

Online Appendix for
Effects of Cooperative Learning on Trust, Attitudes
About Group Work, and Performance

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A Tables

Table 1: Effect of Treatment on Reciprocity

	(1)	(2)	(3)	(4)	(5)
Panel A: Average amount Player 2 sends to a within-section Player 1					
Treatment	0.0929 (0.206)	0.149 (0.227)	0.209 (0.210)	0.234 (0.219)	0.232 (0.219)
Constant	1.609*** (0.181)	-0.672 (1.159)	-3.344 (2.093)	-4.819 (3.432)	-4.587 (3.473)
Panel B: Average amount Player 2 sends to an outside-of-section Player 1					
Treatment	-0.0466 (0.254)	-0.0126 (0.273)	0.0497 (0.241)	0.0728 (0.247)	0.0730 (0.249)
Constant	1.601*** (0.233)	-0.806 (1.373)	-3.426 (2.538)	-6.952* (3.792)	-6.826* (3.901)
Demographic Controls	No	Yes	Yes	Yes	Yes
Education Controls	No	No	Yes	Yes	Yes
Personality Controls	No	No	No	Yes	Yes
Other Controls	No	No	No	No	Yes
<i>N</i>	112	112	112	112	112

Dependent variable in Panel A is the average amount of money Player 2 sends to a randomly assigned Player 1 who is in the same section of the intermediate microeconomics class and the dependent variable in Panel B is the average amount of money Player 2 sends to a randomly assigned Player 1 who is in a different section of the intermediate microeconomics class. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Demographic controls include male dummy, white dummy, and age. Education controls include high school GPA, current college GPA, baseline above-median test score, whether mother is a college graduate and whether father is a college graduate. Personality controls include scores on big 5 personality traits (extroversion, agreeableness, conscientiousness, neuroticism, and openness), grit, growth mindset, locus of control, and self control, obtained in the baseline survey. Other controls include monthly expenditure and annual household income. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Effect of Treatment on SAGA subscales

	Endline SAGA scores (standardized)			
	Cognitive (1)	Motivational (2)	Affect (3)	Management (4)
Treatment	0.334* (0.192)	0.712*** (0.183)	0.424** (0.169)	0.518*** (0.191)
Baseline SAGA Cognitive (std)	0.473*** (0.113)			
Baseline SAGA Motivational (std)		0.281*** (0.102)		
Baseline SAGA Affect (std)			0.559*** (0.0884)	
Baseline SAGA Management (std)				0.437*** (0.101)
Constant	1.892 (2.729)	3.493 (2.694)	1.345 (2.684)	-2.067 (3.159)
All Controls	Yes	Yes	Yes	Yes
N	112	112	112	112

Dependent variable is the standardized score obtained in a particular subscale of the SAGA questionnaire in the endline survey. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Baseline SAGA (std) is the standardized score obtained in a particular subscale of the SAGA questionnaire in the baseline survey. All controls include demographic, education, personality, and other controls listed in Online Appendix Table 1. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Effect of Treatment on Group Work outside of Class

	Probability of Engaging in Group Work Outside of Class				
	(1)	(2)	(3)	(4)	(5)
Treatment	0.0993 (0.103)	0.0884 (0.108)	0.152 (0.118)	0.175 (0.112)	0.175 (0.112)
Overall Baseline SAGA (std)	-0.0160 (0.0481)	-0.00817 (0.0487)	-0.0174 (0.0571)	-0.0254 (0.0597)	-0.0352 (0.0564)
Constant	0.458*** (0.0854)	0.945 (0.672)	-1.162 (1.214)	-1.240 (1.527)	-0.917 (1.548)
Demographic Controls	No	Yes	Yes	Yes	Yes
Education Controls	No	No	Yes	Yes	Yes
Personality Controls	No	No	No	Yes	Yes
Other Controls	No	No	No	No	Yes
N	112	112	112	112	112

Dependent variable is equal to 1 if the student reported studying with another student for problem sets, quizzes, or exams in the intermediate microeconomics class and 0 otherwise. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Overall Baseline SAGA (std) is the standardized version of the overall score obtained in the SAGA questionnaire in the baseline survey. Demographic controls include male dummy, white dummy, and age. Education controls include high school GPA, current college GPA, baseline above-median test score, whether mother is a college graduate and whether father is a college graduate. Personality controls include scores on big 5 personality traits (extroversion, agreeableness, conscientiousness, neuroticism, and openness), grit, growth mindset, locus of control, and self control, obtained in the baseline survey. Other controls include monthly expenditure and annual household income. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Effect of Treatment on Attendance

	Attendance				
	(1)	(2)	(3)	(4)	(5)
Treatment	1.082 (0.923)	1.247 (0.972)	0.787 (0.876)	0.485 (0.898)	0.487 (0.908)
Constant	98.21*** (0.850)	116.4*** (10.04)	122.9*** (12.93)	120.9*** (13.02)	121.4*** (13.45)
Demographic Controls	No	Yes	Yes	Yes	Yes
Education Controls	No	No	Yes	Yes	Yes
Personality Controls	No	No	No	Yes	Yes
Other Controls	No	No	No	No	Yes
<i>N</i>	112	112	112	112	112

Dependent variable is the proportion of classes attended by each student. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Demographic controls include male dummy, white dummy, and age. Education controls include high school GPA, current college GPA, baseline above-median test score, whether mother is a college graduate and whether father is a college graduate. Personality controls include scores on big 5 personality traits (extroversion, agreeableness, conscientiousness, neuroticism, and openness), grit, growth mindset, locus of control, and self control, obtained in the baseline survey. Other controls include monthly expenditure and annual household income. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effect of Treatment on Other Dependent Variables

	(1)	(2)	(3)	(4)	(5)
Panel A: Whether the student graduates with a major in economics					
Treatment	0.0138 (0.0795)	0.0221 (0.0892)	0.0340 (0.0943)	0.0665 (0.0913)	0.0632 (0.0917)
Constant	0.857*** (0.0669)	0.901** (0.436)	0.909 (1.161)	2.185* (1.197)	2.456* (1.252)
<i>N</i>	90	90	90	90	90
Panel B: Cumulative GPA					
Treatment	0.0251 (0.0936)	0.0481 (0.0925)	0.0652 (0.0452)	0.0582 (0.0452)	0.0574 (0.0453)
Constant	3.382*** (0.0831)	5.031*** (0.536)	1.139** (0.569)	1.407** (0.625)	1.559*** (0.573)
<i>N</i>	90	90	90	90	90
Panel C: Time to Degree (in semesters)					
Treatment	0.0438 (0.222)	0.0260 (0.219)	0.0144 (0.217)	0.0584 (0.221)	0.0604 (0.219)
Constant	8.214*** (0.194)	10.90*** (1.027)	9.095*** (2.081)	12.17*** (3.057)	11.13*** (3.408)
<i>N</i>	90	90	90	90	90
Demographic Controls	No	Yes	Yes	Yes	Yes
Education Controls	No	No	Yes	Yes	Yes
Personality Controls	No	No	No	Yes	Yes
Other Controls	No	No	No	No	Yes

Dependent variable in Panel A is whether a student graduates with economics major, dependent variable in Panel B is the cumulative GPA of the student at the time of graduation, and the dependent variable in Panel C is how many semesters it takes a student to graduate. Sample is restricted to the students who graduated from LMU as of August 2022. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Demographic controls include male dummy, white dummy, and age. Education controls include high school GPA, current college GPA, baseline above-median test score, whether mother is a college graduate and whether father is a college graduate. Personality controls include scores on big 5 personality traits (extroversion, agreeableness, conscientiousness, neuroticism, and openness), grit, growth mindset, locus of control, and self control, obtained in the baseline survey. Other controls include monthly expenditure and annual household income. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Heterogeneity based on own demographics

	(1) Trust (within)	(2) Trust (outside)	(3) Endline SAGA	(4) Average Quiz Score	(5) Average Exam Score
Panel A:					
Treatment	0.213 (0.199)	-0.0751 (0.218)	0.596*** (0.210)	8.408* (4.778)	2.062 (5.327)
White	-0.0224 (0.232)	-0.180 (0.247)	-0.146 (0.202)	5.021 (5.250)	2.954 (5.581)
Treatment*White	0.117 (0.281)	0.211 (0.298)	0.0152 (0.297)	-6.285 (5.698)	-5.842 (6.256)
Panel B:					
Treatment	-0.0830 (1.374)	-1.730 (1.462)	0.172 (1.826)	-87.02*** (28.84)	-49.91* (29.65)
Age	0.0773 (0.0596)	0.0548 (0.0628)	-0.0138 (0.0598)	-4.377*** (1.396)	-2.460* (1.380)
Treatment*Age	0.0182 (0.0659)	0.0883 (0.0706)	0.0215 (0.0913)	4.529*** (1.453)	2.393 (1.476)
Panel C:					
Treatment	0.403** (0.165)	0.120 (0.176)	0.459** (0.192)	5.047* (2.718)	1.284 (3.686)
Parent Holding	0.0192 (0.245)	0.173 (0.280)	-0.263 (0.222)	-0.239 (3.834)	5.955 (4.063)
Higher Degree	-0.292 (0.285)	-0.152 (0.315)	0.347 (0.294)	-1.243 (4.479)	-6.621 (4.774)
Panel D:					
Treatment	0.543*** (0.203)	0.220 (0.231)	0.615** (0.239)	3.468 (3.070)	-2.876 (4.028)
Household Income	0.0108*** (0.00348)	0.00752 (0.00463)	0.00373 (0.00385)	-0.0553 (0.0904)	-0.0767 (0.0914)
Treatment*Income	-0.0101** (0.00490)	-0.00646 (0.00610)	-0.000362 (0.00777)	0.0423 (0.101)	0.0529 (0.119)
Panel E:					
Treatment	0.261 (0.197)	-0.124 (0.209)	0.675*** (0.211)	2.326 (2.614)	-3.182 (3.720)
Expenditure	-0.0152 (0.0221)	-0.0332 (0.0246)	0.0238 (0.0290)	-0.171 (0.396)	-0.245 (0.504)
Treatment*Expenditure	0.00477 (0.0263)	0.0362 (0.0278)	-0.0140 (0.0340)	0.450 (0.444)	0.335 (0.628)
All controls	Yes	Yes	Yes	Yes	Yes
Baseline SAGA	No	No	Yes	No	No
<i>N</i>	112	112	112	112	112

In each column, the dependent variable is listed in the header. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Parent holding higher degree is equal to 1 if the student's mother and/or father holds a master's degree or above and 0 otherwise. All controls include demographic, education, personality, and other controls listed in Online Appendix Table 1. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Heterogeneity based on own big 5 personality traits

	(1) Trust (within)	(2) Trust (outside)	(3) Endline SAGA	(4) Average Quiz Score	(5) Average Exam Score
Panel A:					
Treatment	0.295** (0.144)	0.0563 (0.155)	0.613*** (0.147)	4.301** (1.960)	-1.541 (2.467)
Extroversion	0.0915 (0.0753)	0.0852 (0.0873)	0.00742 (0.0730)	-1.394 (0.897)	-0.00584 (0.895)
Treatment*	-0.152 (0.147)	-0.0260 (0.171)	-0.109 (0.177)	3.645* (1.864)	0.255 (2.109)
Panel B:					
Treatment	0.278** (0.139)	0.0469 (0.150)	0.602*** (0.148)	4.429** (1.952)	-1.651 (2.377)
Agreeableness	-0.0758 (0.0771)	-0.0566 (0.0902)	0.0498 (0.0719)	0.517 (1.159)	0.364 (1.479)
Treatment*	0.0871 (0.136)	0.0984 (0.157)	0.0490 (0.161)	1.558 (1.889)	1.628 (2.436)
Panel C:					
Treatment	0.251* (0.134)	0.0228 (0.145)	0.582*** (0.150)	4.812** (1.973)	-1.510 (2.423)
Conscientiousness	0.221** (0.0874)	0.220** (0.0969)	-0.0266 (0.0909)	-1.250 (1.633)	0.0813 (1.345)
Treatment*	-0.284** (0.122)	-0.269* (0.142)	-0.199 (0.132)	2.219 (2.295)	0.115 (2.067)
Panel D:					
Treatment	0.284** (0.139)	0.0540 (0.151)	0.607*** (0.148)	4.541** (1.965)	-1.526 (2.428)
Neuroticism	0.00957 (0.0900)	0.0452 (0.0987)	-0.169** (0.0748)	1.033 (1.223)	0.632 (1.309)
Treatment*	-0.124 (0.173)	-0.110 (0.188)	0.186 (0.149)	-1.752 (2.289)	-0.366 (2.409)
Panel E:					
Treatment	0.284** (0.140)	0.0538 (0.152)	0.609*** (0.148)	4.603** (1.958)	-1.510 (2.420)
Openness	0.0395 (0.0618)	0.0118 (0.0720)	0.0214 (0.0640)	-2.057 (1.475)	-0.755 (1.210)
Treatment*	-0.0133 (0.112)	-0.0235 (0.133)	0.0931 (0.135)	1.616 (2.394)	0.439 (2.162)
All controls	Yes	Yes	Yes	Yes	Yes
Baseline SAGA	No	No	Yes	No	No
N	112	112	112	112	112

In each column, the dependent variable is listed in the header. All personality trait variables are standardized such that mean is zero and standard deviation is one. The Big Five Personality Traits Survey ([Rammstedt and John, 2007](#)) consists of 10 statements with a 5-item Likert scale (answer choices range from “Strongly disagree” to “Strongly agree”). Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. All controls include demographic, education, personality, and other controls listed in Online Appendix Table 1. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Heterogeneity based on own personality traits (other than big 5)

	(1) Trust (within)	(2) Trust (outside)	(3) Endline SAGA	(4) Average Quiz Score	(5) Average Exam Score
Panel A:					
Treatment	0.263* (0.138)	0.0391 (0.151)	0.603*** (0.151)	4.833** (1.950)	-1.333 (2.369)
Grit	0.0546 (0.0375)	0.0264 (0.0481)	-0.0458 (0.0427)	-0.225 (0.518)	-0.156 (0.807)
Treatment*Grit	-0.193 (0.130)	-0.139 (0.159)	-0.0265 (0.152)	2.548 (1.581)	1.718 (2.669)
Panel B:					
Treatment	0.260* (0.144)	0.000915 (0.150)	0.616*** (0.156)	5.178** (2.013)	-1.272 (2.418)
Growth Mindset	0.0315 (0.0318)	0.0516 (0.0319)	0.0112 (0.0290)	-0.773* (0.414)	-0.127 (0.399)
Treatment*	-0.157	-0.347**	0.0661	4.065*	1.631
Growth Mindset	(0.153)	(0.160)	(0.180)	(2.069)	(2.380)
Panel C:					
Treatment	0.287** (0.137)	0.0572 (0.150)	0.605*** (0.149)	4.524** (1.961)	-1.529 (2.431)
Locus of Control	0.0516 (0.0709)	0.0894 (0.0911)	-0.0395 (0.0814)	-0.134 (1.071)	0.805 (1.375)
Treatment*	-0.173	-0.157	0.0187	1.554	0.328
Locus of Control	(0.124)	(0.157)	(0.156)	(1.698)	(2.386)
Panel D:					
Treatment	0.277** (0.135)	0.0471 (0.147)	0.601*** (0.148)	4.611** (1.957)	-1.509 (2.429)
Self Control	-0.00426 (0.0152)	-0.00241 (0.0189)	-0.0258 (0.0213)	-0.0102 (0.301)	0.141 (0.383)
Treatment*	0.207* (0.110)	0.199 (0.137)	0.134 (0.143)	-1.643 (2.119)	-0.403 (2.694)
All controls	Yes	Yes	Yes	Yes	Yes
Baseline SAGA	No	No	Yes	No	No
N	112	112	112	112	112

In each column, the dependent variable is listed in the header. All personality trait variables are standardized such that mean is zero and standard deviation is one. The Grit Survey ([Duckworth, 2016](#)) consists of 8 statements with a 5-item Likert scale (answer choices range from “Very much like me” to ”Not like me at all”) and measures passion and perseverance for long-term goals. The Growth Mindset Survey ([Paunesku, Walton, Romero, Smith, Yeager and Dweck, 2015](#)) consists of 8 statements with a 6-item Likert scale (answer choices range from “Disagree a lot” to “Agree a lot”). It asks students’ beliefs and goals regarding ability and performance. The Locus of Control Survey ([Rotter, 1966](#)) asks questions about students’ beliefs on how luck affects certain outcomes. It consists of 8 statement pairs and students need to choose the statement they believe more strongly from each pair. The Self Control Survey ([Tangney, Baumeister and Boone, 2004](#)) measures how much self control students have and contains 13 statements which students rate based on how much the statements apply to them (on a 5-item Likert scale, ranges from “Not at all” to “Very much”). Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. All controls include demographic, education, personality, and other controls listed in Online Appendix Table 1. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Effect of Problem Set Scores on Quiz Scores

	(1) All	(2) All	(3) $\geq 25\%$ difference	(4) $\geq 25\%$ difference
Higher PS Score	0.322*** (0.088)	0.250** (0.010)	0.418** (0.178)	0.506 (0.305)
Lower PS Score	0.124*** (0.039)	0.152*** (0.059)	0.160** (0.072)	0.108 (0.143)
Quiz FE	No	Yes	No	Yes
Group FE	No	Yes	No	Yes
N	433	433	143	107
Groups	109	109	77	42

The dependent variable is the score on a given quiz. Higher PS Score and Lower PS Score respectively refer to the higher and lower scores among the two group members on the problem set question that prepared students for the quiz (groups of 3 and untreated sections are excluded). In columns 3 and 4, only groups where the higher scoring member scored at least 25% higher on the problem set than the lower scoring member are included. The discrepancy in observations between columns 3 and 4 is because in column 4 any group where there was only one occasion where the problem set scores were 25% or more apart became a singleton and dropped out in column 4 due to the inclusion of group fixed effects. Robust standard errors in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Effect of Treatment on Performance with COVID-19 correction

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:	Average Score in the Quizzes					
Treatment	5.844** (2.405)	5.200** (2.226)	5.677** (2.182)	5.849*** (1.975)	5.232*** (1.903)	5.207*** (1.903)
Baseline Above-Median Test Score		5.397*** (1.618)	4.845*** (1.512)	3.274** (1.634)	2.489 (1.740)	2.350 (1.834)
Constant	82.76*** (2.272)	80.60*** (2.484)	118.8*** (16.57)	91.75*** (26.70)	89.77*** (26.37)	89.60*** (27.01)
Panel B:	Average Score in the Exams					
Treatment	-0.800 (2.569)	-1.884 (2.333)	-1.949 (2.355)	-1.297 (2.196)	-1.793 (2.306)	-1.805 (2.310)
Baseline Above-Median Test Score		9.070*** (2.076)	8.600*** (1.990)	5.218*** (1.884)	4.851** (2.177)	4.789** (2.212)
Constant	77.12*** (2.206)	73.49*** (2.353)	114.0*** (16.20)	52.68* (28.39)	32.00 (28.70)	27.68 (30.26)
Demographic Controls	No	No	Yes	Yes	Yes	Yes
Education Controls	No	No	No	Yes	Yes	Yes
Personality Controls	No	No	No	No	Yes	Yes
Other Controls	No	No	No	No	No	Yes
N	112	112	112	112	112	112

Dependent variable is the average quiz scores in Panel A and the average exam scores in Panel B. For Fall 2020, all quiz and exam scores are averaged. For Spring 2020, only quizzes 1-8 and exams 1 and 2 are averaged. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Demographic controls include male dummy, white dummy, and age. Education controls include high school GPA, current college GPA, baseline above-median test score, whether mother is a college graduate and whether father is a college graduate. Baseline Above-Median Test Score is equal to 1 if the student is among the more higher scoring half of students based on the baseline microeconomics and calculus test and 0 otherwise. Personality controls include scores on grit, locus of control, self control, growth mindset, and big 5 personality traits (extroversion, agreeableness, conscientiousness, neuroticism, and openness) obtained in the baseline survey. Other controls include monthly expenditure and annual household income. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: SAGA effect heterogeneity based on agreeableness

	Endline SAGA scores (standardized)				
	Overall (1)	Cognitive (2)	Motivational (3)	Affect (4)	Management (5)
Treatment	0.617** (0.249)	0.258 (0.332)	0.757** (0.294)	0.219 (0.254)	0.936*** (0.308)
Above Median Agreeableness	-0.258 (0.336)	-0.371 (0.405)	-0.267 (0.342)	-0.530 (0.349)	0.467 (0.429)
Treatment*Above Median Agreeableness	-0.0264 (0.295)	0.0997 (0.403)	-0.0803 (0.348)	0.288 (0.312)	-0.605 (0.382)
Baseline SAGA-General	0.628*** (0.0908)				
Baseline SAGA-Cognitive		0.465*** (0.114)			
Baseline SAGA-Motivational			0.293*** (0.102)		
Baseline SAGA-Affect				0.558*** (0.0865)	
Baseline SAGA-Management					0.453*** (0.100)
Constant	0.0363 (2.856)	1.366 (2.883)	2.915 (2.811)	0.729 (2.727)	-1.980 (3.277)
All Controls	Yes	Yes	Yes	Yes	Yes
N	112	112	112	112	112

Dependent variable is the standardized overall score or standardized score obtained in a particular subscale of the SAGA questionnaire in the endline survey. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. Above median agreeableness takes a value of 1 if the students scored at or above the median score for agreeableness based on the pre-Treatment survey. Baseline SAGA is the corresponding standardized scores obtained in the SAGA questionnaire in the baseline survey. All controls include demographic, education, personality, and other controls listed in Online Appendix Table 1. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Effect of Treatment on Outcome Variables Controlling for Instructor Fixed Effects

	(1) Trust (within)	(2) Trust (outside)	(3) Endline SAGA	(4) Average Quiz Score	(5) Average Exam Score
Treatment	0.288** (0.142)	0.0528 (0.151)	0.613*** (0.147)	4.177** (1.898)	-2.027 (2.429)
Constant	-3.346** (1.684)	-3.636* (1.876)	0.560 (2.776)	90.22*** (25.48)	15.96 (30.20)
All Controls	Yes	Yes	Yes	Yes	Yes
Baseline SAGA	No	No	Yes	No	No
Instructor F.E.	Yes	Yes	Yes	Yes	Yes
N	112	112	112	112	112

In each column, the dependent variable is listed in the header. Treatment is equal to 1 if the student is assigned to take quizzes in pairs and 0 otherwise. All controls include demographic, education, personality, and other controls listed in Online Appendix Table 1. Column (3) additionally controls for Baseline SAGA scores, that is the standardized version of the overall score obtained in the SAGA questionnaire in the baseline survey. All regressions include instructor fixed effects. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B Experimental materials

We add comments for the reader in italics.

Loyola Marymount University Informed Consent Form

TITLE:	Beattie and Ersoy Research Study
INVESTIGATOR:	Dr. Graham Beattie (310 258 87 59) and Dr. Fulya Ersoy (310 338 7372), ECONOMICS, BCLA
PURPOSE:	You are being asked to participate in a research project that seeks to investigate determinants of academic achievement. For the purposes of this project, we will use your attendance, homework, quiz, and exam data (including the exam you took at the beginning of the semester) for ECON 3100. You will be asked to complete an online survey about your demographics and attitudes at the beginning of the class and an online survey about your attitudes and study habits at the end of the class. Each of these surveys will take approximately 15 minutes to complete and should not take more than 30 minutes. If you permit, we will also obtain data about you (gender, race, age) and your academic performance (high school GPA, SAT/ACT scores, college GPA, your grades) from the registrar's office.
RISKS:	There are no foreseeable risks associated with this study.
BENEFITS:	This research will benefit overall research society by investigating determinants of academic achievement of students.
INCENTIVES:	You will receive 2 extra points (for your overall course grade) for completing these surveys. You will also earn between \$0-\$8 in the form of Amazon Gift Cards based on your actions in a game you will play during the survey at the end of the class. Participation in the project will require no monetary cost to you. If you choose not to participate, there are no penalties to you.
CONFIDENTIALITY:	In this study, your name and your demographic information will be collected. Your name will never be used in any public dissemination of these data (publications, presentations, etc.). All research materials and consent forms will be stored in locked cabinets and/or password-protected computers. Only the investigators will have access to the data. When the research study ends, any identifying information will be removed from the data, or it will be destroyed. All of the information you provide will be kept confidential.
RIGHT TO WITHDRAW:	Your participation in this study is <i>voluntary</i> . You may withdraw your consent to participate at any time without penalty. Your withdrawal will not influence any other services to which you may be otherwise entitled, your class standing or relationship with Loyola Marymount University.

SUMMARY OF RESULTS: A summary of the results of this research will be supplied to you, at no cost, upon request. Please contact Dr. Graham Beattie (310 258 87 59, graham.beattie@lmu.edu) and Dr. Fulya Ersoy (310 338 7372, fulya.ersoy@lmu.edu) Summary of results is expected to be available by January 2022.

VOLUNTARY CONSENT: I have read the above statements and understand what is being asked of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time, for any reason, without penalty. If the study design or use of the information is changed I will be informed and my consent reobtained. On these terms, I certify that I am willing to participate in this research project.

I understand that if I have any further questions, comments or concerns about the study or the informed consent process, I may contact Dr. David Moffet, Chair, Institutional Review Board, Loyola Marymount University, 1 LMU Drive, Los Angeles, CA 90045-2659 or by email at David.Moffet@lmu.edu.

Participant's Name

Date

Participant's Signature

CONSENT TO OBTAIN ADMINISTRATIVE RECORDS:

I give my permission for the following information about me to be retrieved from the registrar's records, matched with my data and used only for the purposes of this research study: gender, age, race, high school GPA, SAT/ACT scores, cumulative college GPA, GPA for each semester of college, name of the classes I took and will take and my grades from those classes, my year of graduation.

Participant's Name

Date

Participant's Email Address

Participant's Signature

B.1 Baseline Survey Questions

How good are you at academic subjects, in general?

- Extremely strong
- Moderately strong
- Slightly strong
- Neither strong nor weak
- Slightly weak
- Moderately weak
- Extremely weak

How good are you at Economics?

- Extremely strong
- Moderately strong
- Slightly strong
- Neither strong nor weak
- Slightly weak
- Moderately weak
- Extremely weak

How much do you enjoy studying Economics?

- Like it a great deal
- Like it a moderate amount
- Like it a little
- Neither like it nor dislike it
- Dislike it a little
- Dislike it a moderate amount
- Dislike it a great deal

SAGA instrument

What do you think about group assignments in general?

Please choose the answer that best describes your feelings.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Doing assignments as a group is less time consuming than doing them by myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group assignments give me a chance to learn from my peers' knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group assignments provide me with the opportunity to get feedback on my understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am unhappy when assignments need to be completed in a group situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding a time to meet for group assignments is difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Agree	Strongly Agree
It is highly motivating for me to work on assignments with a group of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am happy to work on assignments with a group of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding an effective way to communicate with peers while working on group assignments is challenging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My motivation for the group assignments generally decrease because of the peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group assignments give me a valuable opportunity to rethink my own ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Growth Mindset Survey

First, you will answer an opinion survey about **beliefs and goals**
regarding ability and performance.

It is very important that you give your honest opinion, not what you
believe someone else would think best.

Read each statement, decide how much you agree or disagree with the
statement.

	Disagree a Lot	Disagree	Disagree a Little	Agree a Little	Agree	Agree a Lot
I like my work best when I can do it really well without too much trouble.	<input type="radio"/>					
To tell the truth, when I work hard, it makes me feel as though I'm not very smart.	<input type="radio"/>					
No matter how much intelligence you have, you can always change it a good deal.	<input type="radio"/>					
When something is hard, it just makes me want to work more on it, not less.	<input type="radio"/>					
	Disagree a Lot	Disagree	Disagree a Little	Agree a Little	Agree	Agree a Lot
You can learn new things, but you cannot really change your basic level of intelligence.	<input type="radio"/>					
I like my work best when I can do it perfectly without any mistakes.	<input type="radio"/>					
I like work that I'll learn from even if I make a lot of mistakes.	<input type="radio"/>					
I like my work best when it makes me think hard.	<input type="radio"/>					

Locus of Control Survey

Next, you will answer some questions about **your beliefs on how luck affects certain things.**

Please select the one statement from each pair that you believe to be more correct. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. There are no right or wrong answers. In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned.

- | | |
|---|--|
| Many of the unhappy things in people's lives are partly due to bad luck. | <input type="radio"/> <input type="radio"/> People's misfortunes result from the mistakes they make. |
| One of the major reasons why we have wars is because people don't take enough interest in politics. | <input type="radio"/> <input type="radio"/> There will always be wars, no matter how hard people try to prevent them. |
| In the case of the well prepared student there is rarely if ever such a thing as an unfair test. | <input type="radio"/> <input type="radio"/> Many times exam questions tend to be so unrelated to course work that studying is really useless. |
| Without the right breaks one cannot be an effective leader. | <input type="radio"/> <input type="radio"/> Capable people who fail to become leaders have not taken advantage of their opportunities. |
| In the long run people get the respect they deserve in this world. | <input type="radio"/> <input type="radio"/> Unfortunately, individuals worth often pass unrecognized no matter how hard they try. |
| The idea that teachers are unfair to students is nonsense. | <input type="radio"/> <input type="radio"/> Most students don't realize the extent to which their grades are influenced by accidental happenings. |
| No matter how hard you try some people just don't like you. | <input type="radio"/> <input type="radio"/> People who can't get others to like them don't understand how to get along with others. |
| I have often found that what is going to happen will happen. | <input type="radio"/> <input type="radio"/> Trusting to fate has never turned out as well for me as making a decision to take a definite course of action. |

Personality Traits Survey

Next, you will see a number of sentences that may or may not apply to you. Please answer all questions choosing the option that best describes you.

I am someone who

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Is generally trusting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is relaxed and handles stress well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tends to find fault with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has few artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tends to be lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is outgoing and sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Self Control Survey

Using the scale provided, please indicate how much each of the following statements reflects you. When responding, please think about how you compare to everyone not just the people you know.

	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
Sometimes I can't stop myself from doing something even if I know it is wrong.	<input type="radio"/>				
I refuse things that are bad for me.	<input type="radio"/>				
I have a hard time breaking bad habits.	<input type="radio"/>				
People would say that I have iron self-discipline.	<input type="radio"/>				
I wish I had more self-discipline.	<input type="radio"/>				
	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I say inappropriate things.	<input type="radio"/>				
I am able to work effectively toward long-term goals.	<input type="radio"/>				
I am good at resisting temptation.	<input type="radio"/>				
I often act without thinking through all the alternatives.	<input type="radio"/>				
I have trouble concentrating.	<input type="radio"/>				
	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I am lazy.	<input type="radio"/>				
Pleasure and fun sometimes keep me from getting work done.	<input type="radio"/>				
I do certain things that are bad for me if they are fun.	<input type="radio"/>				

Grit Survey

Here are a number of statements that may or may not apply to you. When responding, please think about how you compare to everyone not just the people you know. There are no right or wrong answers, so just answer honestly!

	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I have been obsessed with a certain idea or project for a short time but later lost interest.	<input type="radio"/>				
I often set a goal but later choose to pursue a different one.	<input type="radio"/>				
I am a hard worker.	<input type="radio"/>				
Setbacks don't discourage me. I don't give up easily.	<input type="radio"/>				
	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I have difficulty maintaining my focus on projects that take more than a few months to complete.	<input type="radio"/>				
I am diligent. I never give up.	<input type="radio"/>				
I finish whatever I begin.	<input type="radio"/>				
New ideas and projects sometimes distract me from previous ones.	<input type="radio"/>				

How many hours per week, on average, do you spend on studying for all your classes outside of the time you spend in the classroom in a semester?

[Just type the number of hours you spend. For example, if you spend 20 hours on average, type 20. If you spend 15 hours and 30 minutes, type 15.5. Do not enter any blanks.]

How many hours per week, on average, are you planning to spend for studying for ECON 3100 outside of the time you will spend in the classroom?

[Just type the number of hours you spend. For example, if you spend 20 hours on average, type 20. If you spend 15 hours and 30 minutes, type 15.5. Do not enter any blanks.]



Considering all your classes during a semester, what percentage of your overall studying time (outside of class) do you spend with others (based on the scale above)?



Considering ECON 3100, what percentage of your overall studying time (outside of class) do you expect to spend with others (based on the scale above)?



Considering all your classes during a semester, how much do you cram for exams or do an assignment at the last minute (based on the scale above)?

What was your high school grade point average (GPA)?

Did you take the SAT and/or ACT?

- Yes, I took SAT.
- Yes, I took ACT.
- Yes, I took both SAT and ACT.
- No, I didn't take SAT or ACT.

What is your current status at school?

- Freshman
- Sophomore
- Junior
- Senior
- Other

What is your current grade point average (GPA)?

To the best of your knowledge, what was your SAT score?
If you took SAT more than once, please enter your highest scores.

SAT Reading Score	<input type="text"/>
SAT Math Score	<input type="text"/>

To the best of your knowledge, what was your ACT score?
If you took ACT more than once, please enter your highest scores.

ACT Composite Score	<input type="text"/>
ACT English Score	<input type="text"/>
ACT Math Score	<input type="text"/>

What is your gender?

female

male

non-binary

What is your age?

What is your ethnicity?

African-American

Asian

Caucasian

Hispanic

Other

What is the highest level of education your father completed?

No Education

Primary Education

High School Drop Out

High School Degree

College Drop Out

College Degree

Master's Degree or PhD

Do not know

What is the highest level of education your mother completed?

No Education

Primary Education

High School Drop Out

High School Degree

College Drop Out

College Degree

Master's Degree or PhD

Do not know

How much do you spend on food, clothing, leisure each month, on average?

- \$0 - \$49
- \$50 - \$99
- \$100 - \$149
- \$150 - \$199
- \$200 - \$299
- \$300 - \$399
- \$400 - \$499
- \$500 - \$749
- \$750 - \$999
- \$1000 - \$1499
- \$1500 - \$1999
- \$2000 - \$2499
- \$2500 - \$3000
- more than \$3000

What is your family's approximate annual income?

- \$0 - \$9,999
- \$10,000 - \$24,999
- \$25,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000 - \$199,999
- \$200,000 - \$299,999
- \$300,000 - \$499,999
- \$500,000 - \$1,000,000
- more than \$1,000,000
- Do not know

B.2 Endline Survey Questions

SAGA instrument

What do you think about group assignments in general?

Please choose the answer that best describes your feelings.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Doing assignments as a group is less time consuming than doing them by myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group assignments give me a chance to learn from my peers' knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group assignments provide me with the opportunity to get feedback on my understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am unhappy when assignments need to be completed in a group situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding a time to meet for group assignments is difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Agree	Strongly Agree
It is highly motivating for me to work on assignments with a group of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am happy to work on assignments with a group of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding an effective way to communicate with peers while working on group assignments is challenging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My motivation for the group assignments generally decrease because of the peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group assignments give me a valuable opportunity to rethink my own ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SAGA instrument (Specific)

This question is only asked to the students in the treatment group.

What do you think about group quizzes in this class?

Please choose the answer that best describes your feelings.

	Strongly Disagree	Disagree	Agree	Strongly Agree
It was highly motivating for me to work on quizzes with a group of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group quizzes gave me a valuable opportunity to rethink my own ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was happy to work on quizzes with a group of peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group quizzes provided me with the opportunity to get feedback on my understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was unhappy since quizzes needed to be completed in a group situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Agree	Strongly Agree
My motivation for the quizzes generally decreased because of the peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group quizzes gave me a chance to learn from my peers' knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding an effective way to communicate with peers while working on quizzes was challenging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing quizzes as a group was less time consuming than doing them by myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Growth Mindset Survey

First, you will answer an opinion survey about **beliefs and goals**
regarding ability and performance.

It is very important that you give your honest opinion, not what you
believe someone else would think best.

Read each statement, decide how much you agree or disagree with the
statement.

	Disagree a Lot	Disagree	Disagree a Little	Agree a Little	Agree	Agree a Lot
I like my work best when I can do it really well without too much trouble.	<input type="radio"/>					
To tell the truth, when I work hard, it makes me feel as though I'm not very smart.	<input type="radio"/>					
No matter how much intelligence you have, you can always change it a good deal.	<input type="radio"/>					
When something is hard, it just makes me want to work more on it, not less.	<input type="radio"/>					
	Disagree a Lot	Disagree	Disagree a Little	Agree a Little	Agree	Agree a Lot
You can learn new things, but you cannot really change your basic level of intelligence.	<input type="radio"/>					
I like my work best when I can do it perfectly without any mistakes.	<input type="radio"/>					
I like work that I'll learn from even if I make a lot of mistakes.	<input type="radio"/>					
I like my work best when it makes me think hard.	<input type="radio"/>					

Grit Survey

Here are a number of statements that may or may not apply to you. When responding, please think about how you compare to everyone not just the people you know. There are no right or wrong answers, so just answer honestly!

	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I have been obsessed with a certain idea or project for a short time but later lost interest.	<input type="radio"/>				
I often set a goal but later choose to pursue a different one.	<input type="radio"/>				
I am a hard worker.	<input type="radio"/>				
Setbacks don't discourage me. I don't give up easily.	<input type="radio"/>				
	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I have difficulty maintaining my focus on projects that take more than a few months to complete.	<input type="radio"/>				
I am diligent. I never give up.	<input type="radio"/>				
I finish whatever I begin.	<input type="radio"/>				
New ideas and projects sometimes distract me from previous ones.	<input type="radio"/>				

How many hours per week, on average, did you spend on studying for all your classes outside of the time you spent in the classroom this semester?

[Just type the number of hours you spent. For example, if you spent 20 hours on average, type 20. If you spent 15 hours and 30 minutes, type 15.5. Do not enter any blanks.]

How many hours per week, on average, did you spend for studying for ECON 3100 outside of the time you spent in the classroom this semester ?

[Just type the number of hours you spent. For example, if you spent 20 hours on average, type 20. If you spent 15 hours and 30 minutes, type 15.5. Do not enter any blanks.]



Considering all your classes during this semester, what percentage of your overall studying time (outside of class) did you spend with others (based on the scale above)?



Considering ECON 3100, what percentage of your overall studying time (outside of class) did you spend with others (based on the scale above)?



Considering all your classes during this semester, how much did you cram for exams or do an assignment at the last minute (based on the scale above)?



These questions are only asked to the students in the treatment group.

Outside of any in-class activities, did you study with your peers for problem sets, quizzes, or exams for ECON 3100?
[Check that all apply]

<input type="checkbox"/> Yes, for problem sets
<input type="checkbox"/> Yes, for quizzes
<input type="checkbox"/> Yes, for exams
<input type="checkbox"/> No

For each randomly assigned partner, please answer the following questions.

PARTNER 1:

- Did you know your partner when you were first assigned? ↑ ↓
Did you work together with your partner for a class other than ECON 3100? ↑ ↓
Do you think you are similar with your partner in terms of personality? ↑ ↓
Do you think you are similar with your partner in terms of academic level? ↑ ↓

PARTNER 2:

- Did you know your partner when you were first assigned? ↑ ↓
Did you work together with your partner for a class other than ECON 3100? ↑ ↓
Do you think you are similar with your partner in terms of personality? ↑ ↓
Do you think you are similar with your partner in terms of academic level? ↑ ↓

PARTNER 3:

- Did you know your partner when you were first assigned? ↑ ↓
Did you work together with your partner for a class other than ECON 3100? ↑ ↓
Do you think you are similar with your partner in terms of personality? ↑ ↓
Do you think you are similar with your partner in terms of academic level? ↑ ↓

Trust Game

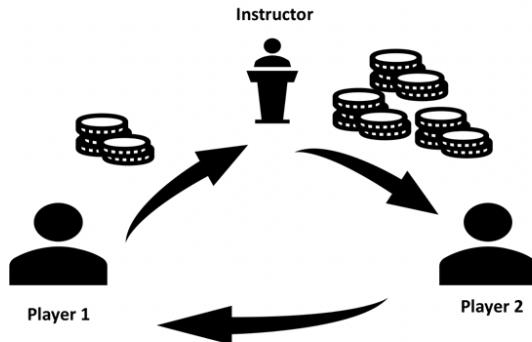
Game Instructions

Now, you will play a game in which you will be randomly paired with another person (henceforth your partner).

Both you and your partner will receive \$2 to start with.

Here is the sequencing of the game:

- Player 1 will decide how much of the \$2 to send to Player 2.
- The amount Player 1 decides to send to Player 2 will be tripled by us.
- Player 2 will decide how much of his/her total money to send back to Player 1.



You will now answer four questions regarding this game.

Depending on the question, you will either be Player 1 or Player 2.

Furthermore, depending on the question you will either be matched with a partner in your section of ECON 3100 or in another section of ECON 3100.

At the end of the survey, one of these questions will be randomly selected. You will be paid with an Amazon e-gift card based on your answer in that question only. You can earn up to \$8.

Suppose you are randomly assigned to play the role of **Player 1**.
Suppose Player 2 is someone in **this** section of ECON 3100. How much of your \$2 are you willing to send to Player 2?
(Remember: The amount you choose to send will be tripled and then passed to Player 2. Player 2 will then decide how much of his/her total money to send back to you! Your payment will be the amount you choose not to send plus the amount player 2 will send to you.)

\$0

\$0.5

\$1

\$1.5

\$2

Suppose you are randomly assigned to play the role of **Player 1**.
Suppose Player 2 is someone in **another** section of ECON 3100. How much of your \$2 are you willing to send to Player 2?
(Remember: The amount you choose to send will be tripled and then passed to Player 2. Player 2 will then decide how much of his/her total money to send back to you! Your payment will be the amount you choose not to send plus the amount player 2 will send to you.)

\$0

\$0.5

\$1

\$1.5

\$2

Suppose you are randomly assigned to play the role of **Player 2**.
Suppose Player 1 is someone in **this** section of ECON 3100. How much
will you send back in each of the following situations?
(Remember: Your payment will be your \$2 plus the tripled amount
Player 1 sends you minus the amount you send back to Player 1.)

Please enter the numerical amount (no blanks, no dollar signs, no
words).

The amount you will send back to Player 1 (\$)

If player 1 sends \$0
(you have \$2 in
total):

If player 1 sends
\$0.5 (you receive
\$1.5 so you have
\$3.5 in total)

If player 1 sends \$1
(you receive \$3 so
you have \$5 in total)

If player 1 sends
\$1.5 (you receive
\$4.5 so you have \$6
in total)

If player 1 sends \$2
(you receive \$6 so
you have \$8 in total)

Suppose you are randomly assigned to play the role of **Player 2**.
Suppose Player 1 is someone in **another** section of ECON 3100. How
much will you send back in each of the following situations?
(Remember: Your payment will be your \$2 plus the tripled amount
Player 1 sends you minus the amount you send back to Player 1.)

Please enter the numerical amount (no blanks, no dollar signs, no
words).

The amount you will send back to Player 1 (\$)

If player 1 sends \$0
(you have \$2 in
total):

If player 1 sends
\$0.5 (you receive
\$1.5 so you have
\$3.5 in total)

If player 1 sends \$1
(you receive \$3 so
you have \$5 in total)

If player 1 sends
\$1.5 (you receive
\$4.5 so you have \$6
in total)

If player 1 sends \$2
(you receive \$6 so
you have \$8 in total)

C Course Materials

Problem Set 4

1. The Calculus of Demand (Cobb-Douglas Utility Function)

Suzie purchases two goods, food and clothing. She has the utility function $U(X, Y) = 2XY$, where X denotes the amount of food consumed and Y the amount of clothing. Hint: You may find it easier to begin by solving a Lagrangian for generic I, P_X , and P_Y .

- Use a Lagrangian to find an expression for her demand curve for clothing when $I = 200$ and $P_X = 2$. Does this satisfy the law of demand?
- Use a Lagrangian to find an expression for her Engel Curve for clothing when $P_X = 2$, $P_Y = 2$. Is clothing normal or inferior?

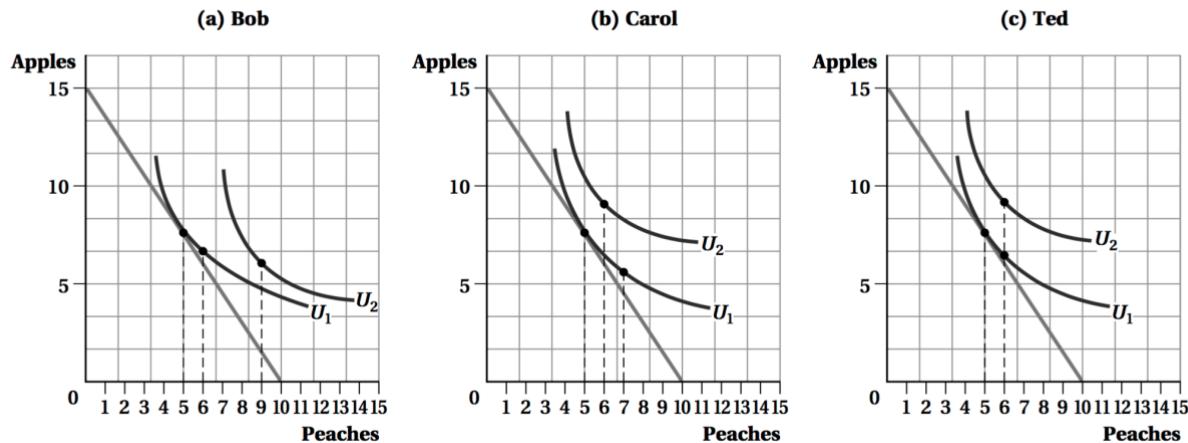
2. The Calculus of Demand (Special Utility Functions)

Refer to Q3 of Problem set 3.

- Find Josiah's demand curve for carving knives if he has \$100 to spend and the price of antique books is \$10.
- Find Charlie's demand curve for carving knives if he has \$100 to spend and the price of antique books is \$10.

3. Income and Substitution Effects

Consider the following three graphs, which illustrate the preferences of three consumers (Bob, Carol, and Ted) regarding two goods, apples and peaches. Each consumer has an income of \$30, and each consumer pays \$2 for apples and \$3 for peaches. (There are some extra graphs at the end of the problem set if you need.)



- a. Suppose that the price of peaches falls to \$2. Draw a new budget line for each consumer and find the new optimal bundle of apples and peaches each would buy. How does the new quantity of peaches compare to the original quantity? Indicate the change in the first column of the table below (an increase of 1 unit might be denoted as a +1).

- b. For each consumer, determine the substitution effect of the price change.

Hint: Draw a hypothetical budget line with the same slope as your new budget line, but just tangent to the consumer's original indifference curve. Indicate that change in the second column of the table below.

- c. Now add the income effect. Compare each consumer's peach consumption in (b) to his or her final peach consumption in (a). Indicate the difference in column 3 of the table below.

- d. Do Bob, Carol, and Ted consider peaches normal or inferior?

	Total Effect of Price Change	Substitution Effect of Price Change	Income Effect of Price Change
Bob			
Carol			
Ted			

4. Deriving Market Demand

Three students have different demands for doughnuts. André's demand is given by $Q = 5 - P$; Carlene's demand is given by $Q = 6 - 2P$; Cooper's demand is given by $Q = 4 - 0.5P$.

- a. Derive the market demand curve for doughnuts algebraically.

- b. Graph the market demand curve for doughnuts. Pay special attention to any kinks in the market demand!

Quiz 4
Duration: 10 minutes
(Please show all your work!)

NAME:

Sally consumes two goods, housing (X) and food (Y). Her utility function is $U(X, Y) = 3Y\sqrt{X}$. The prices of housing and food are $p_x = 2$ and $p_y = 3$.

- a) Set up a Lagrangian optimization problem.
- b) Take the three partial derivatives necessary to solve the Lagrangian.
- c) Find the Engel curve for X.
- d) Show whether X is normal or inferior.

D AEA RCT Registration Screenshots

These screenshots belong to Version 1.1 (<https://doi.org/10.1257/rct.4440-1.1>).

The latest version can be accessed here: <https://doi.org/10.1257/rct.4440-5.0>.

ADDITIONAL TRIAL INFORMATION

Status

In development

Start date

2019-08-26

End date

2022-01-01

Keywords

[Education](#)

Additional Keywords

JEL code(s)

I2

Secondary IDs

Abstract

Working with peers can be beneficial or harmful for many reasons. This study explores how working in pairs and pair composition (in terms of academic achievement, demographics, and, personality traits) affects students' academic achievement and attitudes towards group work. Hence, this study will shed light on the mechanisms through which peer effects work.

External Link(s)

REGISTRATION CITATION

Citation

Beattie, Graham and Fulya Ersoy. 2019. "Effects of Peer Group Composition in a Post-Secondary Environment." AEA RCT Registry. December 02. <https://doi.org/10.1257/rct.4440-1.1>

Former Citation

Beattie, Graham and Fulya Ersoy. 2019. "Effects of Peer Group Composition in a Post-Secondary Environment." AEA RCT Registry. December 02.

<https://www.socialscienceregistry.org/trials/4440/history/58117>

INTERVENTIONS

Intervention(s)

Intervention (Hidden)

Intervention Start Date 2019-08-26	Intervention End Date 2022-01-01
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PRIMARY OUTCOMES

Primary Outcomes (end points)

- Exam Scores
- Perceptions about Group Work
- Interest in the economics major
- Trust levels

Primary Outcomes (explanation)

SECONDARY OUTCOMES

Secondary Outcomes (end points)

- Quiz Scores/Answers
- College GPA
- Time to Graduation

Secondary Outcomes (explanation)

EXPERIMENTAL DESIGN

Experimental Design

This experiment has two treatment arms: Individual Quiz and Group Quiz.

Experimental Design Details

Before each semester starts, students who enrolled for the intermediate microeconomics course take an online test that measures their initial microeconomics knowledge. Then, students receive an online initial survey that measures some personality traits (such as persistence, growth mindset, self-control, etc.) and their attitudes towards group work. Classrooms are randomly assigned to the treatment and the control groups. Each student in the treatment classrooms takes in-class quizzes with another randomly assigned student. The random peer assignment is repeated after every 4 quizzes. Each student in the control classrooms takes in-class quizzes individually. In total, there are 12 quizzes and these quizzes make up 12% of students' final grades. Quiz questions are similar to the homework questions to give students an incentive to make them work on their homework together. At the end of the semester, students complete an end survey that measures their attitudes towards group work. This survey will also ask them questions about their interactions with their assigned partners outside of the classroom.

Randomization Method

Each semester, one professor will teach one section whereas the other professor will teach two sections. The section of the professor who teaches only one section will be the Group Quiz section. One of the sections of the professor who teaches two sections will be randomly assigned to be the Individual Quiz section and the other will be the Group Quiz section. The randomization will be done with a coin flip.

In the Group Quiz sections, students are randomly assigned to their partners by a computer and this is repeated after every 4 quizzes.

Randomization Unit

Randomization for the treatment is done at the classroom level.

Individuals in the group quiz classrooms are further randomly assigned to their peers.

Was the treatment clustered?

Yes

EXPERIMENT CHARACTERISTICS

Sample size: planned number of clusters
12 classrooms

Sample size: planned number of observations
Approximately 250 students

Sample size (or number of clusters) by treatment arms
4 control classrooms (80 students) where students will take individual quizzes.
8 treatment classrooms (160 students) where students will take quizzes in pairs.

Minimum detectable effect size for main outcomes (accounting for sample design and clustering)

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