Online Appendix for "Fostering Patience in the Classroom: Results from Randomized Educational Intervention"[*‡]

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[*]This appendix contains all supplementary information for the paper.

[†]Previous Title: **Good Things Come to Those Who (Are Taught How to) Wait: An Educational Intervention on Time Preference**.

Tables with Covariates

Table 1: Treatment Effects on MPL (Phase 1, Elementary Schools)

	(1) Early choices (Today vs 1-week)	(2) Early choices (1-week vs 2-weeks)
Treatment IT	-0.822***	-0.833**
	(0.27)	(0.33)
Male	0.141	0.212
	(0.12)	(0.17)
High Academic Stand.	-0.444***	-0.540***
	(0.14)	(0.15)
High SES	-0.112	-0.141
	(0.14)	(0.18)
Risk Tolerance	0.061	-0.026
	(0.05)	(0.07)
Raven Score	-0.287***	-0.252**
	(0.08)	(0.10)
Highly Patient	-0.140	0.002
	(0.14)	(0.17)
Control Mean	3.024	3.281
N	1748	1716

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are coefficients from OLS regressions where the dependent variable is the number of early choices in MPL tasks. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Table 2: Treatment Effects on CTB (Phase 2, Elementary Schools)

	Today vs 1 week,r=0.25		Today vs 1 week,r=0.50	
	(1)	(2)	(3)	(4)
Treatment IT+CT	-0.459***		-0.413***	
	(0.13)		(0.11)	
Male	0.045	0.045	0.008	0.008
	(0.08)	(0.08)	(0.07)	(0.07)
High Academic Stand.	-0.291***	-0.291***	-0.226***	-0.226***
	(0.08)	(0.08)	(0.08)	(0.08)
High SES	-0.046	-0.046	-0.073	-0.074
	(0.09)	(0.09)	(0.10)	(0.10)
Risk Tolerance	-0.026	-0.026	-0.045*	-0.045*
	(0.03)	(0.03)	(0.03)	(0.03)
Raven Score	-0.311***	-0.311***	-0.357***	-0.357***
	(0.04)	(0.04)	(0.04)	(0.04)
Highly Patient	-0.068	-0.068	-0.098	-0.098
	(0.07)	(0.07)	(0.08)	(0.08)
Treatment IT		-0.454***		-0.407***
		(0.13)		(0.12)
Treatment CT		-0.473***		-0.431***
		(0.16)		(0.14)
Control Mean	2.02	2.02	1.75	1.75
N	1877	1877	1868	1868

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are coefficients from OLS regressions where the dependent variable is number of tokens allocated to the earlier date in CTB tasks where the earlier reward comes today and the later reward comes in one week. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Table 3: Treatment Effects on CTB (Phase 2, Elementary Schools)

	One Week vs Two Weeks, r=0.25		One Week vs Two Weeks, r=0.50	
	(1)	(2)	(3)	(4)
Treatment IT+CT	-0.516***		-0.499***	
	(0.11)		(0.14)	
Male	0.084	0.083	0.003	0.004
	(0.08)	(0.08)	(0.07)	(0.08)
High Academic Stand.	-0.261***	-0.260***	-0.298***	-0.299***
	(0.09)	(0.09)	(0.08)	(0.08)
High SES	-0.264***	-0.264***	-0.004	-0.005
	(0.08)	(0.08)	(0.11)	(0.11)
Risk Tolerance	-0.033	-0.033	-0.024	-0.024
	(0.03)	(0.03)	(0.03)	(0.03)
Raven Score	-0.292***	-0.292***	-0.255***	-0.255***
	(0.05)	(0.05)	(0.05)	(0.05)
Highly Patient	-0.004	-0.005	-0.018	-0.017
	(0.07)	(0.07)	(0.09)	(0.09)
Treatment IT		-0.530***		-0.484***
		(0.12)		(0.14)
Treatment CT		-0.475***		-0.542***
		(0.15)		(0.17)
Control Mean	2.05	2.05	1.86	1.86
N	1872	1872	1871	1871

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are coefficients from OLS regressions where the dependent variable is the number of tokens allocated to earlier date in CTB tasks where the earlier reward comes in one week and the later reward comes in two weeks. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Table 4: Treatment Effects on CTB (Phase 4, Middle Schools)

	Today vs 1 Week		1 Week vs 2 Weeks	
	(1)	(2)	(3)	(4)
Treatment IT+CT	-0.208*		-0.325**	
	(0.11)		(0.14)	
Male	0.021	0.022	0.056	0.057
	(0.09)	(0.09)	(0.09)	(0.09)
High Academic Stand.	-0.307***	-0.304***	-0.299***	-0.295***
	(0.10)	(0.10)	(0.10)	(0.10)
High SES	0.115	0.115	0.051	0.052
	(0.13)	(0.14)	(0.13)	(0.13)
Risk Tolerance	0.011	0.011	0.027	0.026
	(0.02)	(0.02)	(0.03)	(0.03)
Raven Score	-0.291***	-0.288***	-0.218***	-0.214***
	(0.06)	(0.06)	(0.05)	(0.05)
Highly Patient	-0.078	-0.085	-0.025	-0.035
	(0.07)	(0.07)	(0.10)	(0.10)
Treatment IT		-0.176		-0.281*
		(0.11)		(0.15)
Treatment CT		-0.315*		-0.474**
		(0.18)		(0.18)
Control Mean	1.78	1.78	2.07	2.07
N	1171	1171	1172	1172

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are coefficients from OLS regressions where the dependent variable is the number of tokens allocated to earlier date in CTB tasks, with a one-week horizon and r=50%. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Table 5: Treatment Effects on CTB (Phase 4, Middle Schools)

	Today vs 2 Weeks		2 Weeks vs 4 Weeks	
	(1)	(2)	(3)	(4)
Treatment IT+CT	-0.288**		-0.404**	
	(0.13)		(0.17)	
Male	-0.001	-0.001	-0.030	-0.028
	(0.10)	(0.10)	(0.09)	(0.09)
High Academic Stand.	-0.385***	-0.383***	-0.296**	-0.290**
	(0.08)	(0.08)	(0.11)	(0.11)
High SES	0.025	0.025	0.043	0.043
	(0.14)	(0.14)	(0.12)	(0.12)
Risk Tolerance	0.000	-0.000	0.011	0.009
	(0.03)	(0.03)	(0.04)	(0.03)
Raven Score	-0.210***	-0.208***	-0.245***	-0.239***
	(0.05)	(0.05)	(0.04)	(0.04)
Highly Patient	0.006	0.003	-0.082	-0.096
	(0.11)	(0.11)	(0.10)	(0.10)
Treatment IT		-0.271**		-0.341**
		(0.13)		(0.17)
Treatment CT		-0.344**		-0.622***
		(0.17)		(0.18)
Control Mean	2.06	2.06	2.32	2.32
N	1173	1173	1176	1176

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are coefficients from OLS regressions where the dependent variable is number of tokens allocated to the earlier date in CTB tasks, with a two-week horizon and r=50%. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Table 6: Treatment Effects on Survey Responses (Phase 4, Middle Schools)

	Forward-Lookingness		Self-Control Problems		Bad Behavior	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment IT+CT	0.025		-0.038		-0.003	
	(0.07)		(0.06)		(0.10)	
Male	-0.094	-0.094	0.125**	0.125**	0.225***	0.226***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)
High Academic Stand.	0.152**	0.151**	-0.243***	-0.242***	-0.104	-0.100
	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)
High SES	-0.193**	-0.194**	0.077	0.078	0.072	0.076
	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.09)
Risk Tolerance	-0.002	-0.002	-0.004	-0.004	-0.003	-0.005
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
Raven Score	0.159***	0.158***	-0.132***	-0.131***	-0.083**	-0.078**
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Highly Patient	0.298***	0.301***	-0.160**	-0.163**	-0.184***	-0.197***
	(0.08)	(0.08)	(0.06)	(0.06)	(0.05)	(0.05)
Treatment IT		0.013		-0.026		0.050
		(0.07)		(0.07)		(0.10)
Treatment CT		0.063		-0.074		-0.173*
		(0.09)		(0.06)		(0.10)
Observations	1100	1100	1111	1111	1152	1152

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are coefficients from OLS regressions where the dependent variables are factors extracted from a survey that includes questions on forward-looking behaviors, self-control problems and behavioral issues. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Table 7: Treatment Effect on Time Consistency

	(1) Elementary School	(2) Middle School
Treatment IT+CT	-0.020	0.004
	(0.03)	(0.04)
Male	0.061**	0.006
	(0.03)	(0.03)
High Academic Stand.	0.030	0.037
	(0.02)	(0.04)
High SES	-0.029	0.005
	(0.02)	(0.05)
Risk Tolerance	0.003	0.001
	(0.01)	(0.01)
Raven Score	0.068***	0.034**
	(0.02)	(0.01)
Highly Patient	0.015	-0.020
	(0.02)	(0.05)
Control Mean	0.45	0.51
N	1845	1167

Note: Standard errors (clustered at the school level) are in parentheses and * p<0.10, ** p<0.05, *** p<0.01. Reported estimates are marginal effects from logit regressions where the dependent variable is a dummy that takes the value of 1 if the subject made time consistent choices in both interest rate environments in the CTB task in the elementary school and with both time horizons in middle school. Covariates are (baseline) teacher-assessed success, family SES, patience, Raven score, risk tolerance, gender and experimenter dummies.

Education Materials (Case Studies)

The main concept that was conveyed to the case and activity developers by the authors was the sense of future. In most case studies, the story involves a "wise bird" (made known to the students at the beginning of the first case study) who talks to the child in the story about the issue at hand and helps her/him visualize the alternative realizations of the future.

Case Study 1): Zeynep is a girl who wants a bicycle for her next birthday but she needs to cover part of the cost herself. For this, she needs to save. After talking to the wise bird, she gets on a time machine and sees alternative birthday realizations (with and without the bicycle). Then she tries to infer what sort of actions might have led to each realization. Please see the related illustration in Figure 3.

Case Study 2) Merve, who regularly receives allowances, wants a backpack and calculates everyday how quickly she gets to the target under different spending/saving regimes and tries to find a good balance between her consumption and saving. See the related illustration in Figure 3.

Case Study 3) Busra and Ceren are twin sisters with different tastes. Both want a bicycle. Busra chooses to wait until the summer and get a bike with the extra gadgets that she cares about, while Ceren makes a conscious decision not to wait and get a bike without those gadgets. Here, alternative future images of Ceren involve waiting and being very unhappy about not having a bike in the meantime, or not waiting and being unhappy after having seen Busra's bike, or not waiting and having no regrets about the decision. Similarly, the alternatives for Busra are presented. These alternative situations are discussed in class by the students. This case study emphasizes the importance of interpersonal differences and individual preferences in intertemporal decisions.

Case Study 4) Mustafa (representative of his class) has to find a solution to the conflicting opinions of his classmates regarding the way in which a class picnic is organized. He evaluates alternative scenarios resulting from his decision by imagining the future and makes a decision based on this evaluation.

Case Study 5) John (Can) tries to use the opportunity of a windfall from his grandparents to save up money for a new football. He is conflicted as he really likes a particular snack. Students critically evaluate the situation by imagining alternative futures for him. This case does not end. Students are asked to write the end of the story as they wish.

Case Study 6) Class activity: This activity involves a discussion of the possibility of time travel to see ourselves in the future. In particular, students are asked to visit future dates that are important in

terms of set targets. Examples include, summer holiday, end of school (report day), moving to middle school, studying at a university etc. Activities involve drawing or composing a short story, preparing mini sketches or building an actual time machine in class. Here, unexpected alternative realizations (due to luck) are discussed as well.

Case Study 7) Class activity: This activity involves determining some sort of target for the next month. Students are asked to articulate alternative future realizations for hypothetical other children (rather than themselves).

Case Study 8) Smart Shopping: A girl named Seyda lectures her mother about when and how to shop to get most out of their money.

Figure 1: Sample Visuals from Case Studies

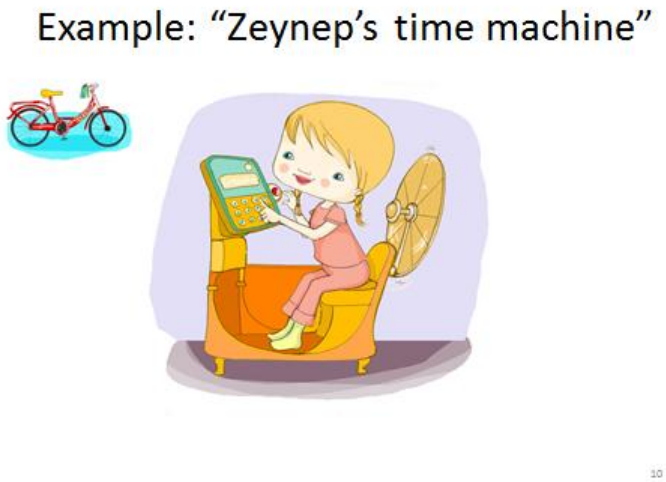
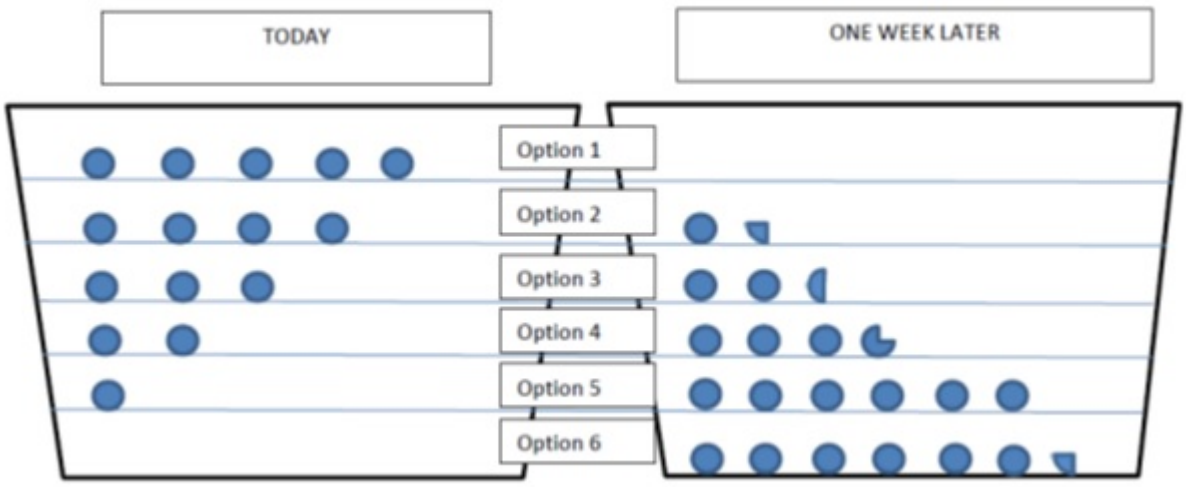


Figure 2: A Sample Classroom Activity: Building a Time Machine

Figure 3: Presentation of the CTB Task to Children (r=0.25%)



Survey Questions for the Middle School Sample

Five-point item scale:

1. I stick to the plans I make to reach my targets, I do not leave things half way.
2. If I want to, I can easily quit a bad habit.
3. Fun and games sometimes keep me away from the work I have to do.
4. I am a patient person.
5. Even if I know that I'll regret them later on, I do things that please me at the moment.
6. It is easy for me to keep as secret things that I am not supposed to tell other people.
7. I usually act without considering the consequences of my actions.
8. I sometimes get involved in fights at school.
9. If I feel like eating a food I like (like chocolate or candy), I can't stop myself.
10. I do not care much about rules at school, I act the way I feel like acting.
11. I often think about how my life will be or what kind of job I will have in the future.
12. I can forgo my comfort today in order to achieve my objectives for the future.