

LONG TERM ORIENTATION AND EDUCATIONAL PERFORMANCE

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Motivation

- Remarkable correlation between educational achievement and family socioeconomic background in the US and around the world (Black et al., 2005; Fryer and Levitt, 2004)
- Relevance of education, income and wealth. Research found moderately-sized (and often zero) causal effects
- Much of the correlation between parents and children must be due to other family characteristics.
- Parents transmit to their children human capital, income, wealth but also a specific set of cultural values (Bisin and Verdier, 2001)

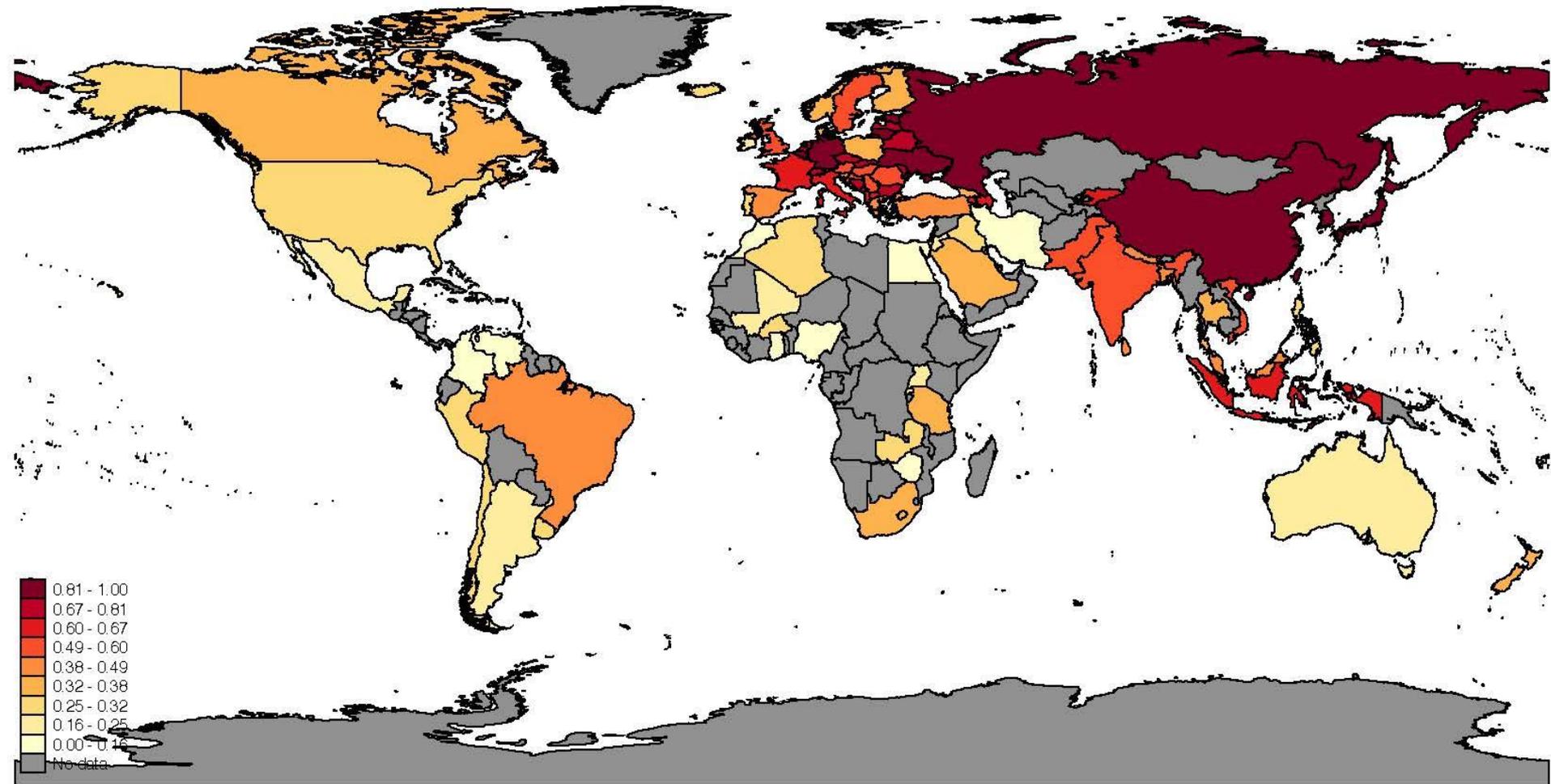
Culture and educational performance

- Parents transmit different beliefs and values to their children
- These differences in beliefs and values could drive differences in educational performance
- Our proxy for culture relates to the ability to delay gratification and to exert self-control
- Associated with physical, emotional and educational outcomes (Mischel and Ebbsen, 1970, Mischel et al., 1988, 1989)

Long term orientation: measure

- Hofstede et al. (2010): Long-Term Orientation is the cultural value that “stands for the fostering of virtues oriented toward future rewards”
- Hofstede (1991): major source of cultural dimensions and values, widely used in cross-cultural studies, management, and economics.

Long term orientation across countries



Long Term Orientation and Educational Performance

- Use a large administrative dataset on first and second generation migrants in Florida.
- External validity using data from the Program for International Student Assessment (PISA) on first and second generation migrants

Evidence from Florida

- Individual-level administrative data from the Florida Department of Education Data Warehouse:
 - K-12 students who attended the Florida public schools between 2002-2003 and 2011-2012
 - Longitudinal data allow us to follow students over a decade and study their progress by country of origin
- Match school records with birth records for all children born in Florida
 - match done using SSN, names and exact dates of birth.

Outcomes of interest

- **Florida Comprehensive Assessment Test (FCAT) in mathematics and reading**
 - Regressions in levels for grade 3
 - Increase in educational performance
- **Retention:** a dummy for whether the student attends the same grade in year $t+1$
- **Absence rates** during academic year defined as the percent days absent
- **Disciplinary incidents:** whether the student was involved in a disciplinary incident (serious offenses often resulting in suspension)
- **High school graduation:** a dummy for whether the student received a standard diploma within four years after entering the 9th grade for the first time.

Empirical analysis

$$Y_{icst} = \alpha LTO_c + \beta X_{it} + \gamma_g + \mu_s + \delta_t + \mu_s \cdot \delta_t + \varepsilon_{icst}$$

Where:

Y_{ics} is the outcome of interest

X_{it} includes gender, age in months, free or reduced lunch, enrollment in limited English proficiency, belonging to a special education program

δ_t are year fixed effects

γ_g are grade fixed effects

μ_s are school fixed effects

Standard errors are clustered at the country of origin level

[Sample selection](#)

[Descriptive statistics](#)

First generation: performance in mathematics

VARIABLES	Sample: 1st generation							
	Whole sample				Language restriction			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Math score, 3rd grade	Math score, change 3rd to 8th	Math score, change 3rd to 8th	Math score, change 3rd to 8th	Math score, 3rd grade	Math score, change 3rd to 8th	Math score, change 3rd to 8th	Math score, change 3rd to 8th
Long-Term Orientation	0.597***	0.336***	0.217**	0.217**	0.814***	0.591***	0.454***	0.427***
	(0.136)	(0.123)	(0.100)	(0.091)	(0.145)	(0.135)	(0.119)	(0.111)
Male	0.081***	0.121***	-0.015	-0.003	0.078***	0.116***	-0.006	0.007
	(0.009)	(0.006)	(0.010)	(0.010)	(0.011)	(0.007)	(0.008)	(0.008)
Age in months	-0.016***	-0.005***	-0.020***	-0.017***	-0.014***	-0.004***	-0.020***	-0.017***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Free or Reduced Priced Lunch		-0.202***		-0.069***		-0.191***		-0.068***
		(0.019)		(0.013)		(0.017)		(0.014)
Special education		-0.674***		-0.353***		-0.654***		-0.352***
		(0.029)		(0.022)		(0.030)		(0.023)
Enrolled in Limited English proficiency program		-0.660***				-0.671***		
		(0.026)				(0.026)		
Enrolled in Limited English proficiency in grade 3				0.120***				0.099***
				(0.020)				(0.019)
Math score, 3rd grade				-0.348***				-0.360***
				(0.015)				(0.014)
				-0.357***				-0.370***
				(0.017)				(0.016)
Observations	81,986	81,977	32,895	32,895	69,659	69,652	28,046	28,046
R-squared	0.337	0.441	0.386	0.399	0.353	0.458	0.405	0.417
Year*school FE	YES	YES	YES	YES	YES	YES	YES	YES
Dependent Variable (mean)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dependent Variable (sd)	1.000	1.000	0.779	0.779	1.000	1.000	0.783	0.783
Long-Term Orientation (mean)	0.307	0.307	0.304	0.304	0.255	0.255	0.254	0.254
Long-Term Orientation (sd)	0.241	0.241	0.236	0.236	0.192	0.192	0.190	0.190
Long-Term Orientation (beta)	0.144	0.081	0.066	0.066	0.156	0.113	0.110	0.103
N_clust	93	93	90	90	89	89	84	84

Magnitude of the coefficients

First generation immigrants:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Math level	Math growth	Reading Levels	Reading Growth	Graduation	Absence	Incident Levels	Retention
0.136	0.101	0.058	0.080	0.045	-0.068	-0.066	-0.019

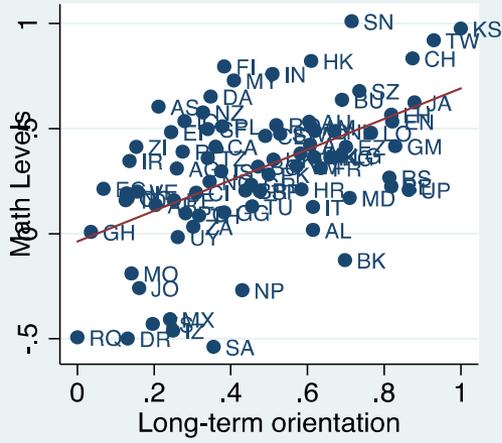
Second generation immigrants

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Math level	Math growth	Reading Levels	Reading Growth	Graduation	Absence	Incident Levels	Retention
0.114	0.088	0.079	0.074	0.033	-0.052	-0.062	-0.015

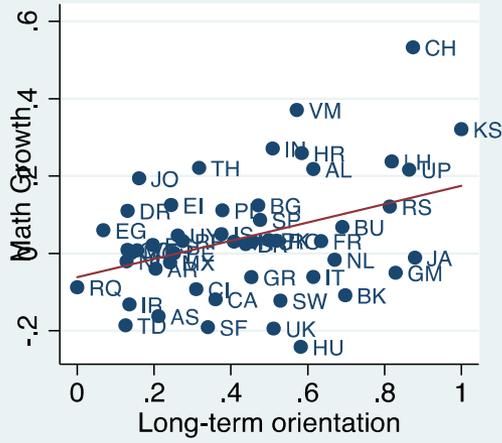
➤ Math level difference[0.136 or 0.114]

- Equivalent to one extra year of maternal education (0.12)
- 1/5 of the difference in math outcomes of kids with mothers who have a 4-year college degree or higher and those with mothers with exactly a high school education and no more (0.7).

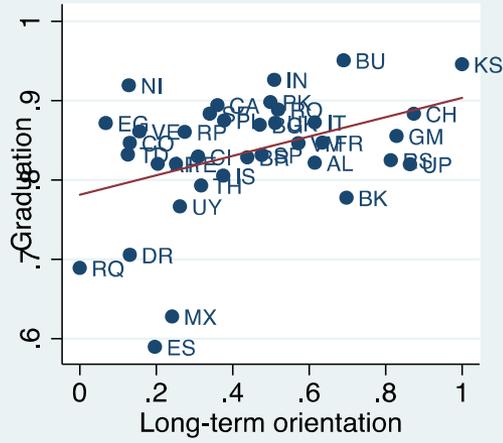
Raw data: first generation immigrants



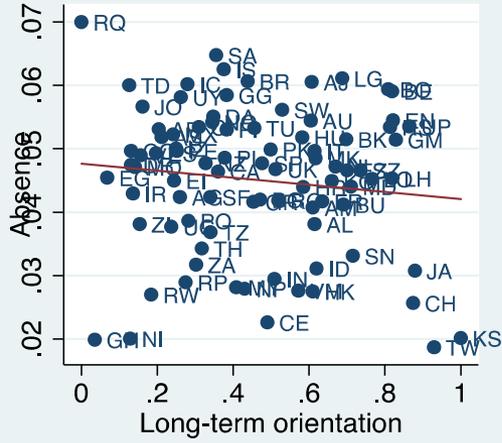
• Math Levels — Fitted values



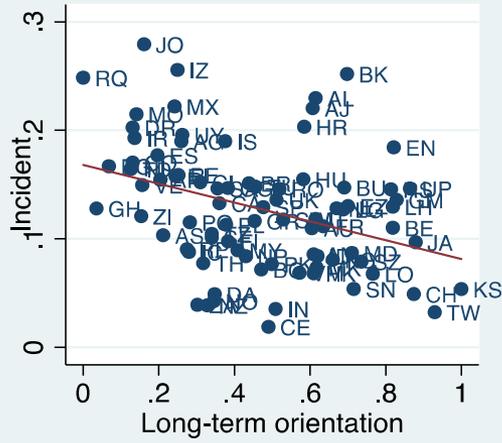
• Math Growth — Fitted values



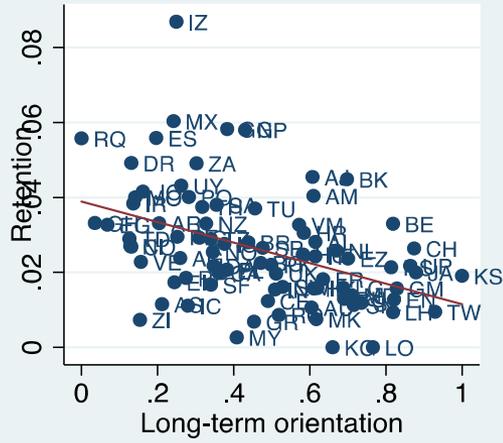
• Graduation — Fitted values



• Absence — Fitted values

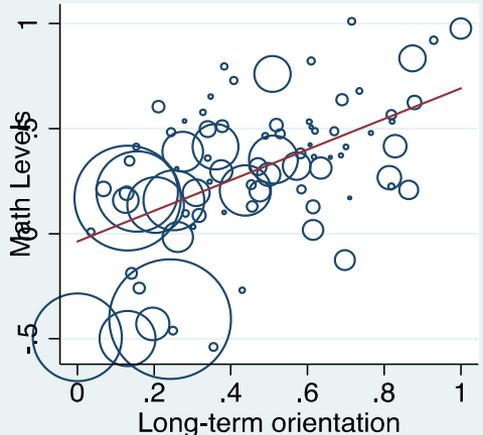


• Incident — Fitted values

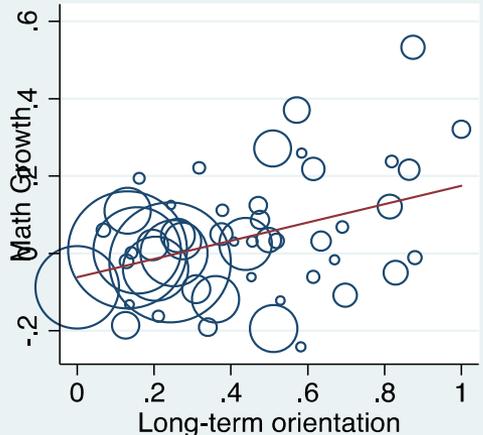


• Retention — Fitted values

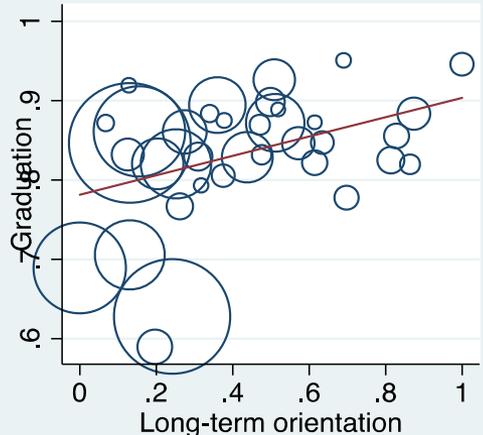
Raw data: first generation immigrants



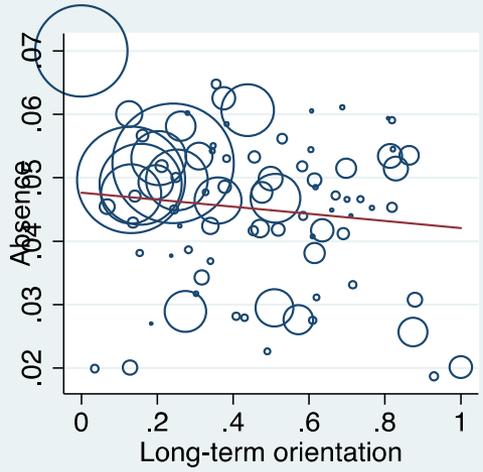
○ Math Levels — Fitted values



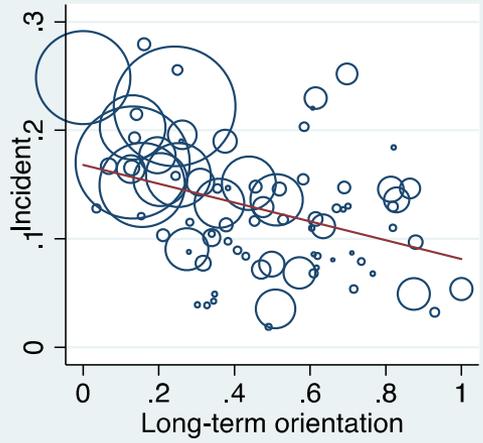
○ Math Growth — Fitted values



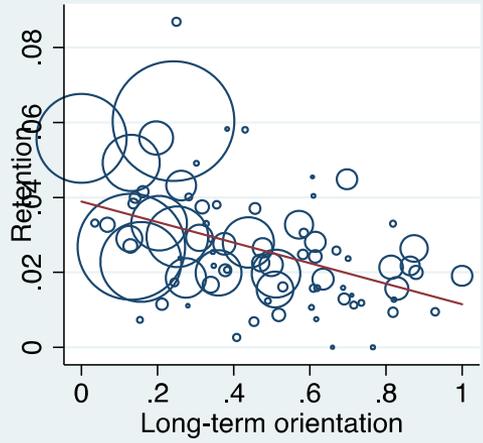
○ Graduation — Fitted values



○ Absence — Fitted values

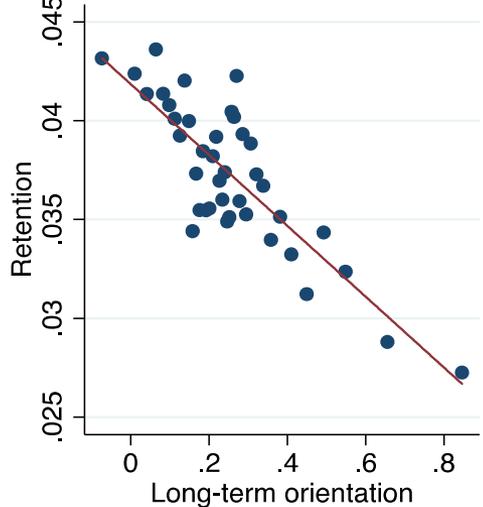
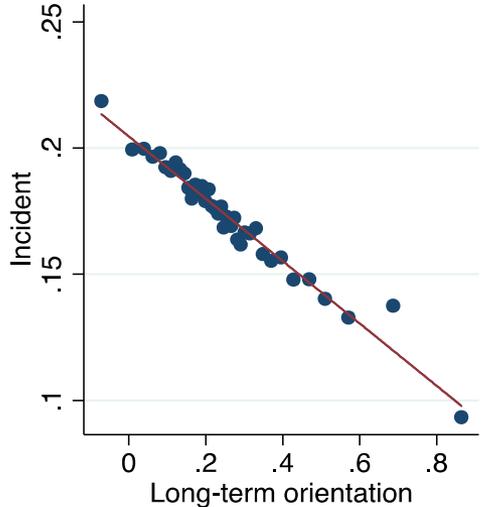
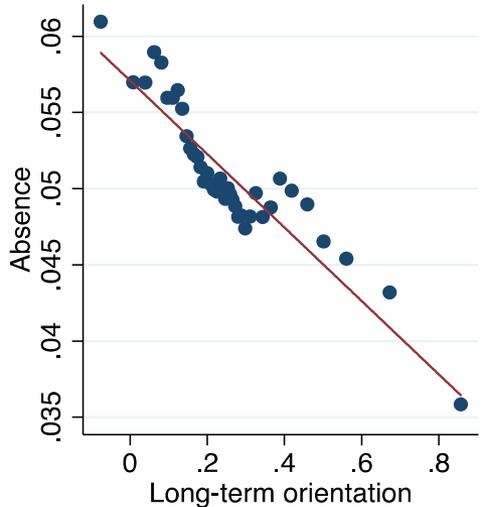
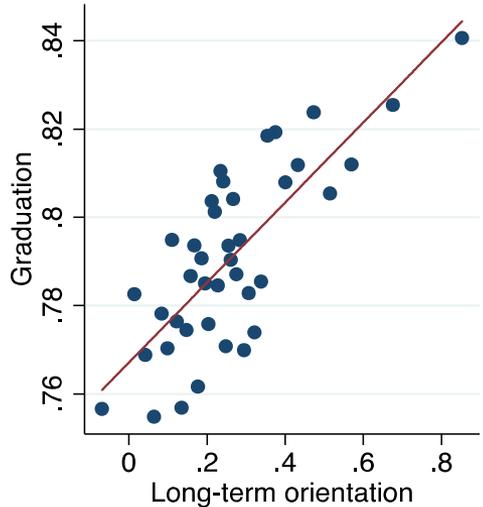
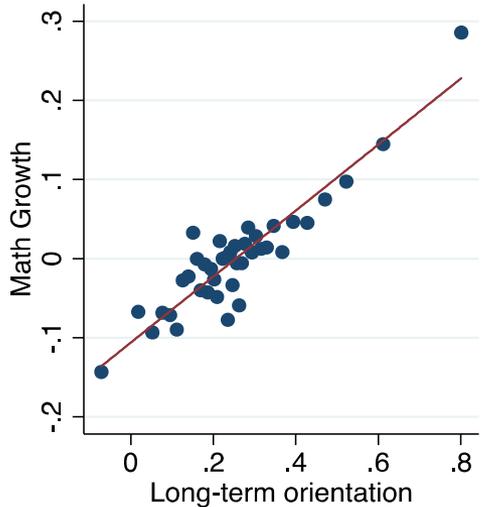
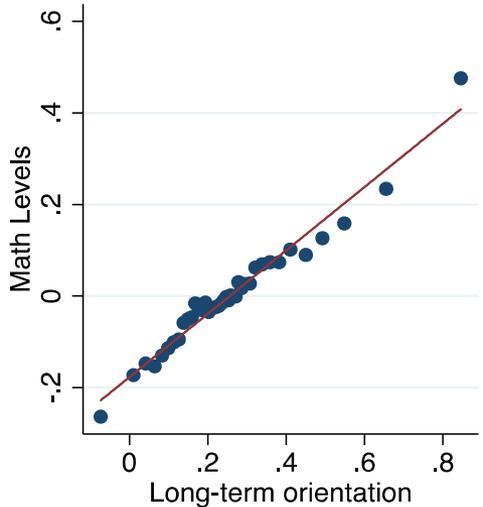


○ Incident — Fitted values



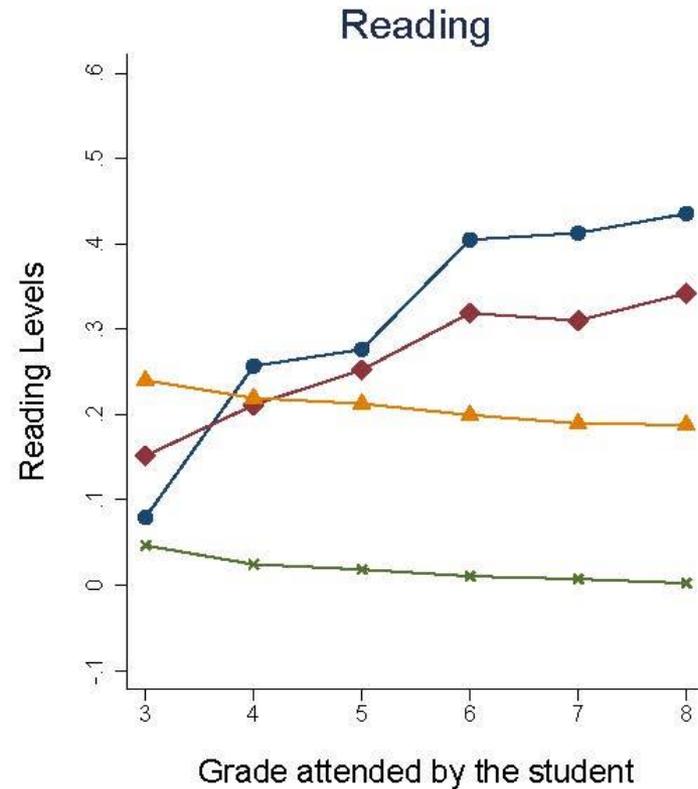
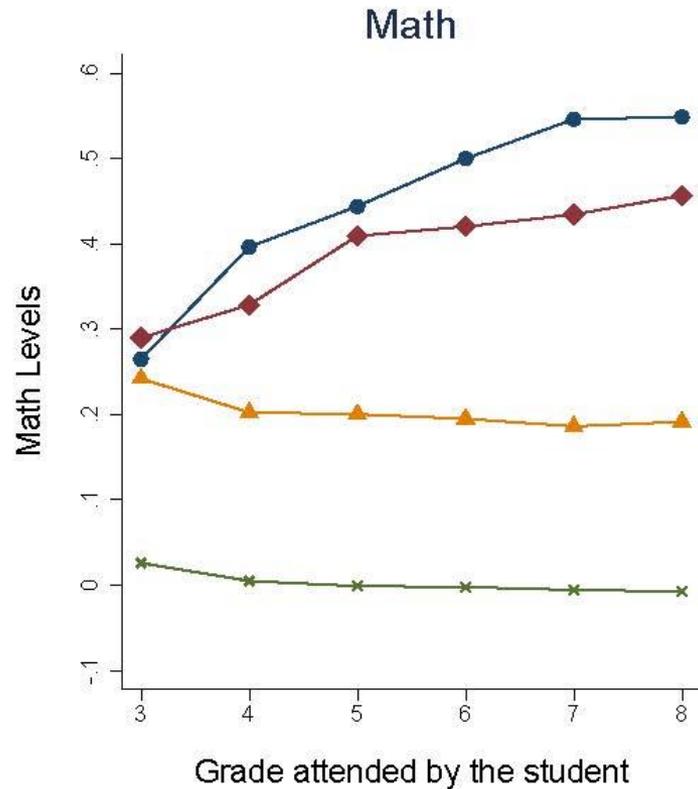
○ Retention — Fitted values

Bin-scatters: first generation immigrants



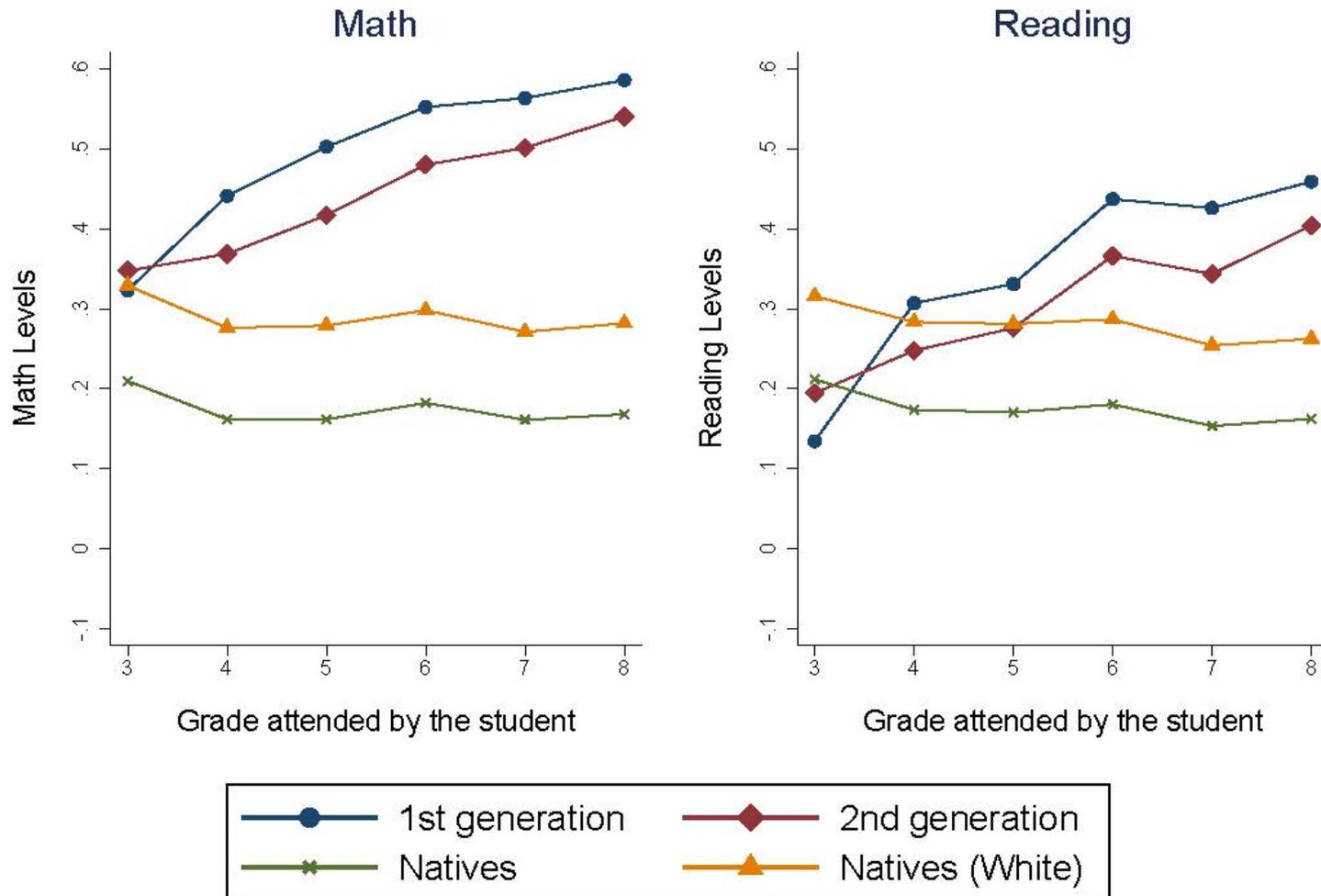
Comparisons with natives

1st generation vs. 2nd generation vs. Natives and Natives (White)

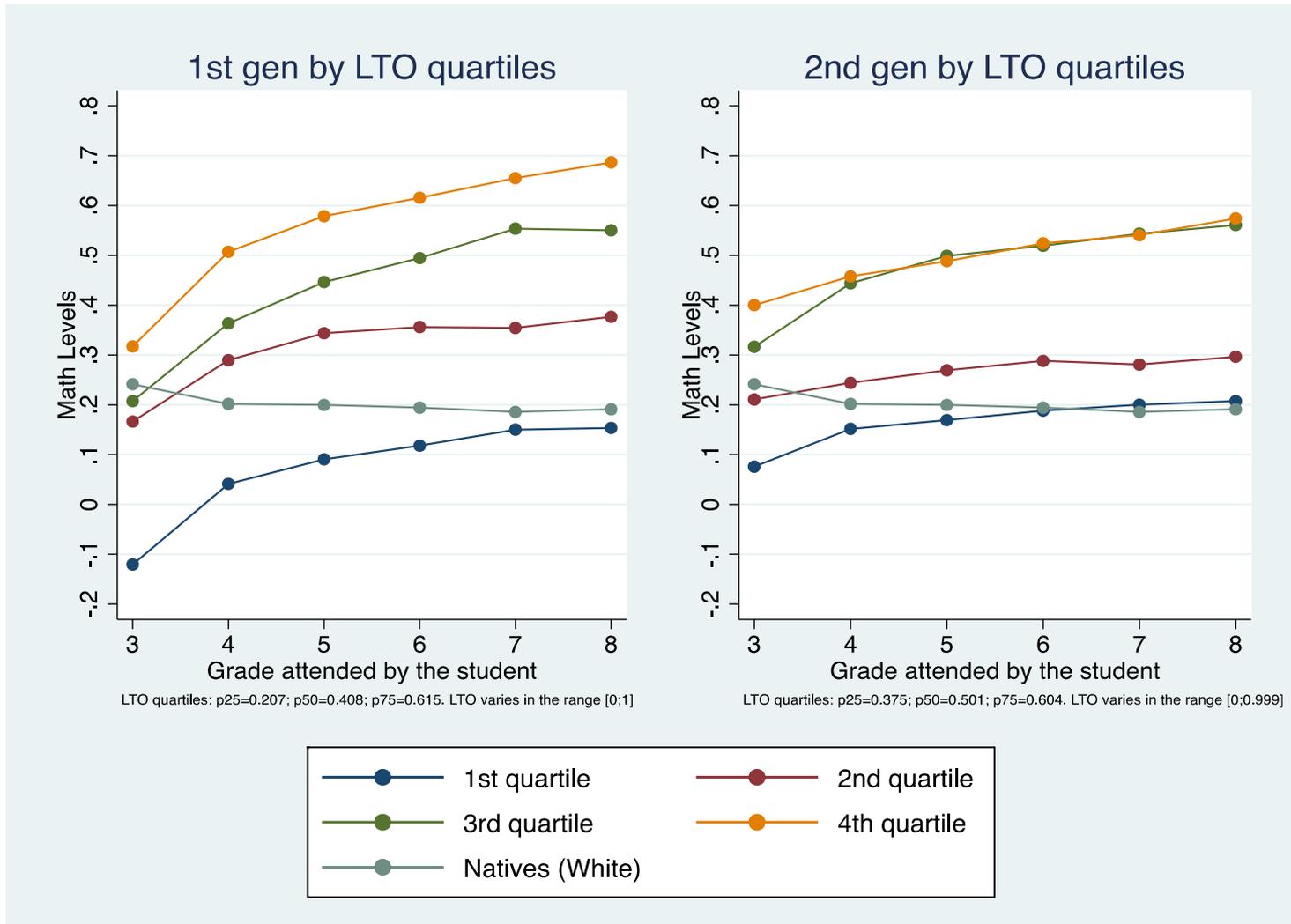


Comparisons with natives: Grade A schools

1st generation vs. 2nd generation vs. Natives (White) and Natives - Grade A schools



Comparison with natives (white), by LTO quantiles: mathematics



Robustness checks (1)

- Includes the following measures from the country of origin:
 - Distance from the country of origin
 - GDP from the country of origin
 - Average math score from the country of origin (FROM PISA)
 - Measure of educational selection following Feliciano (2005)
 - Saving/GDP from the country of origin
 - Population, Gini coefficients, type of migrants, genetic distance from the US

Robustness check (2)

- Exclusions of Hispanics
- Exclusion of Asians
- Inclusion of continent fixed effects

Robustness checks (3)

- Include family characteristics: education, marital status of the mother, teen pregnancy, number of older siblings, median income in the zipcode of birthplace

Robustness checks (4)

- Include other cultural variables: trust, importance of hard work, other cultural dimensions by Hofstede (individualism, power distance, masculinity/femininity, uncertainty avoidance, indulgence/restraint)

Heterogeneous effects: family and peers

- Interactions with family characteristics
- Interaction effects between LTO and the size of the community of the same group

Peers

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Math score, 3rd grade	Math score, change 3rd to 8th	Math score, change 3rd to 8th	Reading score, 3rd grade	Reading score, change 3rd to 8th	Reading score, change 3rd to 8th	Graduation	% Absent Days	Disciplinary Incident	Retention
Long-Term Orientation (LTO)	0.662*** (0.197)	0.478*** (0.132)	0.522*** (0.161)	0.378** (0.147)	0.490*** (0.128)	0.509*** (0.161)	0.069*** (0.022)	-0.025** (0.012)	-0.108** (0.047)	-0.006* (0.003)
Fraction speaking the same language (log)*LTO	0.169*** (0.057)		0.159** (0.064)	0.070 (0.046)		0.133 (0.081)	0.023 (0.014)	-0.009*** (0.003)	-0.029** (0.012)	-0.002 (0.001)
Fraction speaking the same language (log)	-0.101*** (0.028)		-0.088*** (0.031)	-0.063*** (0.019)		-0.071* (0.037)	-0.013 (0.008)	0.005*** (0.002)	0.020*** (0.006)	0.002** (0.001)
Fraction speaking the same language (log) in grade 3*		0.142*** (0.048)			0.147** (0.061)					
Fraction speaking the same language (log) in grade 3		-0.079*** (0.024)			-0.093*** (0.028)					

Potential mechanisms

- **School letter score:** score earned the year before the student attends the school. It ranges from “F” (failing school), coded as 1, to “A”, coded as 5.
- **Gifted:** probability of being enrolled in a gifted program in grade 4, conditional on being a top performer (achievement level in math + achievement level in reading ≥ 9 , max in each subject is 5) and not being enrolled in a gifted program in grade 3
- Probability of selecting **advanced placement, IB or AICE classes** conditional on performance in grade 8
- Probability of selecting **different types of advanced classes**

Potential mechanisms

VARIABLES	(1) Fraction of advanced classes	(2) Fraction of advanced classes (scientific subjects)	(3) School Letter Score (from A to F) at t-1, (pre-) kindergarten	(4) School Letter Score (from A to F) at t-1, all grades	(5) Gifted in grade 4
Long-Term Orientation	0.081*** (0.018)	0.032*** (0.007)	0.377*** (0.126)	0.328*** (0.109)	0.095*** (0.017)
Male	-0.016*** (0.001)	-0.002*** (0.000)	-0.003 (0.002)	-0.001 (0.002)	0.002 (0.004)
Age in months	0.000 (0.000)	0.000*** (0.000)	0.007*** (0.001)	-0.006*** (0.001)	-0.003*** (0.001)
Free or Reduced Priced Lunch	-0.017*** (0.002)	-0.004*** (0.001)	-0.435*** (0.041)	-0.382*** (0.037)	0.025*** (0.007)
Special education	0.010*** (0.002)	0.005*** (0.001)	0.060*** (0.010)	0.014 (0.016)	
Enrolled in Limited English proficiency prog	0.012*** (0.002)	0.007*** (0.001)	-0.066*** (0.013)	-0.095*** (0.018)	0.005 (0.011)
Math score, 8th grade	0.046*** (0.005)	0.013*** (0.002)			
Observations	512,070	512,070	243,233	3,478,545	26,308
R-squared	0.336	0.215	0.208	0.246	0.419
Year*school FE	YES	YES	-	-	YES
District FE	-	-	YES	YES	-
Year FE	-	-	YES	YES	-
Grade FE	YES	YES	-	YES	-
Dependent Variable (mean)	0.058	0.013	4.120	4.128	0.112
Dependent Variable (sd)	0.145	0.054	0.991	1.012	0.316
Long-Term Orientation (mean)	0.222	0.222	0.217	0.220	0.276
Long-Term Orientation (sd)	0.162	0.162	0.152	0.160	0.205
Long-Term Orientation (beta)	0.090	0.096	0.058	0.052	0.062
N_clust	94	94	92	97	88

Alternative measures of long term orientation

- Chen (2013) Languages differ in the ways they encode time. He distinguishes between stronger and weak future tense languages. Languages that grammatically associate the future and the present, foster future-oriented behavior.
- Galor and Ozak (2016): higher potential crop yield experienced during the pre-industrial era increased the long term orientation of individuals in the modern period

Alternative measures of long-term orientation: Chen (2013) with the inclusion of country fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Math score, 3rd grade	Math score, change 3rd to 8th	Reading score, 3rd grade	Reading score, change 3rd to 8th	Graduation	% Absent Days	Disciplinary Incident	Retention
Futureless Language (Chen)	0.310*** (0.045)	0.264*** (0.098)	0.130*** (0.024)	0.193*** (0.061)	0.001 (0.018)	-0.005* (0.003)	-0.042*** (0.008)	-0.003** (0.002)
Observations	81,369	32,670	81,319	32,553	27,980	838,059	521,296	668,646
R-squared	0.458	0.413	0.473	0.422	0.384	0.188	0.125	0.108
Year*school FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Grade FE	-	-	-	-	-	YES	YES	YES
Individual controls	YES	YES	YES	YES	YES	YES	YES	YES
Dependent Variable (mean)	0.000	0.000	0.000	0.000	0.803	0.050	0.169	0.036
Dependent Variable (sd)	1.000	0.779	1.000	0.842	0.398	0.070	0.375	0.185
Futureless Language (mean)	0.025	0.023	0.025	0.023	0.027	0.028	0.029	0.026
Futureless Language (sd)	0.156	0.151	0.156	0.150	0.161	0.164	0.167	0.159
Futureless Language (beta)	0.048	0.051	0.020	0.034	0.000	-0.012	-0.019	-0.003
N_clust	78	71	78	71	69	85	82	83

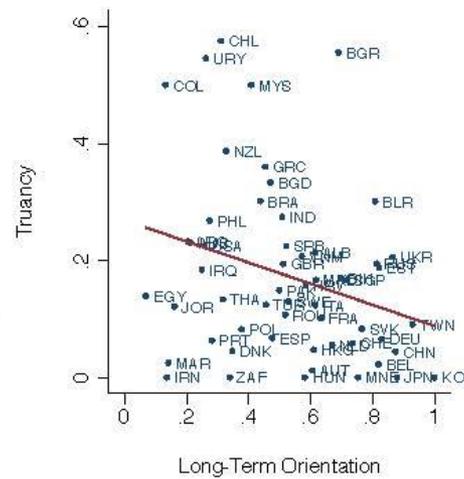
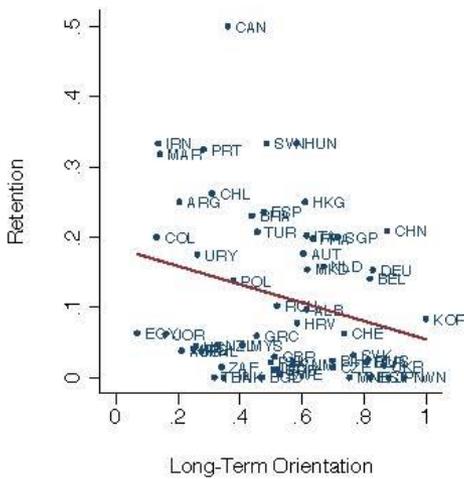
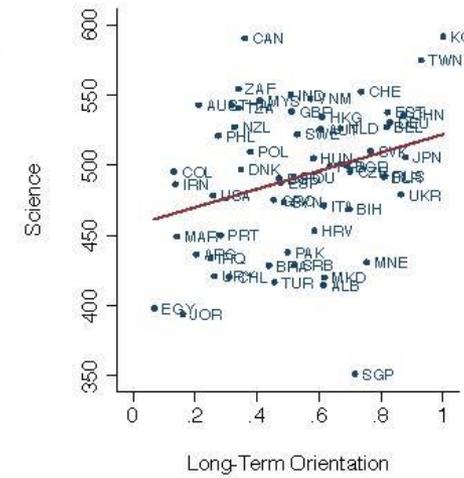
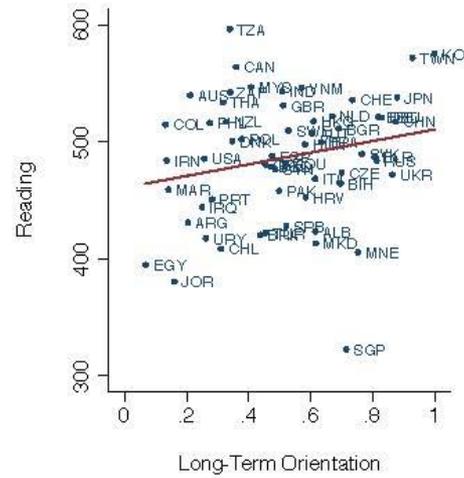
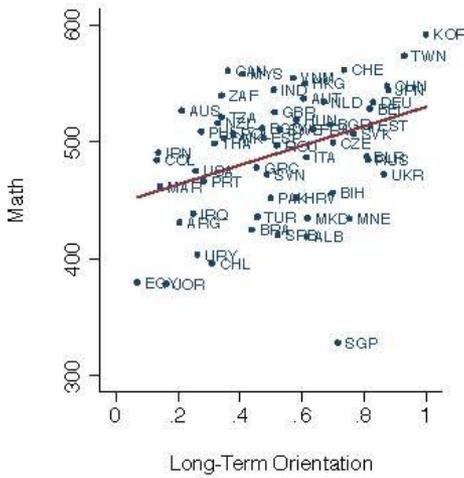
Alternative measures of long-term orientation: Galor and Ozak (2016)

PANEL C: 1st generation + 2nd generation (extended definition), excluding the Americas								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Math score, 3rd grade	Math score, change 3rd to 8th	Reading score, 3rd grade	Reading score, change 3rd to 8th	Graduation	% Absent Days	Disciplinary Incident	Retention
Maximum Crop Yield (Galor)	0.042*** (0.010)	0.030*** (0.008)	0.025*** (0.008)	0.031*** (0.008)	0.004** (0.002)	-0.002*** (0.001)	-0.010*** (0.002)	-0.000 (0.000)
Observations	45,262	17,062	45,238	17,001	11,552	373,220	216,428	298,977
R-squared	0.464	0.474	0.470	0.469	0.375	0.178	0.131	0.141
Year*school FE	YES	YES	YES	YES	YES	YES	YES	YES
Grade FE	-	-	-	-	-	YES	YES	YES
Individual controls	YES	YES	YES	YES	YES	YES	YES	YES
Dependent Variable (mean)	0.000	0.000	0.000	0.000	0.883	0.038	0.120	0.022
Dependent Variable (sd)	1.000	0.764	1.000	0.834	0.321	0.062	0.325	0.147
Maximum Crop Yield (mean)	8.601	8.610	8.602	8.607	8.593	8.593	8.588	8.592
Maximum Crop Yield (sd)	2.298	2.261	2.298	2.263	2.262	2.298	2.283	2.281
Maximum Crop Yield (beta)	0.097	0.089	0.058	0.085	0.029	-0.089	-0.067	-0.004
N_clust	81	76	81	76	78	83	83	83

Evidence from PISA

- Program for International Student Assessment
- Four waves, 2003, 2006, 2009, 2012.
- 37 countries
- Analysis on first generation immigrants and second generation immigrants (identified using mother for consistency with the Florida dataset)
- Performance in reading, math and science, retention and truancy

Raw data: second generation immigrants



Evidence from PISA: first generation immigrants

VARIABLES	(1) Math	(2) Reading	(3) Science	(4) Retention	(5) Truancy	(6) Math	(7) Reading	(8) Science	(9) Retention	(10) Truancy
Long-term Orientation	0.655***	0.434**	0.616***	-0.065**	-0.124***	0.709***	0.505**	0.676***	-0.061**	-0.124***
	(0.155)	(0.213)	(0.219)	(0.027)	(0.034)	(0.136)	(0.204)	(0.216)	(0.025)	(0.034)
Wealth						0.048***	0.031**	0.027**	-0.000	0.004
						(0.017)	(0.014)	(0.012)	(0.004)	(0.004)
Male	0.142***	-0.343***	0.030	0.017***	0.010	0.143***	-0.349***	0.028	0.013**	0.010
	(0.011)	(0.026)	(0.019)	(0.004)	(0.009)	(0.013)	(0.026)	(0.023)	(0.006)	(0.010)
Age of Student	-0.144***	-0.126***	-0.125***	0.190***	0.021	-0.163***	-0.154***	-0.155***	0.193***	0.021
	(0.036)	(0.028)	(0.031)	(0.024)	(0.015)	(0.033)	(0.030)	(0.033)	(0.028)	(0.015)
Year FE	YES	YES	YES	YES	NO	YES	YES	YES	YES	NO
Grade FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country of destination FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Parents' education FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	27,649	27,649	27,649	17,229	7,918	22,734	22,734	22,734	13,371	7,899
R-squared	0.371	0.341	0.341	0.314	0.080	0.380	0.344	0.348	0.337	0.081
Dependent Variable (mean)	0.000	0.000	0.000	0.158	0.136	0.000	0.000	0.000	0.159	0.136
Dependent Variable (sd)	1.000	1.000	1.000	0.365	0.343	1.000	1.000	1.000	0.366	0.343
Long Term Orientation (mean)	0.590	0.590	0.590	0.570	0.561	0.591	0.591	0.591	0.566	0.561
Long Term Orientation (sd)	0.253	0.253	0.253	0.259	0.267	0.258	0.258	0.258	0.268	0.266

Conclusions

- Remarkable variation in educational performance among migrants
- Analysis with administrative data from Florida show that long term orientation is strongly correlated with various measures of educational outcomes
- Longitudinal analysis helps to control for differences in initial conditions among migrants
- Results are similar when we look at first and second generation migrants in 37 different destination countries