25.0	76.2
4. ($A \succ B$) : \$10 w/50%, \$5 w/30% ($A \succ C$): \$10 w/50%, \$2.5 w/40%	47.3	59.4	69.2
5. ($A \succ B$) : \$10 w/50% ($A \succ C$): \$10 w/50%, \$2.5 w/50%	97.0	5.0	97.2
6. ($A \succ B$) : \$10 w/25%, \$5 w/15% ($A \succ C$): \$10 w/25%, \$2.5 w/75%	98.2	0.0	98.6
7. ($A \succ B$) : \$10 w/25%, \$5 w/15% ($A \succ C$): \$10 w/25%, \$2.5 w/45%	98.2	5.8	100.0
8. ($A \succ B$) : \$10 w/20%, \$5 w/20% ($A \succ C$): \$10 w/20%, \$2.5 w/80%	97.0	11.7	97.3
9. ($A \succ B$) : \$10 w/20%, \$5 w/20% ($A \succ C$): \$10 w/20%, \$2.5 w/40%	88.5	31.8	100.0
Average	87.2	15.2	95.0

Notes: This table summarizes the choices made over pairs of lotteries constructed to offer the same payouts as arise from each scenario's focal strategies. The first column reports the fraction of subjects choosing the lottery that arises from the diversified application strategy, illustrating that this option is overwhelmingly preferred when the consequences are made transparent. The second column shows the fraction of subjects choosing the lottery that arises from the aggressive application strategy contingent on being coded as responding to correlation in the analysis of Table A4. The third column shows the fraction of subjects choosing the lottery associated with the diversified application strategy conditional on pursuing that strategy in both correlation conditions.

TABLE A6. Predicting Correlation-Neglectful Preference Reversals.

	(1)	(2)
Enke-Zimmermann Measure	0.323 (0.120)***	0.263 (0.125)**
EZ Missing	0.212 (0.100)**	0.171 (0.105)
Raven's Matrices Performance		-0.046 (0.025)*
Female		0.036 (0.060)
High School GPA		0.007 (0.042)
College GPA		-0.090 (0.082)
Attended High School in USA		-0.043 (0.099)
Math		0.052 (0.073)
Constant	0.220 (0.090)**	0.751 (0.331)
# of observations	157	157
R^2	0.045	0.080

Notes: This table presents OLS regressions of our measure of the rate of correlation-neglectful preference reversals on the Enke-Zimmermann measure of correlation neglect. The Enke-Zimmermann measure is treated as missing if it is measured outside of the unit interval, in which case the variable "EZ Missing" is set to 1. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

TABLE A7. Comparing ROLs by Scenario and Experiment.

	Scenario	Experiment	Rank-Order List (A ≻ B)	(A ≻ C)	(B ≻ C)	Other
1.	C: (50, 45, 0)	1	48.5	44.9	4.2	2.4
		2	38.1	37.3	12.7	11.9
	U: (50, 90, 0)	1	10.9	84.2	0.0	4.9
		2	16.9	62.9	2.4	17.7
2.	C: (50, 45, 10)	1	50.3	44.2	3.0	2.4
		2	43.0	31.0	13.4	12.7
	U: (50, 90, 20)	1	10.3	87.9	0.0	1.8
		2	25.9	57.1	2.7	14.3
5.	C: (50, 55, 0)	1	26.7	69.1	1.2	3.0
		2	29.5	49.2	9.0	12.3
	U: (50, 100, 0)	1	7.9	87.9	0.6	3.6
		2	19.5	68.6	3.4	8.5

Notes: This table summarizes the distribution of ROLs submitted for the three scenarios included in Experiment 2. The distribution of ROLs submitted in same scenario of Experiment 1 is included for reference. All numbers presented percentages of subjects in the scenario/experiment combination that submitted the ROL indicated in the header.

TABLE A8. Assessing the Impact of Debiasing Treatments on Focal Strategies in Experiment 2.

	Full Sample				Standard Strategists		Alphabetical Strategists	
	Aggressive	Diversified	Aggressive	Diversified	Aggressive	Diversified	Aggressive	Diversified
Correlated Control	0.16***	-0.24***	0.17***	-0.24***	0.24***	-0.24***	0.18***	-0.28***
	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
UK Intervention	0.07**	-0.10**	0.07**	-0.10**	0.10**	-0.10**	0.07*	-0.14***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Lottery	0.17***	-0.16***	0.17***	-0.16***	0.19***	-0.19***	0.16***	-0.22***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Sequential	0.15***	-0.16***	0.15***	-0.16***	0.18***	-0.18***	0.15***	-0.20***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Extra Practice	0.13***	-0.15***	0.13***	-0.15***	0.16***	-0.16***	0.12***	-0.20***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Score Explanation	0.15***	-0.22***	0.15***	-0.22***	0.22***	-0.22***	0.17***	-0.26***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Constant	0.20***	0.62***	0.21***	0.63***	0.25***	0.75***	0.23***	0.71***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Scenario Indicators	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Observations	1999	1999	1999	1999	1611	1611	1783	1783

Notes: This table presents results from OLS regressions predicting the submission of either the aggressive or diversified ROL (indicated in the header) with dummy variables for the different treatment arms in Experiment 2. Heteroskedasticity-robust standard errors are reported in parentheses. The uncorrelated control is the omitted treatment category and serves as the baseline. Scenario 1 is the baseline scenario when scenario indicators are present. The first two columns present the results used to generate Appendix Figure 4. The next two columns reproduce those results, differing only in their exclusion of scenario fixed effects. The next two columns reproduce the primary regressions while restricting the sample to "standard strategists." This excludes all subjects who submitted any ROL other than the the aggressive or diversified strategy. The final two columns reproduce the primary regressions while restricting the sample to "alphabetical strategists." This excludes all subjects who submitted any ROL not in alphabetical order—i.e., $C \succ A$, $C \succ B$, or $B \succ A$. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A9. Assessing the Rate of Aggressive Strategies Within Module 1

	Should Be Aggressive	Actually Aggressive	
Correlated Arm	-0.212***	0.001	0.012
	(0.023)	(0.035)	(0.039)
Constant	0.742***	0.538***	
	(0.016)	(0.026)	
Scenario FE	No	No	Yes
Observations	1650	1650	1650

Notes: This table reproduced the results of Table 4 while restricting the data to only the first module presented to subjects. Standard errors, clustered by subject, are presented in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C. TIME TRENDS IN EXPERIMENT 1

Figures A1 and A2 both show the fractions of aggressive and diversified portfolio choices, the former in the correlated arm of the experiment, the latter in the uncorrelated arm. Recall that the order in which subjects faced each scenario (see Table 1) was randomly determined at the subject level. This allows us to examine if the tendency towards aggressive or diversified portfolios changed as experience answering these questions accumulated.

To illustrate the interpretation of these figures: the bars presented in time period 1 of Figure A1 show that, averaging over all scenarios presented first in the correlated treatment arm, subjects chose the aggressive portfolio, 39% of the time and the diversified portfolio 36% of the time. The fourth scenario subjects faced in the correlated treatment arm resulted in the aggressive portfolio being chosen 40% of the time on average, while the diversified portfolio is chosen 41% of the time.

Both graphs show that there is little evidence of time trends in either condition, as the fraction of aggressive and diversified portfolios remain largely stable over the course of the experiment.

FIGURE A1. Time Trends in ROL Choices: Correlated Treatment Arm.

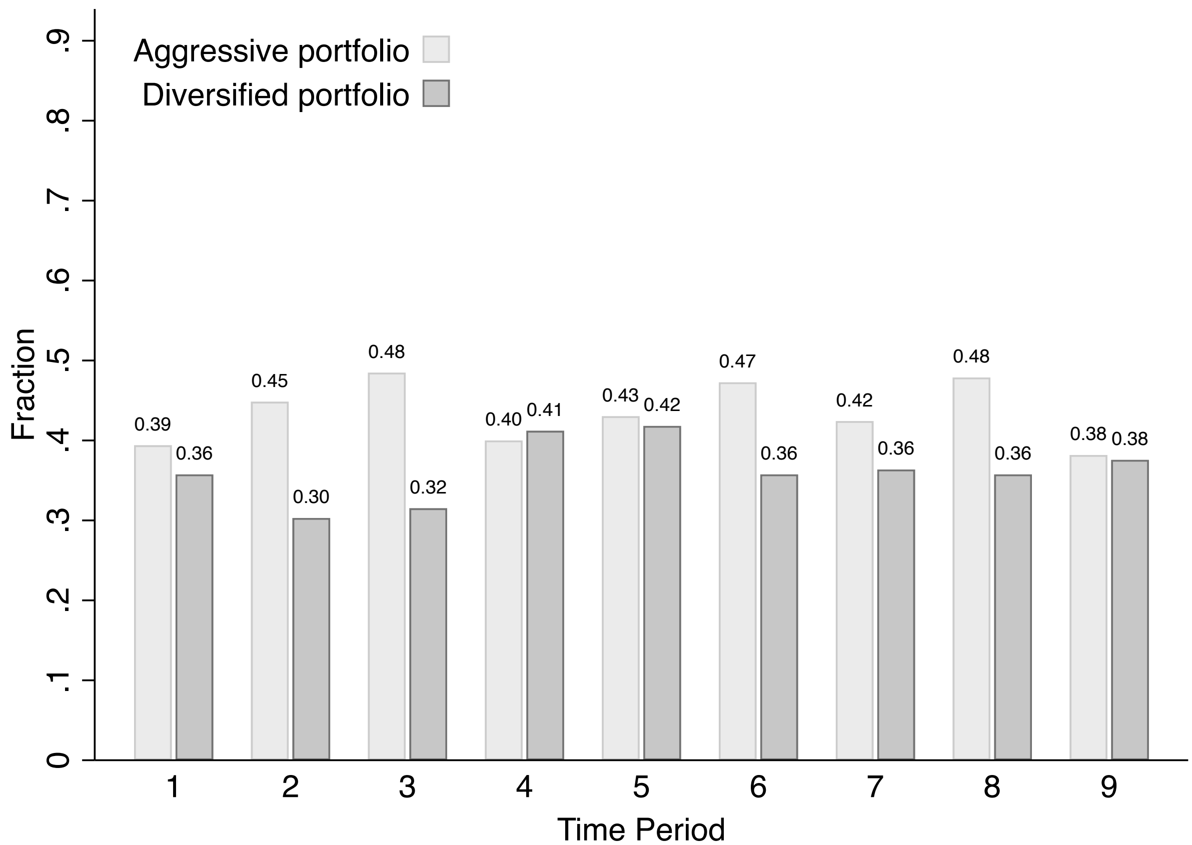
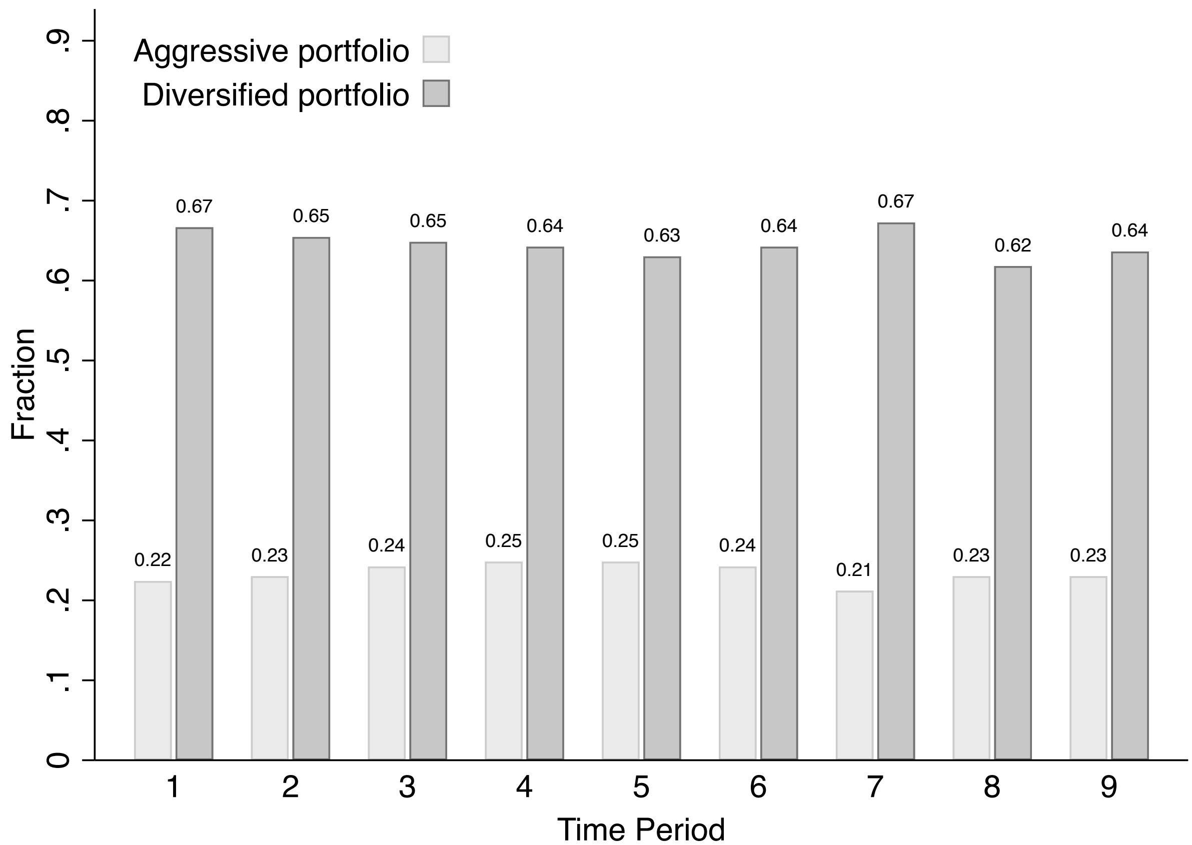


FIGURE A2. Time Trends in ROL Choices: Uncorrelated Treatment Arm.



D. Alternative Explanations for Results of Experiment 1

In this Appendix we consider several alternative explanations for the results of Experiment 1.

D.1. **Aversion to Schools Dominated as Singleton Applications.** Recall that in our leading example (matching scenario 1), subjects were more likely to submit an ROL rationally foregoing the middle school when that school had an admissions threshold of 90 on an independent test as opposed to when it had an admissions threshold of 45 on the common test. While both framings result in the same distributions of outcomes when the ROL (best, middle) are applied, note that they would result in different outcomes if middle were listed in isolation. In the uncorrelated framing, the middle option is formally dominated as a singleton application: it has a lower utility and a higher admissions threshold than the best school. In the correlated framing, it is not dominated: while it does have a lower utility, it also has a lower threshold. If subjects are irrationally averse to including such options in a multi-school ROL, this aversion could guide them towards optimal behavior (for reasons different than our focus in this study).

Note, however, that while this concern is present in our leading example, it is not present in scenarios 3, 4, 8, or 9. In all such cases, compared to applications to top school A, applications to middle school B yields a lower utility with a higher chance of admissions regardless of framing. The continued presence of qualitatively large differences in application behavior in these environments alleviates the worry that this potential aversion explains the results we have documented.

D.2. **Models of Choice-Set Dependence.** We consider next the potential explanatory value of a class of choice-set-dependent models of recent prominence in the behavioral economics literature. These models consider how the distribution of attributes in a choice set influence the decision weights placed on those attributes, with greater weight meant to capture the devotion of additional attention. In the focusing model of Köszegi and Szeidl (2012), it is assumed that an attribute with a larger range of values receives more decision weight. In the relative thinking model of Bushong et al. (2020), it is assumed that an attribute with a more narrow range gets more attention. In the salience model of Bordalo et al. (2012), the key predictions come from their assumptions of ordering and diminishing sensitivity, which at times point in the direction of either of the previous models. For a recent paper carefully comparing these theories and their empirical performance in explaining experimental purchasing decisions, see Somerville (2022).

When applying these frameworks to our setting, we believe it is most natural to imagine the student to be considering two attributes: payoffs and admissions thresholds. Payoffs are held constant in our design, but admissions thresholds (and their ranges) differ. Referencing Table 1, note that the manner in which thresholds change makes the range of thresholds in the uncorrelated treatment larger in some scenarios (1, 2, 5-7), smaller in other scenarios (4, 9), and unchanged in yet others (3, 8). The fact that we document apparent neglect of the safety option that is most attractive on the admissions-threshold dimension across all of these variants suggests that choice-set-dependent models based on comparisons of range do not provide a natural explanation for our results.[2]

D.3. **Independence Neglect.** We have interpreted the different preferences that subjects express in the correlated and uncorrelated treatment arms of Experiment 1 as evidence of correlation neglect. An alternative conceptual possibility is independence neglect: acting as if outcomes are correlated by default, and neglecting to account for their independence when it is experimentally imposed. Independence neglect could generate some findings that we have documented, but two elements of our results suggest that it is not relevant. First, recall that choices in the uncorrelated treatment are those most closely aligned with choices in our transparent lotteries. While it is perhaps reasonable to suggest that real-life admissions decisions typically are correlated, and thus that

[2]Note that only the ordering assumption in Bordalo et al. (2012) depends directly on range. Turning to the assumption of diminishing sensitivity, we note that this assumption considers the salience implications of shifting the values of attributes to be larger across both options considered. Since most of our scenarios vary only the threshold for middle program while holding the thresholds for the other programs constant, this assumption does not apply to our setting as written.

the default behavior should assume correlation, it is less plausible to suggest that such a presumption of correlation exists for transparent lotteries. Second, in scenarios involving a second-best school that is unattainable given rejection from the first-best (e.g., scenario 5), independence neglect predicts no difference in behavior across conditions, whereas correlation neglect predicts the observed differences. These considerations, combined with the large psychology literature demonstrating a tendency towards a default assumption of independence (for discussion, see Fiedler and Juslin 2006), lead us to believe that independence neglect is unlikely to meaningfully affect our results in Experiment 1. Furthermore, the results of Experiment 3 directly rule out independence neglect in a very similar experimental context.

D.4. **Preferences for Randomization.** We interpret our finding of within-subject preference reversals to be strong evidence of incorrect processing of correlated environments. This interpretation relies on the assumption that behavior would not respond to framing if all elements of the decision environment were fully understood,. However, several recent works have examined cases where subjects hold an explicit preference for randomization (see, e.g., Agranov and Ortoleva 2017, Dwenger et al. 2018, Cerreia-Vioglio et al. 2019); in the presence of such preferences, inconsistent choice need not reflect a true preference reversal.

Four pieces of evidence suggest that preference for randomization have little role in our results. First, note that when subjects faced their first module of school-choice decisions, they did not know that an additional round of equivalent-but-differently-framed scenarios would follow. Without knowledge that two iterations of each question would occur, the underlying motivations that guide intentional randomization would not be triggered. Second, we note that intentional randomization alone would not generate the stark asymmetry observed: while it could predict different answers within-subject, it would not predict the strong tendency for aggressive applications specifically under correlated framing. Third, a preference for randomization would not explain why choices made in the absence of correlation were more in line with choices in transparent lotteries. Finally, even if a preference for randomization obfuscates the interpretation of within-subject preference reversals, the between subject contrasts we have presented would remain valid. Given these issues, we believe that preference for randomization does not provide a systematic account of the results we have documented.