Long-Term Orientation and Educational Performance

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We study the role of Long-Term Orientation on the educational attainment of immigrant students. Controlling for the quality of schools and socio-economic characteristics, students from long-term oriented cultures perform better in third grade reading and math, have larger test score gains over time, fewer absences and disciplinary incidents, are less likely to repeat grades, more likely to enroll in advanced high school courses and more likely to graduate from high school in four years. Evidence on mechanisms suggests that both parents' educational choices for their children and social learning from peers are important mechanisms. (*JEL* I20, I24, J15, Z1)

Individual educational achievement and family socioeconomic background are remarkably correlated, in the US and around the world (see, e.g., Black, Devereux, and Salvanes 2005; Chevalier, Denny, and McMahon 2009; Fryer and Levitt 2004; Hanushek and Woessmann 2010; Hertz et al. 2007; Reardon and Galindo 2009; Rothstein and Wozny 2013). To understand the strong persistence in educational achievement across generations, economists have examined the causal effect on children's education of some specific components of parental socioeconomic background: parental education, income, and wealth (Black, Devereux, and Salvanes 2005;

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Bleakley and Ferrie 2016; Dahl and Lochner 2012). This research has found at most moderately-sized (and often zero) causal effects, suggesting that much of the correlation between parents' and children's educational outcomes must be due to other shared family characteristics, including access to high quality schools (Rouse and Barrow 2006), or inherited abilities and traits (Krapohl et al. 2014).

Parents transmit to their children not only human capital, income, wealth, and genetic traits but also a specific set of cultural values (Bisin and Verdier 2001). This paper follows the literature on cultural transmission and explores the importance of a distinct cultural trait transmitted from parents to children as an alternative and complementary determinant of educational achievement: the ability to defer gratification and exert self-control.[2]

Older research in psychology indeed suggests that this trait fosters educational attainment and cognitive competence (Mischel and Ebbesen 1970; Mischel, Shoda, and Peake 1988; Mischel, Shoda, and Rodriguez 1989; Shoda, Walter, and Peake 1990): in the famous "marshmallow test", children that were able to resist eating a marshmallow with the promise of getting an extra one if they waited, had higher SAT scores and earnings, when followed many years later. More recently, Duckworth et al. (2007) have also shown that the tendency to stick with long-term goals and self-control is relevant to complete the demanding training among West Point entrants. Sutter et al. (2013) elicit time preferences of children and adolescents and show that more impatient children and adolescents are more likely to spend money on alcohol and cigarettes, have a higher BMI, are less likely to save money, and commit more violations of the school's code of conduct. Self-control also predicts student grades, high school dropout and earnings more strongly than IQ (Cadena and Keys 2015). Future-oriented individuals are also healthier, richer, less likely to be single parents and less likely to be convicted of a crime as adults (Moffitt et al. 2011). At a macro level, Galor and Ozak (2016) show that geographic differences in preferences for delayed gratification are extremely stable over time, tracing their origin to geographical conditions that affected the return

[2] There exists a long sociological literature documenting cross-cultural differences in academic achievement. Important recent examples include Hsin and Xie (2014), who argue that the Asian-American advantage over white students in the United States has more to do with effort differences than with differences in cognitive skills or socio-economic status, and Liu and Xie (2016), who show that there is a stronger relationship between socio-economic status and academic achievement for white students than for Asian-Americans, and that Asian-Americans' beliefs and values are less related to family socio-economic status than are those of whites. Olneck (2009) provides historical and contemporary perspectives on the values that immigrant groups seek from American schools. These strands of research provide important foregrounding for the present paper.

to agricultural investment. Furthermore, Galor and Ozak (2016) show that, across geographical areas, preferences for delayed gratification correlate with technology adoption, savings, and educational achievement.

Given that time preferences and delayed gratification correlate with educational attainment at the macro level, in this paper we study whether the transmission of these preferences across generations can explain individual educational attainment and possibly account for at least part of the intergenerational correlation between socioeconomic background and educational achievement observed in the literature. To investigate this hypothesis, we face several challenges. First, if parents share a culture of high educational attainment, they are likely to be highly educated and, thus, more likely to have high income and live in areas with better schools, therefore hindering our ability to distinguish between a transmission of cultural values and a direct effect of parental education or income. Second, cultural determinants of educational attainment are often indistinguishable from other institutional and economic factors using cross-country aggregate data. For example, a culture that values delayed gratification could foster high quality of schools and other educational institutions. If that is the case, we would not be able to distinguish whether the effect of higher education attainment is due to better institutions or to children's attitudes of delayed gratification.

To address these concerns, we focus on immigrants in the US and in other countries. We attribute to each immigrant student the average willingness to forego immediate utility for future gratification of his/her country of origin, using Hofstede, Hofstede, and Minkov's (2010) measure of Long-Term Orientation (LTO) and other proxies for delayed gratification. Following Carroll, Rhee, and Rhee (1994), Giuliano (2007), and Fernández and Fogli (2009), our identification strategy relies on the opportunity to observe immigrant children from different cultures in the same location, thus distinguishing between cultural factors from other institutional and economic factors.

We study immigrants' educational outcomes in a unique population-level dataset containing individual-level administrative data from the Florida Department of Education (FLDOE) Warehouse on elementary and secondary (Kindergarten to grade 12, or grade K-12) students, matched to birth certificate data from the Florida Bureau of Vital Statistics for the purposes of this research agenda. The link to birth records allows us to identify second-generation students and also to control (in the case of Florida-born children) for variables not typically observed in administrative education data, such as maternal age, marital status, and education, birth order, and the like. Florida is especially interesting for our purposes as it is one of the largest immigrant-receiving states in the United States.[3]

The results show that immigrants from countries with high LTO score substantially higher in standardized tests than immigrants originating from countries with lower LTO. Furthermore, over time, the scores of immigrant students from high LTO cultures grow more, controlling for their initial third grade score, suggesting that, in comparison with low LTO students, these immigrants not only have higher educational achievement in third grade but also continue to improve in relative terms over time. Similarly, we find that immigrants from long-term oriented countries have better school attendance records, are less likely to repeat a grade and to be truant, and are more likely to graduate from high school in four years. Students from more long-term oriented countries are also more likely to enroll in advanced college level classes (AP, IB, and AICE classes) during high school and more likely to choose advanced classes in scientific subjects.

Our results are robust to a wide array of potential confounders. Since we control for school-by-year fixed effects in all our specifications, our results are not driven by school quality, a potential source of selection for immigrants coming from long-term oriented cultures. They are also robust to including several potential confounding characteristics of the country of origin, as well as several maternal characteristics. The results are not driven by specific groups of immigrants and are confirmed when we use alternative measures of delayed gratification. LTO is also not picking up other cultural traits such as trust, the importance of hard work or any of the other Hofstede, Hofstede, and Minkov's (2010) cultural traits. Using evidence from a large set of countries from the Program of International Student Assessment (PISA), we finally find remarkably similar results in a very different sample of immigrants suggesting that, independently of the formal institutions of the country of destination, the relative performance of immigrants relates to the LTO of the country of origin.

[3] Florida has over four million foreign-born individuals, more than all but 15 entire countries on earth. Florida's foreign-born population is also diverse: while the foreign-born population is disproportionately Hispanic (include 23% Cuban and 7% Mexican), it is also 21% from non-Hispanic Caribbean countries, 11% from Asian countries, 10% from European countries, and 2% from African countries. The heterogeneity in countries of origin of foreign-born residents of Florida is much greater than in Texas and California, where the majority of foreign-born residents come from a single country, Mexico. A description of the selection of immigrants attending public schools in Florida is provided in Section A.2.3 of the On-line Appendix.

Our empirical strategy makes contributions along several dimensions. For one, whereas other papers on cultural transmission observe immigrants when they are already young adults, ours is the first paper that studies cultural transmission by focusing on children's trajectories. This allows us to shed some light on the mechanisms of cultural transmission and the role of parenting in enforcing it. Second, the unique microdata that we employ in this paper allows us to control for geography at a much finer level than was possible in related studies of adults. Specifically, we control for school-level fixed effects (which essentially control for residential neighborhoods in our Florida setting), thereby capturing any unmeasured residential sorting – much smaller in geographic scope than, say, counties or US metropolitan areas. Capturing geography at as fine a level as possible is essential to help to reduce the likelihood that we are conflating LTO with other unmeasured family variables, such as income or wealth, that are geographically linked in the US. In addition, since people are not randomly assigned to neighborhoods and schools, and high-LTO families might choose more advantaged neighborhoods and schools (as we demonstrate), all else equal, our ability to compare students within the same school means that we are more likely to be generating conservative estimates of the relationship between LTO and educational outcomes. Third, since we have some direct information on parental actions and on peers, we are able to uncover some of the mechanisms behind cultural transmission.

In the final part of the paper, we try to gain further insights on the transmission mechanisms behind cultural transmission. While we cannot directly measure the transmission of values from parents to children, nor measure students' effort, we can test whether parents originating from countries that share values of delayed gratification take actions that increase the educational attainment of their children. We study whether these parents are more likely to select better schools within the school district of residence and whether they are more likely to advocate for their children's inclusion in gifted programs, conditional on the student's achievement. We find evidence consistent with the hypothesis that parents from countries with higher LTO are more likely to select good educational opportunities for their children. This mechanism can further increase educational outcomes and magnify the cultural transmission of delayed gratification. As an additional channel of cultural transmission, we study whether social learning (Boyd, Richerson, and Henrich 2011) reinforces the importance of the cultural values transmitted at home. Consistent with a social learning hypothesis, we find that long term oriented students perform better in the schools where a larger fraction of children speaks their same language.

Overall, our results suggest the existence of a cultural channel that explains the persistence of educational outcomes across generations, beyond income and educational transmission. Besides being related to a fast-growing literature on cultural transmission (Alesina and Giuliano 2015; Alesina, Giuliano, and Nunn 2013; Algan and Cahuc 2010; Becker et al. 2016; Galor and Michalopoulos 2012; Galor and Moav 2002; Guiso, Sapienza, and Zingales 2006; Nunn and Wantchekon 2011; Sacerdote 2005; Tabellini 2008; Voigtlander and Voth 2012), our paper relates to the intergenerational mobility literature and to the research on immigrants' assimilation. Chetty and Hendren (2015) find that local conditions matter less for immigrants consistently with the conjecture that culture, rather than neighborhood's characteristics, can play an important role for immigrants. The literature on immigrants has systematically identified an "advantage" of some immigrant groups but, as far as we know, no paper has identified which cultural factors may be responsible for these findings (Abramitzky, Boustan, and Eriksson 2014; Card, Di Nardo, and Estes 2000).

The remainder of the paper is organized as follows. The next section describes the main dataset. Section II presents the empirical evidence from the FLDOE data. Section III discusses at length the issue of migrants' selection. Section IV discusses the robustness of the results to the use of alternative measures of LTO and the inclusion of a large set of other cultural variables. Section V explores potential mechanisms behind the relationship between LTO and educational performance. Section VI describes how immigrants perform compared to natives. Finally, the results using PISA are presented in Section VII. We conclude in Section VIII.

I. Data and outcome of interests

The main data sources for our analysis are school records obtained from the Florida Department of Education Data Warehouse, and the measure of LTO at the country level based on Hofstede, Hofstede, and Minkov (2010). For external validity, we rely on student level data coming from the Program for International Student Assessment (PISA), described in Section VII.

A. Florida Department of Education Data

We use a unique dataset of school records for the state of Florida merged with birth certificates coming from the Florida Bureau of Vital Statistics.

The individual-level administrative data from the Florida Department of Education (FLDOE) Warehouse contain information on K-12 students who attended Florida public schools between 2002-2003 and 2011-2012. The dataset also contains information about the country of origin of the child and the language spoken at home. The dataset is longitudinal in nature, therefore it allows us to follow students over a decade and study their progress within subgroups of interest (either country of origin or language spoken at home).

Birth certificates contain a larger set of socio-economic controls (such as maternal education, marital status, and maternal age), normally not included in school records. They also contain information on whether the mother was born abroad.[4] Since data from birth certificates are available only for children born between 1992 and 2002, we limit our analysis to these cohorts for all immigrant groups (including the first generation for which the birth certificates are not present). The FLDOE dataset merged with birth certificates allows us to study educational outcomes for first, second and higher than second-generation immigrants.

We identify first generation immigrants combining information on the country of birth and the language spoken at home.[5] For the first generation, we merge the country of origin with the LTO variable defined at the country level.

We identify second-generation immigrants as children born in the United States, either speaking a language different than English at home, or speaking English at home with mothers born abroad (these children could come from speaking English countries, such as the United Kingdom).[6] This group, which we call "extended second-generation," could therefore include second generation students from both the maternal and paternal side (information on paternal place of origin is unknown to us), but also a generation higher than the second. The results are very

[4] Birth certificates and school records were matched using first and last names, date of birth and social security numbers. The sample of birth records consists of 2,047,633 observations. Of these, 1,652,333 were present in Florida public school data. The match rate of 81% is consistent with the percentage of children who are born in Florida, reside there until school age, and attend public school, as calculated from the Census and the American Community survey for the corresponding years. See Figlio et al. (2014) for details about the nature and additional evidence on the quality of the birth-school data merge.

[5] The results do not change if we identify first generation using only the country of origin of the child. The language restriction helps reduce some measurement error in those cases in which a child is born abroad but he/she is the child of US citizens (for example children born in a US military base); alternatively, it could help us also to capture a stronger cultural attachment to the country of origin through the intention of the family to preserve their cultural identity by speaking their language at home. The list of the main languages spoken in a country is from the 17th version of the *Ethnologue*.

[6] Birth certificates do not contain information about the maternal foreign country of birth (with the exception of the following countries/territories: Canada, Cuba, Guam, Mexico, Puerto Rico, and Virgin Islands); they only indicate whether the mother was born abroad or not. For that reason, we use the language spoken at home as a main way to identify the extended generation. We use the measure of LTO at the country level only for the three countries identified in the birth certificates for which we have the LTO data (Canada, Mexico, and Puerto Rico).

similar when we use a more restrictive definition of second generation: children born in the US with mother born abroad.

For second-generation immigrants we construct a measure of LTO at the language level. For most languages, there is a one to one association between language and country of origin (e.g., Norwegian). For languages spoken in multiple countries (e.g., Portuguese) we calculate the LTO cultural variable as a weighted average of the LTO of all the countries in which Portuguese is the main language spoken in the country. We use as weights the fraction of first generation immigrants in our sample speaking that language and born in a country where that language is one of the spoken languages. For instance, in the case of Portuguese, we allocate 98% of the weight to Brazil and 2% of the weight to Portugal, in accordance with their shares of first generation immigrants speaking a foreign language in the Florida school data.[7] [8]

Outcomes of interest.– We study the following five different outcomes, in a pooled sample of first generation immigrants and the extended version of second generation immigrants:

i) *Test scores in mathematics and reading*. We look both at differences in the Florida Comprehensive Assessment Test (FCAT), the state's high-stakes criterion-referenced test, in grade 3 (the first grade of statewide testing) as well as the increase in performance from grade 3 to grade 8, after controlling for the initial score reported in grade 3. Studying test score growth is especially important because test score levels might reflect some omitted variable correlated with LTO, but it is highly unusual for students to make large improvements in their relative performance between third and eighth grade in the statewide tests. Because the test changed in 2011 and to aid in interpretation, we standardize the statewide test scores to zero mean and unit variance at the grade/year level based on the sub-sample used in each regression/specification.[9]

[7] As a robustness check, we also run our regressions limiting the sample to countries that can be identified uniquely with a language. Our results (available from the authors) are robust to this specification.

[8] The list of countries/languages and the number of observations by country/language for first and second generation immigrants is provided in the Appendix, Tables A2 and A3. For confidentiality reasons with the FLDOE, we cannot report the number of observations for groups whose size is smaller than 50. These countries/languages are combined in the Appendix and labelled as "Non-disclosed".

[9] We also estimated models in which we standardize test scores at the grade/year level for the entire immigrant population. The results when using this alternative standardization are highly similar to those reported in the paper.

ii) *Probability of being retained*, calculated for each student/grade and defined as a dummy equal to one if the student repeats the same grade. Retention is calculated for all grades from 3 to 12.[10]

iii) *Absence rates* during academic year defined as the percentage of days in which the student is absent during the academic year. Absence rates are calculated for all grades from 3 to 12.

iv) *Disciplinary incidents:* a dummy for whether the student was involved in a disciplinary incident (serious offences often resulting in suspension). Disciplinary incidents are calculated from grades 6 to 12, as incidents are extremely rare in elementary school.

v) *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. This part of the analysis is conducted only for those students who have the potential to be observed for at least four years after they start high school, so we can only study this outcome for the oldest students in our population.

In addition, in the section devoted to understand the potential mechanisms linking LTO and educational attainment, we study four additional outcomes:

vi) *Enrollment in advanced classes:* we calculate the fraction of advanced classes, including Advanced Placement (AP), International Baccalaureate (IB), and Advanced International Certificate of Education (AICE), over the total of all classes taken by the student in a given year, for grades 9 to 12.[11]

[10] In Florida, there is a mandated third-grade retention for all students who do not meet a Level 2 benchmark or higher (the second lowest of five levels) on the Florida Comprehensive Assessment Test (FCAT) reading exam, though some exceptions to this rule are admitted (LiCalsi, Özek, and Figlio, forthcoming). LiCalsi, Özek, and Figlio (forthcoming) find that family factors are important determinants of differential enforcement of the mandatory retention rule, and that children from high-SES families are comparatively more likely to be promoted despite the mandatory retention rule, indicating some room for parental influence in school decision-making, even in cases when decisions are putatively mandatory. Retention in subsequent grades is not based on a strict score cutoff. As such, retention in third grade is substantially higher than in other grades. In our tables, we will study the retention in every grade. In unreported regressions, we tested retention only in grade 3 and the effects are similar in magnitude.

[11] These three possible types of advanced classes are offered in Florida public schools and are recognized as college level classes at least by state Universities. Every school varies in its policies for including students in these advanced classes, but in general higher-performing students are more likely to take advanced classes. Nonetheless, many students who are not top-performers take college-level advanced classes. About 20 percent of students scoring between the 50th and 60th percentiles of the tenth grade mathematics distribution take AP math or science courses, for instance.

vii) *Fraction of advanced classes in scientific subjects:* we calculate the fraction of advanced classes in scientific subjects (defined as Math, Computer Science or Natural Sciences) over the total of advanced classes.

viii) *School choice*: the Florida Department of Education reports school scores on a letter scale from A (best) through F (worst).[12] We study school choice by looking at the relationship between LTO and the score assigned to the school in the year before entering kindergarten (as this is the first time in which the student enters the public school system). We also look at the relationship between LTO and school scores for all grades, as families with higher LTO might use the school choice mechanisms at their disposal to select higher-rated public schools.[13]

ix) *Gifted students:* Florida defines gifted students as "students who have superior intellectual development and are capable of high performance." Each district serves gifted students with local plans and a specific track. Eligibility for the program is determined by the parents, the student when appropriate, the teacher, a school system representative, or an evaluation specialist. Family intervention is therefore very relevant to determine the enrollment in a gifted program. To study family intervention, we restrict our sample to children who are top performers[14] in grade 3, the first time a student takes a high-stakes examination in Florida, but not yet enrolled in a gifted program as of that time, and test whether the probability of being enrolled in a gifted program in grade 4 is correlated with LTO.[15] Table 1

[12] For a description of the school grading process in Florida, see http://schoolgrades.fldoe.org/. We recoded the letter scores on a scale from 1 through 5, where 1 corresponds to an "F" score and 5 corresponds to an "A" score. These scores are highly salient to households when making decisions regarding residential location (Figlio and Lucas 2004) or voluntary donations to public schools (Figlio and Kenny 2009).

[13] Florida has county-level school districts, and students are assigned to schools based on their residential location. School districts also provide opportunities for children to attend schools out of their assigned school zones, subject to space availability and with families providing transportation to the new school. What we are referring to as "school choice" in this paper is a combination of family residential location decisions (which, essentially, choose schools in Florida) as well as use of controlled choice mechanisms offered by the school. Because we cannot observe residential location in the statewide administrative data, we cannot know whether this choice is largely due to residential sorting or to differential use of controlled choice mechanisms.

[14] These students reach the highest achievement level (that is, level 5) in either Math or Reading, and either level 4 or 5 in the other subject. Fewer than ten percent of students statewide achieve this distinction.

[15] In Florida, gifted assignment requires both school and family action. The administrative record does not show whether gifted proceedings were initiated by the school or by the family, or whether a family advocated for gifted educational services for its children but were denied; that said, we feel comfortable in assuming that a child receiving gifted services following very high initial test performance is an indicator of strong family action and advocacy on behalf of the child's education.

describes sample statistics for all outcomes and more details about each variable are contained in Section A.2.2 of the Online Appendix.

[Table 1 here]

Individual controls.– All our regressions contain a large set of controls, including demographics (age in months and gender), a measure of English proficiency (measured by a dummy equal to one if the student is enrolled in the limited English proficiency – or LEP - program), a measure of low-income status (measured by a dummy equal to one if the student is eligible to receive free or reduced price lunch – FRPL – or attend a "provision 2" school) and a measure for whether the student has some special education needs.[16]

For second-generation immigrants only we also have information on maternal characteristics (educational attainment, marital status at time of birth and whether the mother had the child when she was younger than 16), the number of older siblings and the zip code of the home address at time of birth which we use as controls in a separate robustness analysis presented in the Appendix. Sample statistics for these controls are shown in Table 1 and more details about each variable are contained in the Online Appendix.

B. Long-Term Orientation Data

Following the related literature, we apply Hofstede's (1991) and Hofstede, Hofstede, and Minkov's (2010) measure of LTO. Hofstede, Hofstede, and Minkov (2010) define Long-Term Orientation as the cultural value that "stands for the fostering of virtues oriented toward future rewards, perseverance and thrift." Hofstede (1991) based his original analysis on data gathered from interviews of IBM employees across the world. These original data were later expanded using the data from the Chinese Values Survey and from the World Values Survey for the period 1995-2004. From these surveys, Hofstede, Hofstede, and Minkov (2010) created a measure of LTO using a factor analysis model that loads on three questions contained in the WVS.[17] The LTO

[16] To qualify for free or reduced price lunch, the family income has to be respectively below 185% and 130% of the federal income poverty. Provision 2 schools establish claiming percentages and serve all meals at no charge for a 4-year period. For details, see http://www.fns.usda.gov/school-meals/provisions-1-2-and-3. Categories for special education include mentally handicapped, orthopedically, speech, language, or visually impaired, deaf or hard of hearing. It also includes students with emotional or behavioral disabilities, with autistic spectrum disorder and other forms of serious disabilities (such as students with traumatic brain injuries).

[17] The variables included are: (1) Thrift as a desirable trait for children: percentage of people in a country choosing "thrift" as one of the answers to the question: "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five." (2) National pride: percentage of people in a country choosing "very proud" as answer to the question: "How proud are you to be -name

variable ranges from 0 to 100. In our data, it was rescaled between 0 (short-term orientation) and 1 (long-term orientation). Figure 1 shows the distribution of LTO around the world. In our sample, there is substantial heterogeneity: the country with lowest LTO is Puerto Rico (taking the value of 0), whereas the country with the highest score is South Korea (taking the value of 1). Most Asian and many European countries show high numbers, most African and Latin American countries belong to the lowest part of the distribution, and Canada and Northern European Countries tend to lie somewhere in between. However, even within geographical regions, there exists considerable variation in the LTO measure, and we carry out sensitivity checks in which we exclude portions of the world in order to ensure that we are not simply picking up effects of regional differences across parts of the world.

[Figure 1 here]

II. Evidence from Florida data

Before presenting our regression analysis, in Figure 2, we first plot raw correlation between our educational outcome of interest and LTO as measured in the country of origin in our sample of first-generation immigrants. For all the outcomes, we find that students from cultures that emphasize the importance of LTO have higher test scores, and show an improvement in educational performance over time and higher probability of graduating on time; immigrants and children of immigrants from long-term oriented cultures are also less likely to be retained in school, be absent from school, or have disciplinary problems. The figures also show that the relationship is not driven by a small number of countries.[18]

[Figure 2 here]

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of your nationality-?" (3) Importance of service to others (percentage of people in each country choosing "very important" as an answer to the following question: "For each of the following, indicate how important it is in your life—very important, rather important, not very important, or not at all important… service to others." We downloaded the actual variable from the website www.geerthofstede.nl "Six dimensions for website.xls (version 2015 12 08)" with the addition of the data "Nonofficial VSM08 scores" for Nepal and Sri Lanka, for which we take the value corresponding to "Sri Lanka-General population." Of these three questions, thrift has the highest load in the original factor analysis. In the empirical section, for robustness, we also construct a measure of LTO from the World Value Survey based only on "thrift." In addition, because the Hofstede measure of LTO is only one plausible measure of this variable, we employ multiple alternative measures in the robustness analysis later in the paper.

[18] For purposes of confidentiality, we only show data points for countries of origin/languages where we observe at least 50 individuals. The statistical analyses that follow include all data, including those from countries of origin/language-speakers with fewer than 50 observations. The results for the second-generation are very similar (Figure A1 in the On-line Appendix). In the Appendix, we also present, in Figure A2 and A3, the plots representing the relative weight of each country using the size of the circle to indicate the number of observations.

These differences could be driven by individual characteristics, school characteristics or systematic differences across countries of origin. Our empirical analysis takes care of all the above-mentioned concerns by estimating the following equation:

(1) $$Y_{icsgt} = \alpha LTO_c + \beta X_i + \theta X_{it} + \gamma_g + \delta_t + \mu_s + \mu_s \cdot \delta_t + \varepsilon_{icsgt}$$

where Y_{icsgt} is an outcome of interest for student *i* coming from country *c* (or speaking language *c*), going to school *s*, in grade g, during the academic year *t*, and LTO_c is LTO measured at the country level or by language spoken at home. X_i and X_{it} are time invariant and time variant individual controls including age and gender (X_i), FRPL eligibility, LEP and a dummy indicating whether the student has special educational needs (X_{it}). Our specification also includes grade fixed effects (γ_g), in the outcomes for which this is relevant, a full set of academic year fixed effects (δ_t), school dummies (μ_s), and all the non-linear interactions between school and academic year fixed effects ($\mu_s \cdot \delta_t$) to control for cohort specific differences in performance across different schools. The standard errors are adjusted for clustering at the country of origin or language level, respectively, for first and second-generation immigrants.

Table 2 reports the results for the pooled sample of first-generation and the extended version of second generation immigrants. The regressions include the full set of controls defined in Section I, together with year, school fixed effects and all their non-linear interactions, and grade fixed effects whenever applicable.[19] For both mathematics and reading, we report the test score results in levels, at grade 3 (the first time standardized tests are administered in Florida), in columns 1 and 3. Educational performance differences could correlate to differences in patterns and speed of assimilation across migrants from different countries of origin. Therefore, LTO could simply pick up in a systematic way some of these unobserved differences in initial conditions. To rule out this confounding effect, we also look at the change in performance in mathematics/reading from grade 3 until grade 8, after controlling for the initial score in grade 3 (columns 2 and 4).

[Table 2 here]

Coming from a long-term oriented country not only gives students an initial advantage when they first test in grade 3, it is also associated with strong growth over a long time horizon, as the performance of these students continues to improve compared to similar students with similar

[19] In the Appendix we report the results split by generation (Tables A5, A6 and A7). All the basic conclusions are confirmed when analyzing the data separately.

observable characteristics. The beta coefficients are slightly higher for mathematics (0.11 and 0.098 for the specifications in levels and changes, respectively) than for reading (0.07 and 0.086 for the specifications in levels and changes, respectively). To make sense of the magnitude of the effect, we compare it with the effect of maternal years of education. While we do not have this variable for the sample of first generation students, in the population of second-generation students for which the estimated relationship with LTO is similar, the difference in math performance between a child of a mother with a four-year college degree or more and a child of a high school dropout mother is 0.052 of a standard deviation.[20]

Columns 5-8 report the effect of LTO on other educational outcomes. The results show a strong statistically significant relationship between LTO and various measures of school outcomes: A one standard deviation increase in LTO is associated with 7 percent of a standard deviation reduction in disciplinary problems. When considering the dependent variables that are dichotomous, a one standard deviation increase in LTO is associated with a 4.5 percentage point reduction in grade retention, and a 1.9 percentage point increase in graduation, both large in relation to the 4.4 percent of students who are retained in any given year and the 22.4 percent who fail to graduate in the population.

Figure 3 presents binned scatter-plots of the mean of different educational outcomes versus the mean level of LTO. Consistently with our regression results, we do find a significantly strong relationship between LTO and educational outcomes of immigrants.

[Figure 3 here]

In the analysis presented so far, we could include only a limited number of family control characteristics. For the sample of second-generation immigrants (restricted and extended), we can also include the information about maternal characteristics contained in the birth certificates. In Table A8, we present the results only including the extended sample of second-generation immigrants for which we have controls for maternal education (we define dummies for high school completion, some years of college, and four or more years of college, the excluded group is high school dropout mothers), whether the mother had a teen pregnancy (a dummy for whether the mother was younger than 16 when she gave birth), a dummy for whether the mother was married

[20] We do not observe maternal education levels for foreign-born children, and therefore cannot control for or stratify by maternal education in the population of first generation students. However, we can do this for second-generation immigrants, and we report the results of these analyses in the Appendix, in Table A8.

at time of birth, the number of older siblings, the income in the zip code of birth measured in 1999, and all controls included together. The controls have all the expected sign. The maternal characteristic with the largest relationship is four years of maternal college degree: its coefficient of 0.385 indicates that a child of a mother with a college degree has a math score 40 percent higher than a child whose mother is a high school dropout. It is useful to compare this magnitude to the magnitude of the LTO coefficient. Moving from Puerto Rico's LTO (lowest) to South Korea's (the highest) is associated with a 73 percent increase in math scores. Another way to compare the economic significance of our results is to compare beta coefficients based on column 6 estimates. The beta coefficient of LTO for math score is equal to 0.10, similar in size to the beta coefficient of a four-year college degree dummy (0.12) and much larger than the beta coefficient of other maternal characteristics, such as teen pregnancy (-0.007), marital status (0.049), and the number of older siblings (-0.034). The LTO beta coefficient is also five times larger than the beta coefficient of the income in the zip code of residence at birth and substantially larger than the beta coefficient on FRPL eligibility (-0.069). Only the beta coefficients of enrollment in a LEP program (-0.26) and of whether the student has special education needs (-0.22) are substantially larger. In Table A9, we repeat our regressions on the other educational outcomes by including all maternal controls. The size and the significance of the coefficients on LTO are not affected by this inclusion.

III. Selection of immigrants

In this section, we look at various aspects of migrants' selection that could threat our identification or interpretation. The first concern is that the LTO measure could capture some omitted country of origin characteristics (Table 3). The first obvious candidate is the level of GDP per capita: if countries with higher LTO are also richer, a better performance of immigrants from these countries could be a reflection of differences in income (not fully captured by our free lunch control). Contrary to the argument above, our results show that immigrant students who come from a country with lower GDP per capita perform better than those from countries with higher GDP per capita, suggesting that selected students are more likely to come from poorer countries.

[Table 3]

Distance from the US could be another prominent determinant of differences in educational attainment: Perhaps immigrants coming from countries farther away from the United States have higher determination and perseverance. Higher distance could be also correlated to a higher amount of initial resources necessary to move to the US. Results in Table 3 show that this variable is not systematically related to educational outcomes.

Galor and Ozak (2016) show that a culture emphasizing the future relatively more than the present has a direct positive effect on savings rates. As a result, differences in educational performance could be related to differences in saving rates among immigrant groups and not directly related to differences in LTO, as higher savings may provide more resources for moving. Savings in the country of origin is positively correlated with educational outcomes (but significant for a subset of them) and does not affect the coefficient on LTO.

Although we directly control for maternal education in the regressions, two other aspects of differences in education are worth taking into account in our analysis. The first is a systematic difference in educational attainment between Florida immigrants from specific countries and their fellow citizen who did not migrate. If immigrants in Florida do not reflect a random sample of the population from which they came, LTO could be simply capturing the positive selection in the education of immigrants. To address this issue, we follow Feliciano (2005) and construct an index of selection based on a comparative measure of immigrants' and non-immigrants' educational attainment adjusted for age along all points of the education distribution.[21] For our purpose, the concern is that LTO may be capturing part of this selection, in case LTO is correlated with Feliciano's selectivity measure. Overall, this measure is correlated with educational attainment but its significance varies depending on outcomes, and it does not affect our main results.[22]

Quality of education in the country of origin, as reflected in reading and math scores, could be another important determinant of immigrants' educational performance. Higher quality of

[21] The higher this measure of selectivity, the more educated the immigrants are relative to the non-immigrant population in their home country. On the contrary, if immigrants are more often less educated than non-immigrants, the negative selection of immigrants will be reflected into a negative index. For example, an index of 0.15 indicates that an immigrant's educational attainment probabilistically will exceed that of a non-immigrants from the same country 15 percent more often than a non-immigrant's education will exceed the education of an immigrant from the same country. In our sample, the index of selectivity goes from a minimum of 0.10 (Mexico) to a maximum of 0.92 (Tanzania). China has an index of 0.62, very close to Argentina (0.60) whereas South Korea appears in the bottom part of the distribution (0.30).We describe the construction of this selection measure in detail in the Online Appendix.

[22] In the working paper version of this paper (Figlio et al. 2016) we show the robustness of the results to an alternative measure of immigrant selection constructed by Hanushek, Ruhose, and Woessmann (2017) and the results stay the same. In addition, we also report the relationship between LTO and each of the two measures of selection. LTO is uncorrelated with the Hanushek, Ruhose, and Woessmann (2017) measure of selection and even negatively correlated with the measure of educational selection based on Feliciano (2005). This result is reassuring as it helps us to rule out the possibility that long-term oriented countries send their brightest immigrants to the United States, and that this mechanical effect explains the observed relationship between LTO and educational performance.

education received by the parents may reflect later in higher achievement of the children as parents with higher quality of education could help their children doing homework more effectively. In the Online Appendix (Table A10) we control for the average math score in the country of origin constructed from PISA. The coefficient on LTO is still significant, despite the much smaller number of immigrant groups included in the regression due to the availability of the data from PISA.[23]

The point estimates reported so far may be biased due to unobservable factors that correlate with our education outcomes and LTO. How large would this selection on unobservables need to be relative to the selection on observables in order to attribute the entire OLS estimates previously reported to an unobservable selection effect? We use the approach suggested by Altonji, Elder, and Taber (2005) to assess the degree of omitted variables bias by studying the stability of the estimates for α. The Altonji, Elder, and Taber (2005) ratio (going from 2.18 to 8.55 and reported at the bottom of Table 3) suggests that selection on unobservables would have to be substantially stronger than selection on observables for our main result to be overturned. In one case, the coefficient is even negative suggesting that our OLS results are likely to be downward biased.

The second potential concern with our sample is that our results may be driven by some specific groups of immigrants, in particular Latin American students who are very numerous in Florida and whose LTO is, on average, in the bottom quartile. Similarly, Asian immigrants are in the upper tail of the distribution of LTO and considered a “model minority” for excelling in education. In Table A11, we test the robustness of our results to the exclusion of these groups of immigrants. In Panel A, we exclude the first and second-generation immigrants coming from Latin America and Central America. The results remain robust to the exclusion of this group. In addition, the magnitude of the beta coefficients remains similar (and are sometimes reduced) compared to the baseline specification of Table 2. Panel B shows that our results are also not driven by Asian

[23] Note that the lower coefficient on LTO obtained when we include the mathematics score from PISA is partially due to a sample selection. The effect of LTO to those individuals for whom the PISA math score is available is equal to 0.501 (without the inclusion of this variable) and 0.463 when this control is included. Note also that the PISA math score from the country of origin is not significant in the regressions. One potential reason is that this variable measures both institutions and beliefs in the country of origin and when included in a regression with the beliefs component, the variable captures only the institutional variation which should not be relevant for immigrants, since they live now in the US.

students. The beta coefficients, not surprisingly, are smaller when we exclude the top performers from our specification.[24]

Overall, examining Figure 1, it is apparent that there exists some geographical clustering in LTO by continent. Thus, we also check that our results do not reflect these differences by adding continent dummies to the whole sample. The estimates are also robust to this procedure (Panel C), with almost no difference in terms of magnitude. [25]

The third important aspect of selection is the possibility of within-country selection along LTO, more specifically that immigrants are systematically selected from the upper tail of the distribution of long-term oriented individuals in countries with higher LTO. Unfortunately, we cannot test directly for this hypothesis because in the FLDOE data we do not have a student-level individual measure of LTO.[26] We nevertheless test for this hypothesis by looking at data taken from the European Social Survey (ESS)[27] and we do not find any positive selection based on LTO. The analysis is described in details in Section A.4 of the Appendix.

IV. Alternative proxies for Long-Term Orientation, and other cultural variables

We perform two additional sets of robustness checks: the use of alternative proxies for LTO and the inclusion of additional cultural variables.

We first look at linguistic differences in the use of the future tense as a proxy for the relevance of future-oriented versus present oriented actions. Chen (2013) uses the fact that languages differ in the way in which they grammatically mark future events and test whether this difference has an effect on savings, health behavior, and retirement assets. His idea is that languages that grammatically separate the future and the present lead speakers to dissociate the future from the present. This would make the future feel more distant, therefore making future-oriented choices harder. On the other hand, if the language makes the present and the future

[24] We also test the robustness of our results to the exclusion of all gifted students to rule out the possibility that this group is driving our results and our results are very similar.
[25] For the first generation, the continent dummy is equal to one if the country belongs to a given continent, 0 otherwise. As for language, we adopted the following rule: a language is assigned to a given continent if among the sample of first generation immigrants who speak that language at least 50 percent come from that specific continent.
[26] It is important to note that since LTO is important for educational achievement, and since educational selection is negatively related to LTO, it is unlikely that this form of selection could be at play.
[27] The ESS is a biennial cross-sectional survey administered in a large sample of mostly European nations, containing information on individuals' social values, cultural norms and behavioral patterns. The survey has been conducted several times: in 2002/2003, 2004/2005, 2006/2007, 2008/2009, 2010/2011, 2012/2013. The survey contains information about the country of origin of immigrants, which allows us to construct measures of LTO by country of origin for immigrants and compare these measures to the LTO of the country of origin.

indistinguishable, its speakers will be more willing to take future-oriented actions, because they appear to be closer in time. As such, according to Chen's hypothesis, in our specification *Futureless language*s should be positively correlated to educational performance.

In Table A12, Panel A, we report the impact of speaking a futureless language on all our measures of educational performance: The similarity with our main results is remarkably strong, in terms of both magnitude and significance. One big advantage of matching directly on language is the possibility of including (at least for the first generation) country of origin fixed effects, further reducing the possibility that our results are driven by unobservable country of origin characteristics. Performing this very demanding test does not change the nature of our results: linguistic differences that proxy for a different weight to future and present choices are sufficient in explaining differences in educational performance (Table A12, Panel B).[28]

Galor and Ozak (2016) study the origins of the distribution of LTO across the world. They establish empirically that these differences can be traced back to geographical variations in the return to agricultural investment in pre-industrial societies: societies whose ancestors experienced a higher crop yield are characterized by higher LTO today. The authors test their hypothesis constructing a measure of the potential caloric yield per hectare for each country.

We use the measure constructed by Galor and Ozak (2016) and test its relevance for the determination of school performance.[29] Table A12, Panel C establishes a positive statistically and economically significant effect of crop yield on school performance. In particular, the OLS effects suggest that the magnitude of the beta coefficients is very similar to the magnitude of Hofstede's LTO measure (for example, the beta coefficients for math score and math change are 0.097 and

[28] One potential drawback of the futureless language measure is that the fraction of students speaking a futureless language in our sample is not very large (2 percent), given the large fraction of Spanish-speaking students (coded as zero). This implies that the relevant variation comes from a very small part of the sample. To limit this issue, in Figlio et al. (2016) we also run our regressions excluding from the sample Spanish-speaking countries from both the pooled sample and the first generation sample and the results do not change. Our identification comes from two sources: people coming from countries where multiple languages are spoken, but also people coming from a given country but reporting a different spoken language.

[29] We use the ancestry adjusted measure for the post-1500 CE period. Galor and Ozak (2016) find that this variable is constructed more precisely when the sample excludes the new world, which experienced a large amount of migration. Given the large fraction of migrants speaking Spanish and coming from the new world, where intercontinental migration and population replacement were very high, we limit our attention to the Old World sample. For further details about the construction of this measure, see Galor and Ozak (2016).

0.089).[30] Consistent with Galor and Ozak's (2016) theory, individuals whose ancestors experienced higher crop yields exhibit long-term oriented behavior.

In constructing the measure of LTO, Hofstede, Hofstede, and Minkov (2010) use the principal components of three questions, related to thrift, national pride, and service to others. Of these three questions, the importance to teach thrift to children has the highest load in the original factor analysis performed by Hofstede, Hofstede, and Minkov (2010). As a final robustness check, we also construct a measure of LTO from the World Value Survey only based on thrift as an important value to be transmitted to children, which is the variable most obviously related to delayed gratification. The results, reported in Panel D of Table A12, are very similar to the one obtained when we use the Hofstede measure of LTO.[31]

One concern with our analysis is that educational performance could correlate with other cultural traits. As an additional robustness check, we show that the inclusion of a large set of cultural values to our baseline specification does not alter our main results (Table A13). We start by looking at the importance of social capital, as proxied by the fraction of individuals in a country that believe that most people can be trusted.[32] A large literature shows evidence of a persistent correlation between trust and social capital and various economic outcomes (for a survey article, see Algan and Cahuc, 2014). Social capital could affect the educational performance of immigrants through various channels: individuals that are more trustworthy could trust more the educational system in the United States, take more advantage of it, which in turn could improve their educational performance. Also, Guiso, Sapienza, and Zingales (2016) show that in area of high civic and social capital, children have a higher self-efficacy beliefs which have been linked with better educational outcomes. Finally, social capital could relate to the educational performance of immigrants because of its correlation with teaching practices. Algan, Cahuc, and Shleifer (2013) show that horizontal teaching practices, such as working in groups, seem to promote the formation of social capital, while vertical teaching practices, such as teachers lecturing, seem to discourage

[30] We also run an instrumental variable regression that uses crop yields as an instrument for long-term orientation to see whether the component of LTO driven by long-lasting differences between countries also has a positive effect on test scores. The IV regressions show that the component of LTO driven by long-lasting differences between countries has an effect of all the educational outcomes.
[31] The number of observations is a bit lower than the ones reported in Table 2. Hofstede, Hofstede, and Minkov (2010) includes measures for LTO for Nepal and Sri-Lanka, two countries not present in the WVS.
[32] In the World Value Survey the respondents is asked whether "Generally speaking, would you say that most people can be trusted" (coded as 1), or that "you need to be very careful in dealing with people" (coded as 0).

it. This evidence may imply that migrants coming from countries whose teaching practices are more similar to the ones of the United States could perform better as learning is easier in a similar environment. However, with the exception of absenteeism, trust does not have a significant effect on educational performance. Moreover, its inclusion does not change the economic and statistical significance of the coefficient of LTO on educational performance.

In Table A13, the second trait we consider as a potential confounding factor is the emphasis given by different cultures to the importance of hard work. In his book, *The Protestant Ethic and the Spirit of Capitalism*, Max Weber (1905) argues that the Protestant ethic, which emphasized diligence and hard work, was an important factor for the economic success of Protestants in the early stages of European capitalism. Using the World Values Survey, we constructed a variable for each immigrant group (following our previous methodology) using the answer to the question "In the long run, hard work usually brings a better life" (taking the value of 10) and "Hard work doesn't generally bring success – it's more a matter of luck and connections" (taking value of 1) (a higher value is associated with the importance of hard work). The inclusion of this cultural trait in our baseline regression does not change our results; hard work is also never significantly related to our educational outcomes with the exception of the number of absent days.

Finally, in the bottom of Table A13, we test whether any of the other dimensions of culture studied by Hofstede, Hofstede, and Minkov (2010), including individualism versus collectivism, indulgence/restraint, hierarchy and inequality of power, femininity/masculinity and uncertainty avoidance appear to matter for educational outcomes. The results rule out the possibility that these other societal cultural characteristics are confounding factors in our analysis. Section A.2.2, in the Appendix, describes in details all the cultural variables.

V. Potential mechanisms driving the results: family and peers

So far, our analysis has assumed that LTO has similar effects for all individuals with a similar cultural background. However, the effect of LTO on educational outcomes could have heterogeneous effects, both in terms of family characteristics but also with respect to the interaction with peers of similar cultural background in the school where children study.

[Table 4 here]

We test for these two possibilities separately in Tables 4, 5A, and 5B. In Table 4, we include interaction terms between LTO and different family characteristics (including FRPL eligibility, number of older siblings, the zip code median income at birth and all maternal characteristics). We observe some heterogeneous estimated effects with the level of education of the mother. Mother's education, surprisingly, reduces the effect of LTO although in a non-linear way. A possible interpretation is that cultural values that emphasize effort are relatively more important in families with lower educational attainment. Alternatively, if the mother has less education, perhaps she is more likely to stay at home and socialize her children to her values. Finally, mother's own education can be a substitute for a strong set of cultural values. That is, mothers coming from cultures that do not value education but somehow managed to get an education themselves despite the cultural impediments could pass these skills or values on to their own children. Despite the negative effect on the interaction terms of the mother's educational dummies, the overall effect of LTO remains positive and significant, even when we include as regressors all the interactions in the same specification (Column 6). Table A14 finds similar results for all other educational outcomes.

The fraction of children speaking the same language in a given school may also play an important role in transmitting and preserving the importance of LTO: if cultural transmission is important, the larger the fraction of children speaking the same language in a school, the larger should be the effect of LTO on school performance. Note that this fraction depends on the extent to which a group tends to cluster in a school but also on how large a group speaking a given language is.

We calculate a proxy for cultural density as the proportion of children speaking a given language in each school for every academic year. For each language, the numerator is therefore given by the number of children speaking a given language in the school in a year, whereas the denominator is the number of all students in the school (including non-immigrants) in that year. Although the average fraction of students speaking a given language in a school is fairly low in our sample (lower than one percent), there is a substantial heterogeneity in our sample, with some languages reaching up to 38 percent in a given school/year. Languages with high percentages other than English, Spanish, and Haitian Creole, the three most commonly spoken languages in Florida, include French, Hebrew, Russian, Vietnamese, Chinese, Serbian, Arabic, and Portuguese.

We attach to each child speaking a given language, his/her own measure of cultural density by school and academic year. To limit the possibility that our results are biased by the languages spoken by a very large fraction of students and in order to capture sufficient variation, we drop from the sample students speaking Spanish, Haitian Creole, or English.[33]

[Table 5A here]

Tables 5A and 5B report the results for test scores and non-test outcomes respectively. Across all specifications, a higher fraction of children speaking the same language of the student is significantly negatively related to the student's educational attainment for almost all outcomes.[34] This is not surprising, given that speaking a language different than English can have some impediment on the learning process and a larger fraction of students speaking a foreign language can reduce a student's incentive to speak English. However, interestingly, the estimated interaction between LTO (based on the language spoken by the student) and the fraction of students speaking the same language in school is positive and significant. In addition, the full marginal effect of LTO remains positive and significant when evaluated at the mean of cultural density: a one standard deviation increase in LTO is associated, for example, with an 11.5 percent standard deviation increase in math level. The degree to which children cluster in the same school appears to be an important vehicle to explain the effect of LTO on educational outcomes.[35] This finding could be due to having culturally-similar people reinforcing one's culture, or it could be that people who settle in neighborhoods proximate to others with a similar culture feel their culture more strongly; in either case, this interaction points to a strong role of culture in explaining student educational outcomes.

[Table 5B here]

To investigate the mechanisms through which a culture of delayed gratification affect educational performance, we also study some additional outcomes. We begin by studying the probability of being enrolled in advanced classes in high school and, specifically, the probability of choosing advanced scientific classes. Both could be another manifestation of LTO attitudes.

[33] These observations are dropped only from the numerator (and the regressions), while they will be part of the denominator, which includes the total population of each school.

[34] It is interesting to note that the fraction of students speaking the same language in a school is significant only when the LTO variable is also included. When we run a regression only with the fraction of students speaking the same language as a control, this variable is only significant when the LHS variables are reading scores in grade 3, disciplinary incidents, and retention. In these three cases the cultural density variable has a negative effect on all three educational outcomes.

[35] When the left hand side variable is the change in scores between 3rd grade and 8th grade we interact LTO with our variable of cultural density either in 3rd grade (the first time the student was tested) or in 8th grade. The results are similar in the two specifications.

Advanced classes require hard work and perseverance today in exchange for future rewards, as measured for instance by access to better colleges which normally reward a more rigorous high school curriculum. In addition, scientific subjects, on average, give access to better paying jobs. Furthermore, we investigate possible ways in which parents with higher LTO may further contribute to their children's success by selecting better schools and successfully enrolling their children in a gifted program. We examine all these outcomes in Table 6A (school choice) and Table 6B (taking advanced courses and gifted program participation). [36]

[Table 6A here]

In the previous analysis, we provided evidence that students from cultures that value delayed gratification perform better than other students despite attending the same school. This evidence suggests that long term oriented children are socialized to exert higher effort. There is another potentially complementary channel that connects delayed gratification and academic success. Parents from long term oriented cultures may themselves exert higher effort in securing good education opportunities for their children by prioritizing their kids' education over other personal goals. We study this possibility next. Specifically, we examine whether children coming from long term oriented families also go to better schools, controlling for the district of residence. Starting in 1996 the Florida Department of Education required school districts to design an open enrollment plan that allows parents in every school district to choose among several options including magnet schools, schools-within-schools, alternative schools, year-round schools, dual enrollment, and controlled open enrollment schools. And, of course, families can always engage in "traditional school choice", that is, by choosing their school by selecting a residential location. We study whether parents with high LTO are more likely to either use Florida's school choice programs or otherwise choose neighborhoods served by better schools, as measured by the school quality reported by the Florida Department of Education beginning in 1999. In each district, parents have access to the schools' scores before enrollment. These school scores have 5 possible letter grades, from A to F, which we coded from worst (1) to best (5). Since a school's letter scores change frequently and it is unlikely that parents re-optimize every year, in columns 1-3 of Table 6A, we regress the state-determined quality of the school chosen the first time the student enters the public school system (in kindergarten or pre-kindergarten) – the time when school choice is

[36] The definition of these variables is given in Section I.

most relevant -- on LTO. In columns 4-6, we also repeat the analysis by regressing the school score in any grade on LTO.[37] The results are very similar in terms of magnitude and significance: Families coming from long term oriented societies actively choose better schools within their school district.

We then look at whether there is a direct link between LTO and being enrolled in advanced placement or equivalent classes in high school and whether this correlation also exists for advanced placement classes in scientific subjects (columns 1-2 of Table 6B). We include our standard controls but also add performance in mathematics at grade 8. The effect is statistically and economically significant: LTO has a large estimated effect for both outcomes (the beta coefficients are equal to 0.09 and 0.10 respectively).

[Table 6B here]

The school choice results point toward a pattern in which families from high LTO backgrounds take active steps to secure good outcomes for their children. There exists one outcome in the administrative data that is especially conducive to studying the likely role of direct parental involvement in school decisions – whether a student is enrolled in a school's gifted program. Though there are differences across school districts in the implementation of gifted programs, the state of Florida mandates that each district is responsible for providing an appropriate program that serves all exceptional students and the State Board of Education provides oversight over district plans. By fourth and fifth grade, most elementary schools in Florida offer separate full-time instruction for gifted students. To qualify for being included in gifted instruction, students have two routes. The first way is to submit an IQ test above the state cutoffs. Students could be tested by either a district psychologist or by a private psychologist and submit the results to the school. Students with IQs above the relevant threshold are eligible for gifted status, with the final determination made in consultation between parents, teachers, and the school's Exceptional Student Education (ESE) specialist. This process often begins when school officials suggest that a student be evaluated for gifted IQ status. Alternatively, seats in the gifted classrooms are filled by

[37] For each school choice (the first time they enter the school system either in Kindergarten or pre-Kindergarten) or all grades, we report three different specification, one including district fixed effects, one including zip code at birth fixed effect and one including both. The different specifications allow to control for the locational choice of the family at different time periods.

non-gifted students -- known as high achievers -- who scored highest among their school/grade cohort in statewide achievement tests in the previous year.

While we do not have information on external tests, we have a mechanism for testing the degree to which immigrant students ultimately receive gifted instruction. Our approach is as follows: We look at the set of students who were *not yet* classified as gifted in third grade, before the first statewide assessment, but then who received the highest performance (level 5) rating on either mathematics or reading and either a level 4 or 5 on the other test, and then see whether, conditional on being in this rarefied group of exceptionally high achievers, the student is enrolled in the gifted program in the following year. Because gifted education assignment requires significant action by both parents and school officials, it is reasonable to interpret new gifted enrollment following an exceptionally high initial test performance as evidence of active parental intervention on behalf of the child's education. We find that children coming from long term oriented cultures are more likely to be enrolled in a gifted program and the effect is again sizeable (a beta coefficient of 0.06).

The results presented in Tables 6A and 6B are important for several reasons. First, they confirm that parents from countries with a long-term oriented culture appear to care relatively more about education and, despite the cultural barriers that a foreign school system poses to immigrant families, they are determined to use the rules of the system to secure better educational opportunities for their children. Indeed, part of the higher educational achievement of immigrants coming from countries with high LTO may be the result of a direct intervention of parents selecting better schools and advocating for the inclusion of their children in gifted programs. While our previous analysis suggests that students encultured to delay gratification, are more likely to achieve success independently from the quality of the school, this new evidence, together with the one presented on the importance of having students speaking the same language attending the same school, is consistent with models of cultural transmission emphasizing the relevance of social learning (Boyd, Richerson, and Henrich 2011): children are more likely to internalize the value transmitted by their parents if people around them behave in a similar way.

VI. Relative performance of immigrants and natives

We now compare the performance of immigrants with the one of natives to see whether their cultural beliefs constitute an advantage or disadvantage in the new country.[38] To perform this exercise, we keep in the sample only students who are observed continuously in our panel from grade 3 to grade 8, we then first collapse math and reading scores by country of origin (or language spoken at home) and then by immigrant group (first and second-generation).

In Figure 4, we report the performance of natives, first, and second-generation immigrants from grade 3 to grade 8. Not only immigrants start at a higher level compared to natives but their performance also continues to increase over time, whereas the performance of natives stays flat. Given the observed racial difference in educational performance in the United States, in the same figure we also report test scores for native whites only. Although the scores of white students are higher in level when compared to the overall sample, immigrants tend to out-perform white natives over time in both mathematics and reading.[39] Once again, the performance of white natives is flat over time. In comparing the first and the second-generation, it appears that the second-generation tends to be closer to the natives. This result is not surprising as these children are born and raised in the US and, therefore, they are less isolated from the dominant culture. However, it is important to note that second-generation immigrants in our sample are not the children of the first generation and the differences between first and second generation immigrants in our sample could simply be due to differences in the cohort of migration.

[Figure 4 here]

Since part of the immigrants' school performance could be driven by school quality, to gain further understanding of the differences between immigrants and natives, we also compare the three groups in the highest-rated schools (those receiving a score of A). Schools definitely have a strong relationship with educational performance (the scores are higher for the three groups compared to the averages in the overall sample) but the differential patterns between the three groups remain the same. This is an important result. It suggests that immigrants outperform natives, even holding constant the school institutional environment (Figure A4 in the Online Appendix), and it is consistent with Chetty and Hendren's (2015) finding that local conditions matter less for immigrants.

[38] While the regression analysis contains only data of immigrant students, for pure comparison, this is the only section of the paper in which we use data of native students.
[39] White natives have slightly higher scores in reading only in grade 3.

Figure 4 shows an immigrant advantage in the US but does not say anything on whether LTO could be related to it. In Figure 5 we plot the performance in mathematics and reading by LTO quartiles and for white natives. Note that the LTO for the United States is 0.26, close to the lowest quartile of our immigrants' distribution. [40] We find a remarkably monotonic effect of LTO on math and reading scores: only immigrants with LTO lower than the natives perform worse in both mathematics and reading.

[Figure 5 here]

VII. External validity from the Program for International Student Assessment (PISA)

For external validity, we replicate the results using student-level data from the Program for International Student Assessment (PISA), an internationally standardized assessment conducted by the Organization of Economic Cooperation and Development (OECD) and administered to 15-year old students every three years since 2000. We use the 2003, 2006, 2009 and 2012 waves which contain information about countries of origin of the students and their parents. This dataset does not contain repeated years for the same students but has several other advantages. First, unlike FLDOE, it contains the country of origin of the mother and the father of each student. Second, it covers immigrant students in 37 different countries. Third, PISA assesses a range of relevant skills in three main domains: mathematics, reading, and science. It also provides information on retention and truancy.[41] Overall, we are able to provide external validity for most of the outcomes present in the FLDOE dataset, the only exception being the changes in mathematics and reading scores over time, which cannot be calculated due to the cross-sectional nature of PISA.

We find that the basic correlation between LTO and educational performance is very similar, in sign and magnitude, to the one observed among immigrants in Florida (Figures A8 and A9). The results are confirmed when we run individual level regressions for first and second-generation immigrants (Tables A18-A20 and Figures A10 and A11).

VIII. Conclusions

This paper explores the role of teaching delayed gratification and long term orientation on educational attainment and outcomes. It establishes that, controlling for the quality of schools and individual characteristics, immigrant students from countries with long-term oriented attitudes

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[40] LTO for the bottom 25^{th} percentile is 0.21.

[41] Details on the description of the variables and empirical analysis are provided in the Appendix, Sections A.2.4. and A.5.

perform better in school than immigrants from countries that do not emphasize the importance of delayed gratification. Coming from a long-term oriented country not only gives students an initial advantage when they first test in grade 3 in both math and reading, it also has an additional strong effect over time, as the performance of these students continues to improve relatively to students coming from less long-term oriented cultures. In addition, students from long-term oriented cultures have fewer absences, fewer disciplinary incidents, are less likely to repeat the same grade and are more likely to graduate from high school in four years. Finally, they are more likely to enroll in advanced level classes while in high school and to be more likely to select, among these, scientific subjects.

Parental intervention appears to be an important channel of cultural transmission: We find that parents are more likely to choose highly ranked schools and to advocate for inclusion in gifted programs, controlling for students' achievement level. At the same time, we also find that the composition of the school, in particular the fraction of children speaking the same language, magnifies the effect of LTO on educational performance. Both results are consistent with the idea that social learning (Boyd, Richerson, and Henrich 2011) is an important channel of cultural transmission: children are more likely to internalize the value transmitted by their parents if people around them (family and peers) behave in a similar way.

Our results also show that, independently from formal institutions (schools and neighborhoods), both first and second-generation immigrants from countries with longer term oriented attitudes than the US perform substantially better than native US (white) students. We validate these findings outside the US using educational performance of a sample of student immigrants in 37 different countries (PISA) and find a remarkable economic and statistical similarity in the results.

These results shed light on the remarkable persistence found in the educational literature. Besides income, wealth, and education, parents transmit cultural traits to their children. If LTO is an important trait to explain educational outcomes, disentangling its independent effect on educational outcomes is important for policy implications. Our findings can partially explain why the exogenous effect of a sudden shock to income, albeit significant, has a relatively small economic impact on future generations, especially if compared with the limited mobility across generations. Similarly, this analysis may also shed light on why, despite the importance of socioeconomic background for students' achievement, a substantial exogenous shock to wealth has limited or no effect on future generations. Bleakley and Ferrie (2016) find indeed that the children and grandchildren of winners of the 1832 Cherokee Land Lottery did not experience better educational outcomes than non-winners, suggesting that wealth shocks alone are insufficient to have persistent effects in the formation of human capital of future generations. More importantly, it suggests that part of the correlation that we observe across generations in educational achievement is driven by some other shared family characteristics different from wealth that are transmitted along family lines. In this paper, we have shown evidence consistent with the transmission of LTO values as a driver of better educational attainment.

Beyond finding evidence consistent with parental transmission of values, our results suggest that other channels of cultural transmission affect educational attainment, consistently with Algan, Cahuc, and Shleifer (2013). Our findings that the impact of LTO on individual students also depends on school composition could also explain why observed school quality does not fully account for the differences across schools in the number of high-achieving students (Ellison and Swanson 2016), suggesting that the school's cultural composition may potentially play an important role on each student performance. The full impact of schools' cultural composition on the educational performance of the overall student body is left for future research.

Although long-term orientation is associated with better performance in school, little is known on whether the strong parental encouragement to forego current happiness for future benefits, is associated with increased rates of anxiety and depression among children, either in their youth or at older ages. Some recent evidence (Hsin and Xie, 2014) highlight the potential psychological and social costs associated with Asian-Americans (a group displaying high values of long-term orientation) achievement success. A more comprehensive analysis of these psychological costs is left for future research.

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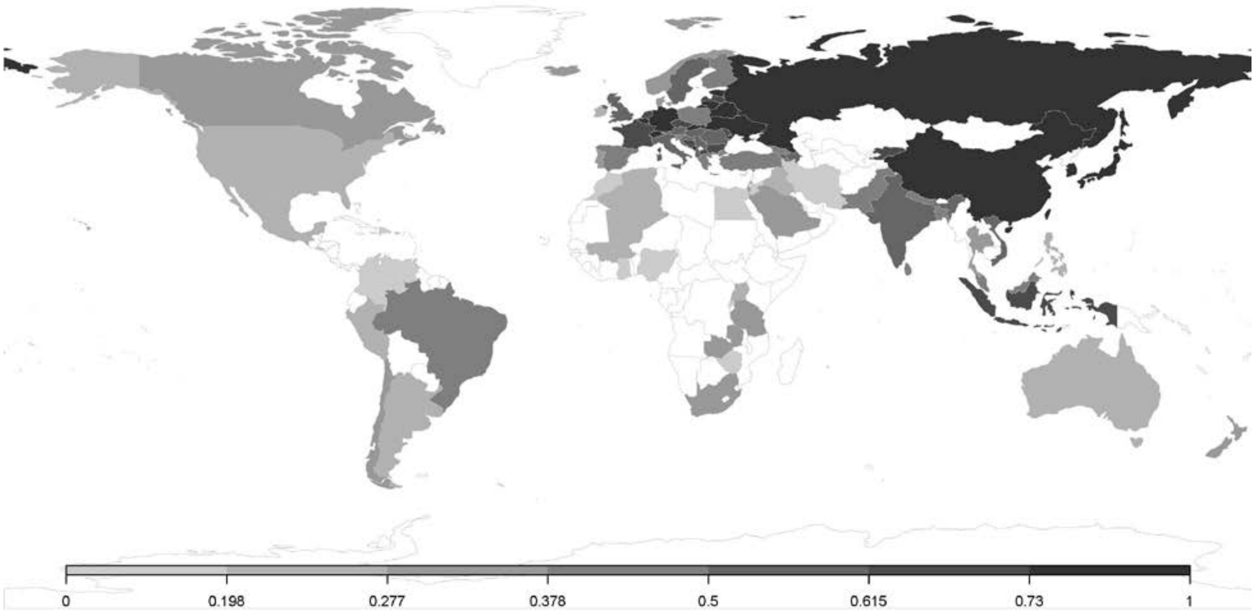
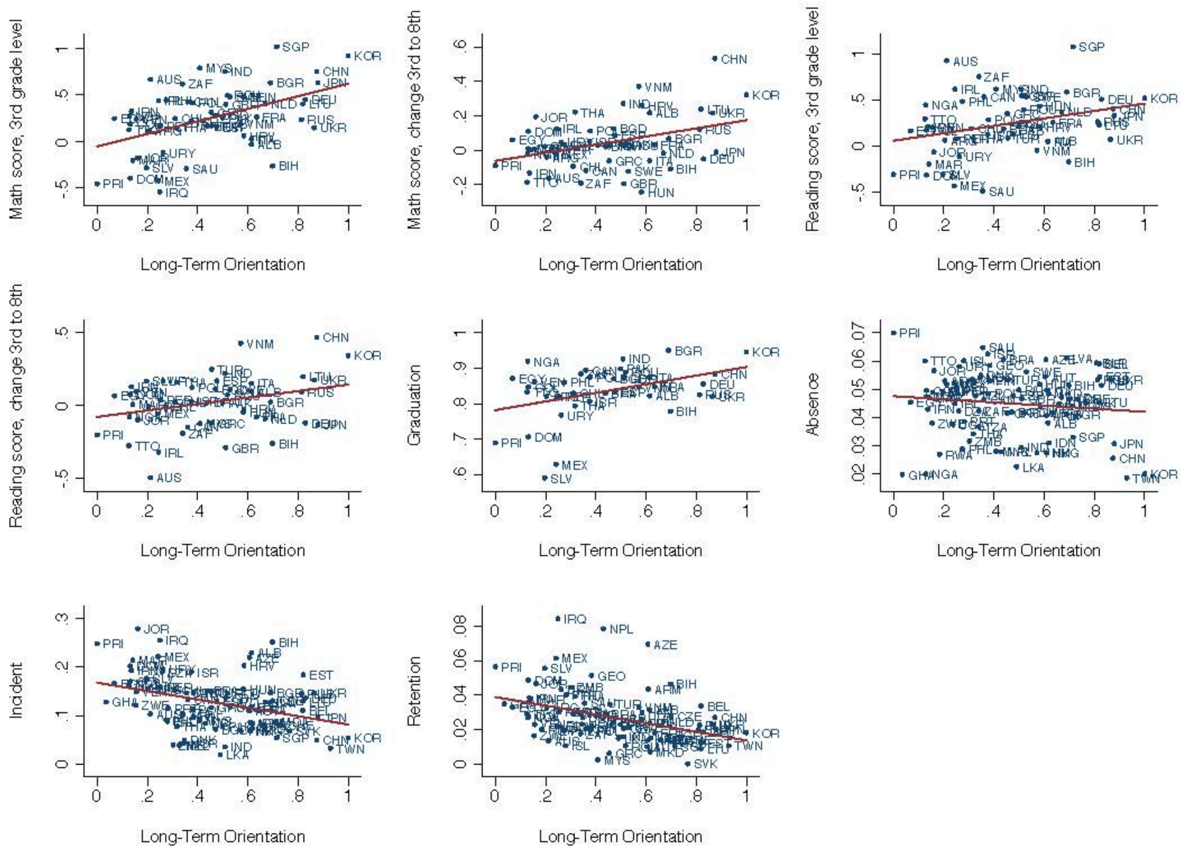
Figure 1
Long-Term Orientation



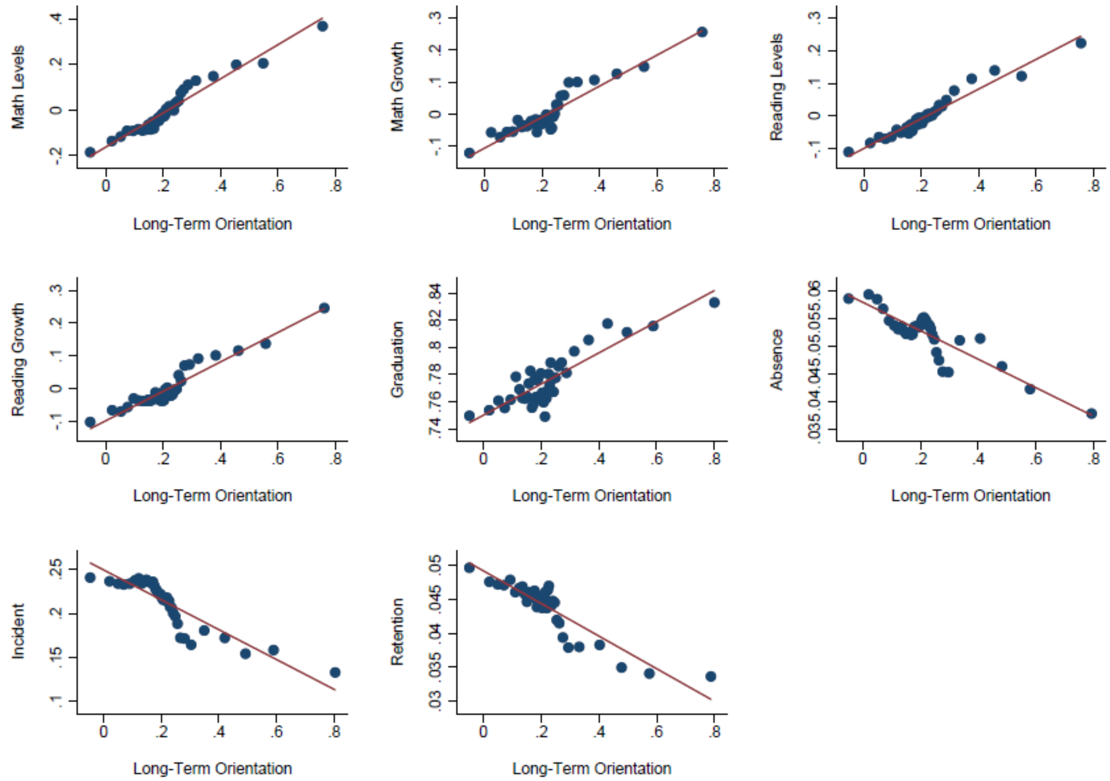
Note: Hofstede et al. (2010) LTO measure rescaled between 0 (short-term orientation) and 1 (long-term orientation). White areas indicate missing values.

Figure 2
Long-Term Orientation and educational outcomes, raw correlation, FLDOE
First generation immigrants



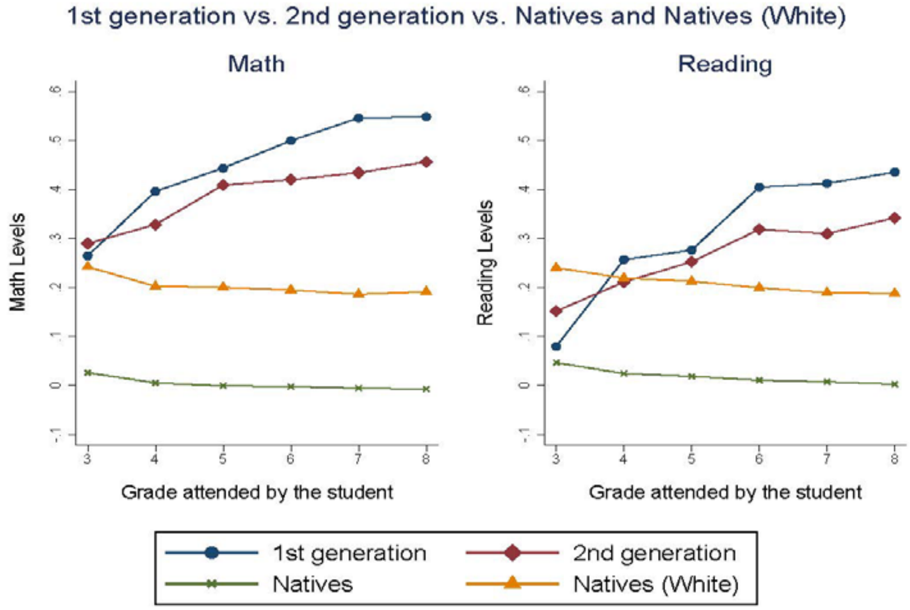
Note: Plots of various educational outcomes averaged by first-generation immigrants groups and LTO. Each educational outcome is described in Section 1.1.1. For purposes of confidentiality, we only show data points for immigrants groups where we observe at least 50 individuals.

Figure 3
Long-Term Orientation and educational outcomes, bin-scatters, FLDOE
First and second generation immigrants (extended definition)



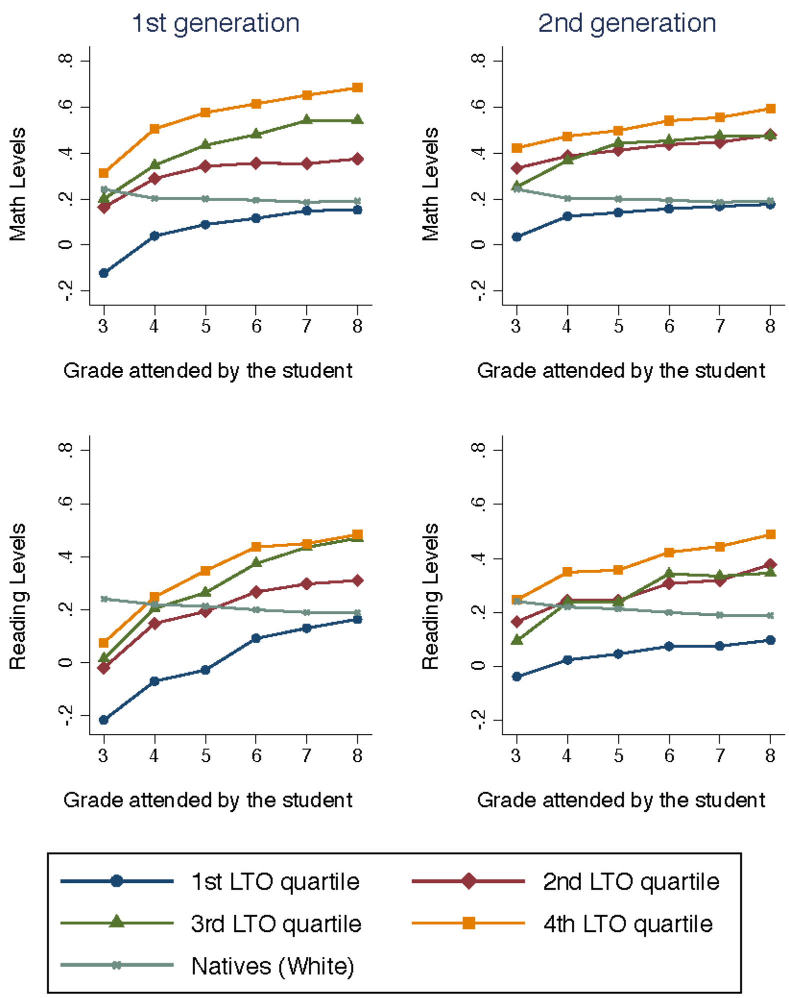
Note: Binned scatter-plots of the mean of different educational outcomes, described in Section 1.1.1, for the pooled sample of first- and second- generation immigrants (extended definition) versus the mean level of LTO. To construct this figure, we divided the horizontal axis into 40 equal-sized (percentile) bins and plotted a given mean education outcome versus the mean level of LTO in each bin. Some bins are larger than others, due to the fact that several countries have a share of the immigrant population that is over 2.5 percent.

Figure 4
Long-Term Orientation and educational outcomes, FLDOE
Native, First and Second Generation immigrants



Note: Sub-sample of native, first-generation, and second-generation students observed in the data continuously from grade 3 to grade 8. For each group (natives, natives-white, first-generation, and second-generation), math and reading scores are first averaged by grade and by country of origin (natives, natives-white, first-generation) or by grade and language spoken at home (second-generation). Then, for first and second-generation students, data are averaged again, so each subgroup of immigrants is weighted equally.

Figure 5
Long-Term Orientation and educational outcomes, FLDOE
by Long-Term Orientation quartiles



Note: Sub-sample of native-white, first-generation, and second-generation students observed in the data continuously from grade 3 to grade 8. For each group (natives-white, first-generation, and second-generation), math and reading scores are first averaged by grade and by country of origin (natives-white and first-generation) or by grade and language spoken at home (second-generation). Then, for first and second-generation students, data are averaged again by LTO quartile, so each subgroup of immigrants is weighted equally.

Table 1
Descriptive statistics, Florida Department of Education Dataset
First and second generation immigrants (extended definition) pooled

	Observations	Mean	Standard deviation
Long-Term Orientation*	2,891,677	0.219	0.160
Math score, 3rd grade	375,034	0.000	1.000
Math score, change 3rd to 8th	135,100	0.000	0.778
Reading score, 3rd grade	374,958	0.000	1.000
Reading score, change 3rd to 8th	134,475	0.000	0.828
Graduation	81,197	0.776	0.417
% Absent Days	2,891,677	0.052	0.071
Disciplinary Incident	1,614,982	0.212	0.409
Retention	2,350,953	0.044	0.205
Male*	2,891,677	0.511	0.500
Age in months*	2,891,677	144.148	31.135
Special education*	2,891,677	0.127	0.333
Free or Reduced Priced Lunch*	2,891,677	0.684	0.465
Enrolled in Limited English proficiency program*	2,891,677	0.203	0.402
Enrolled in Limited English proficiency program in grade 3	135,100	0.259	0.438
Log GDP pc year 2000 ppp*	2,813,769	3.138	0.504
Distance from the US (log)*	2,813,769	8.274	0.467
Savings over GDP/100*	2,813,769	0.211	0.052
Education selection to Florida (Feliciano)*	2,813,769	0.432	0.186
Mother high school graduate**	184,331	0.340	0.474
Mother attended some college**	184,331	0.173	0.378
Mother 4yr college graduate**	184,331	0.136	0.342
Mother teen pregnancy**	184,331	0.010	0.099
Mother married at time of birth**	184,331	0.630	0.483
Number of older siblings**	184,331	1.050	1.221
Median income in zipcode of birth (100,000 of $)**	184,331	0.422	0.138
Fraction speaking the same language (log)*	384,139	-0.709	1.255
Fraction of advanced classes	512,070	0.058	0.145
Fraction of advanced classes (scientific subjects)	512,070	0.013	0.054
Math score, 8th grade	512,070	0.042	0.982
School Letter Score (from A to F) at t-1, (pre-) kindergarten	241,492	4.097	1.000
School Letter Score (from A to F) at t-1, all grades	3,478,527	4.125	1.013
Gifted in grade 4	26,308	0.112	0.316

Notes. The table reports sample statistics for the FLDOE sample of 1st and 2nd generation immigrants (extended definition), and country of origin-level controls. All the variables, as well as the definitions of first and second generation immigrants are described in details in the text and the Online Appendix. The statistics marked with one star (*) are calculated based on the sample used to run the regressions with the dependent variable “% Absent Days” (i.e., the specification where the largest sample is used). The statistics marked with two stars (**) are calculated based on the sample of second generation immigrants (extended definition), as this information is available only for that sample. The statistics for the variable “Enrolled in Limited English proficiency in grade 3” are calculated based on the sample used to run the regression on the variable “Math score, change 3rd to 8th”.

Table 2
Long-Term Orientation and educational performance, FLDOE
First and second generation immigrants (extended definition) pooled

VARIABLES	(1) Math score, 3rd grade	(2) Math score, change 3rd to 8th	(3) Reading score, 3rd grade	(4) Reading score, change 3rd to 8th	(5) Graduation	(6) % Absent Days	(7) Incident	(8) Retention
Long-Term Orientation	**0.747*** **	**0.485*** **	**0.455*** **	**0.451*** **	**0.115*** **	**-0.026*** **	**-0.170*** **	**-0.024*** **
	(0.102)	**(0.100)**	**(0.054)**	**(0.093)**	**(0.019)**	**(0.007)**	**(0.031)**	**(0.004)**
Male	0.132***	-0.017***	-0.059***	-0.046***	-0.040***	-0.001***	0.094***	0.013***
	(0.014)	(0.006)	(0.010)	(0.006)	(0.003)	(0.000)	(0.003)	(0.001)
Age in months	-0.010***	-0.018***	-0.012***	-0.013***	-0.006***	0.001***	0.006***	-0.000***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Free-or-reduced price	-0.233***	-0.068***	-0.242***	-0.105***	-0.010	0.001	0.053***	0.009***
lunch eligible	(0.011)	(0.010)	(0.008)	(0.011)	(0.006)	(0.002)	(0.005)	(0.001)
Special education	-0.669***	-0.294***	-0.738***	-0.278***	-0.193***	0.008***	0.046***	0.034***
	(0.016)	(0.015)	(0.017)	(0.037)	(0.007)	(0.000)	(0.004)	(0.002)
Limited English proficient	-0.623***		-0.736***		-0.349***	0.006***	0.009	0.043***
	(0.010)		(0.020)		(0.017)	(0.001)	(0.010)	(0.003)
LEP in grade 3		0.081***		0.015				
		(0.022)		(0.032)				
Math score, 3rd grade		-0.371***						
		(0.009)						
Reading score, 3rd grade				-0.433***				
				(0.013)				
Observations	375,034	135,100	374,958	134,475	81,197	2,891,677	1,614,982	2,350,953
R-squared	0.340	0.304	0.352	0.295	0.338	0.189	0.122	0.086
Year*school FE	YES	YES	YES	YES	YES	YES	YES	YES
Grade FE	-	-	-	-	-	YES	YES	YES
Dependent Variable (mean)	0.000	0.000	0.000	0.000	0.776	0.052	0.212	0.044
Dependent Variable (sd)	1.000	0.778	1.000	0.828	0.417	0.071	0.409	0.205
Long-Term Orientation (mean)	0.218	0.220	0.218	0.220	0.224	0.219	0.221	0.218
Long-Term Orientation (sd)	0.155	0.158	0.155	0.158	0.164	0.160	0.162	0.158

Long-Term Orientation (beta)	0.116	0.098	0.070	0.086	0.045	-0.058	-0.067	-0.019
Number of clusters	94	89	94	89	92	96	96	96

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample includes the pooled sample of first generation (defined using both the information on the country of origin and the language spoken at home) and second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. The dependent variables measure students' Florida Comprehensive Assessment Test math score in grade 3 (standardized with mean 0 and variance 1), the change in math score from grade 3 to grade 8, reading score in grade 3 (standardized with mean 0 and variance 1), change in reading score from grade 3 to grade 8, 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), absence rates (the percentage of days in which the student is absent during the academic year), disciplinary incidents (a dummy for whether the student was involved in a disciplinary incident, defined as serious offences often leading to suspension), and retention (an indicator for whether the student repeats the same grade at least once). Individual controls are: age in months, a male dummy, an indicator variable for free or reduced free lunch eligibility, a dummy indicating if the student is enrolled in a limited English proficiency program and indicator for special education needs. Columns 2 and 4 also control for the math score and reading score in grade 3, respectively. The ''Long Term Orientation'' variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. We describe in details all the variables in the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 3

Long-Term Orientation and educational outcomes, controlling for other country of origin characteristics, FLDOE: First and second generation immigrants (extended definition)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	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
Long-Term Orientation	**0.670*****	**0.468*****	**0.430*****	**0.436*****	**0.106*****	**-0.035*****	**-0.132*****	**-0.020*****
	(0.112)	**(0.081)**	**(0.084)**	**(0.095)**	**(0.025)**	**(0.008)**	**(0.031)**	**(0.005)**
Log GDP pc year 2000 ppp,	-0.067***	-0.088***	-0.007	-0.079***	-0.001	0.010***	0.025***	0.001
country of origin	(0.024)	(0.023)	(0.017)	(0.028)	(0.005)	(0.002)	(0.006)	(0.001)
Distance from country of origin	0.048	-0.000	0.012	-0.001	-0.004	0.008**	-0.024	-0.002
(log)	(0.059)	(0.024)	(0.044)	(0.030)	(0.007)	(0.004)	(0.019)	(0.002)
Savings over GDP/100 (2000)	0.651**	0.474*	0.280	0.301	0.028	0.021	-0.175*	-0.012
	(0.314)	(0.254)	(0.209)	(0.412)	(0.052)	(0.020)	(0.092)	(0.021)
Education selection to Florida	0.077	0.032	0.197***	0.084	0.093***	0.005	0.044	-0.015***
wrt to country of origin	(0.084)	(0.060)	(0.061)	(0.107)	(0.019)	(0.007)	(0.034)	(0.005)
Observations	364,147	131,125	364,079	130,516	79,075	2,813,769	1,572,767	2,287,683
R-squared	0.343	0.310	0.353	0.301	0.339	0.194	0.124	0.087
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	0.773	0.053	0.213	0.044
Dependent Variable (sd)	1.000	0.779	1.000	0.830	0.419	0.071	0.409	0.206
Long-Term Orientation (mean)	0.209	0.211	0.209	0.211	0.217	0.212	0.213	0.211
Long-Term Orientation (sd)	0.144	0.147	0.144	0.147	0.156	0.150	0.153	0.149
Long-Term Orientation (beta)	0.096	0.088	0.062	0.077	0.040	-0.075	-0.050	-0.014
Altonji ratio	3.525	4.390	5.422	4.408	8.550	-5.041	2.181	2.968
Number of clusters	146	139	146	139	140	148	145	147

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample includes the pooled sample of first generation (defined using both the information on the country of origin and the language spoken at home) and second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. The dependent variables include: students' Florida Comprehensive Assessment Test math and reading score in grade 3 (standardized with mean 0 and variance 1), the change in math and reading score from grade 3 to grade 8, 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), absence rates (the percentage of days in which the student is absent during the academic year) and retention (an indicator for whether the student repeats the same grade at least once) measured in grades 3-12, and disciplinary incidents (a dummy for whether the student was involved in a disciplinary incident defined as serious offences often leading to suspension) measured in grades 6-12. All the regressions include the same individual controls described in Table 2 (coefficients not reported). The country controls are described in the appendix. The ‘‘Long Term Orientation’’ variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. The additional country-controls and all the remaining variables are described in the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 4

Long-Term Orientation and educational performance, heterogeneity in family characteristics, FLDOE: Second generation immigrants, extended definition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES				Math score, 3rd grade			
Long-Term Orientation (LTO)	**0.891*** **	**0.699*** **	**0.637*** **	**0.696*** **	**0.752*** **	**0.666*** **	**0.818*** **
	(0.147)	**(0.124)**	**(0.171)**	**(0.124)**	**(0.211)**	**(0.106)**	**(0.202)**
Mother high school graduate*LTO	-0.173*						-0.209**
	(0.093)						(0.087)
Mother attended some college*LTO	-0.319***						-0.358***
	(0.106)						(0.093)
Mother 4yr college graduate*LTO	-0.224**						-0.268***
	(0.108)						(0.099)
Mother teen pregnancy*LTO		-0.534					-0.679**
		(0.329)					(0.341)
Mother married at time of birth*LTO			0.074				0.145*
			(0.110)				(0.081)
Number of older siblings*LTO				0.001			-0.020
				(0.025)			(0.023)
Median income in zipcode of birth (100,000 of $)*LTO					-0.113		-0.022
					(0.277)		(0.204)
Free or Reduced Priced Lunch*LTO						0.068	0.039
						(0.092)	(0.073)
Mother high school graduate	0.116***	0.083***	0.083***	0.083***	0.083***	0.083***	0.122***
	(0.028)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.027)
Mother attended some college	0.232***	0.170***	0.170***	0.170***	0.170***	0.170***	0.240***
	(0.023)	(0.019)	(0.020)	(0.020)	(0.020)	(0.019)	(0.020)
Mother 4yr college graduate	0.381***	0.337***	0.337***	0.337***	0.337***	0.338***	0.390***
	(0.021)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.017)
Mother teen pregnancy	-0.065***	0.020	-0.071***	-0.070***	-0.070***	-0.069***	0.048
	(0.023)	(0.058)	(0.024)	(0.024)	(0.024)	(0.024)	(0.057)
Mother married at time of birth	0.101***	0.102***	0.088***	0.102***	0.102***	0.102***	0.074***
	(0.007)	(0.007)	(0.019)	(0.007)	(0.007)	(0.007)	(0.014)
Number of older siblings	-0.027***	-0.028***	-0.028***	-0.028***	-0.028***	-0.028***	-0.024***

	(0.004)	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.007)
Median income in zipcode of birth (100,000 of $)	0.172***	0.173***	0.172***	0.173***	0.198***	0.173***	0.177***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.062)	(0.026)	(0.048)
Free or Reduced Priced Lunch	-0.155***	-0.154***	-0.154***	-0.154***	-0.154***	-0.169***	-0.163***
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.017)	(0.014)
Observations	184,331	184,331	184,331	184,331	184,331	184,331	184,331
R-squared	0.368	0.368	0.368	0.368	0.368	0.368	0.369
Year*school FE	YES	YES	YES	YES	YES	YES	YES
Individual controls	YES	YES	YES	YES	YES	YES	YES
Dependent Variable (mean)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dependent Variable (sd)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Long-Term Orientation (mean)	0.207	0.207	0.207	0.207	0.207	0.207	0.207
Long-Term Orientation (sd)	0.143	0.143	0.143	0.143	0.143	0.143	0.143
Long-Term Orientation (beta)	0.127	0.100	0.091	0.100	0.108	0.095	0.117
Number of clusters	90	90	90	90	90	90	90

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample includes second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. See details in the text and the appendix for how the matching between language and countries has been implemented. See details in the text and the appendix for how the matching between languages and countries has been implemented. The dependent variable measure students' Florida Comprehensive Assessment Test math score in grade 3 (standardized with mean 0 and variance 1). All the regressions include the same individual controls described in Table 2 (coefficients not reported). Maternal controls include education dummies (high school, some college and college graduate; the excluded group is college drop-out), whether the mother was younger than 16 when she gave birth, the mother's marital status at time of birth, the number of older siblings, and the median income in the zip code of the place of residence at time of birth (measured in 1999). The ''Long Term Orientation'' variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. We describe in details all the variables in the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 5A
Long-Term Orientation and school composition,
First and second generation (extended definition) immigrants: Test Scores

VARIABLES	(1) Math score, 3rd grade	(2) Math score, change 3rd to 8th	(3)	(4) Reading score, 3rd grade	(5) Reading score, change 3rd to 8th	(6)
Long-Term Orientation (LTO), based on language	**0.662***** **(0.197)**	**0.478***** **(0.132)**	**0.522***** **(0.161)**	**0.378**** **(0.147)**	**0.490***** **(0.128)**	**0.509***** **(0.161)**
Fraction speaking the same language (log)*LTO	0.169*** (0.057)		0.159** (0.064)	0.070 (0.046)		0.133 (0.081)
Fraction speaking the same language (log)	-0.101*** (0.028)		-0.088*** (0.031)	-0.063*** (0.019)		-0.071* (0.037)
Fraction speaking the same language (log) in grade 3*LTO		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)	
Observations	47,992	17,945	17,945	47,963	17,876	17,876
R-squared	0.453	0.458	0.458	0.460	0.451	0.451
Year*school FE	YES	YES	YES	YES	YES	YES
Grade FE	-	-	-	-	-	-
Individual controls						
Dependent Variable (mean)	0.000	0.000	0.000	0.000	0.000	0.000
Dependent Variable (sd)	1.000	0.766	0.766	1.000	0.840	0.840
Long-Term Orientation (mean)	0.528	0.531	0.531	0.528	0.532	0.532
Long-Term Orientation (sd)	0.204	0.204	0.204	0.204	0.204	0.204
Long-Term Orientation (beta)	0.135	0.128	0.139	0.077	0.119	0.124
Number of clusters	91	83	83	91	83	83

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample pools together first generation immigrants defined using the information on both the country of origin and the language spoken at home and second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. See details in the text and the appendix for how the matching between language and countries has been implemented. The dependent variables measure students' Florida Comprehensive Assessment Test math score in grade 3 (standardized with mean 0 and variance 1), the change in math score from grade 3 to grade 8, reading score in grade 3 (standardized with mean 0 and variance 1) and the change in reading score from grade 3 to grade 8. Fraction of students speaking the same language is the ratio of students speaking a given language in a given year in a given school divided by the school population (including natives). Students speaking English, Spanish, or Haitian are not included in our regressions (but are still part of the denominator). All the regressions include the same individual controls described in Table 2 (coefficients not reported). Columns 2 and 4 also control for the math score and reading score in grade 3, respectively. The ''Long Term Orientation'' variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. We describe in details all the variables on the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 5B
Long-Term Orientation and school composition,
First and second generation (extended definition) immigrants: Non-Test Outcomes

	(1)	(2)	(3)	(4)
VARIABLES	Graduation	% Absent days	Disciplinary incident	Retention
Long-Term Orientation (LTO), based on language	**0.069*****	**-0.025****	**-0.108****	**-0.006***
	(0.022)	**(0.012)**	**(0.047)**	**(0.003)**
Fraction speaking the same language (log)*LTO	0.023	-0.009***	-0.029**	-0.002
	(0.014)	(0.003)	(0.012)	(0.001)
Fraction speaking the same language (log)	-0.013	0.005***	0.020***	0.002**
	(0.008)	(0.002)	(0.006)	(0.001)
Observations	11,369	384,139	219,673	307,507
R-squared	0.377	0.180	0.129	0.136
Year*school FE	YES	YES	YES	YES
Grade FE	-	YES	YES	YES
Individual controls				
Dependent Variable (mean)	0.878	0.040	0.126	0.023
Dependent Variable (sd)	0.328	0.063	0.332	0.151
Long-Term Orientation (mean)	0.534	0.531	0.532	0.530
Long-Term Orientation (sd)	0.204	0.206	0.206	0.205
Long-Term Orientation (beta)	0.043	-0.082	-0.067	-0.008
Number of clusters	83	95	93	94

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample pools together first generation immigrants defined using the information on both the country of origin and the language spoken at home and second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. See details in the text and the appendix for how the matching between language and countries has been implemented. The dependent variables measure students' high school graduation (a dummy for whether the student received a standard diploma within four years after entering grade 9 for the first time), absence rates (the percentage of days in which the student is absent during the academic year), disciplinary incidents (a dummy for whether the student was involved in a disciplinary incident, defined as serious offences often leading to suspension), and retention (an indicator for whether the student repeats the same grade at least once). Fraction of students speaking the same language is the ratio of students speaking a given language in a given year in a given school divided by the school population (including natives). Students speaking English, Spanish, or Haitian are not included in our regressions (but are still part of the denominator). All the regressions include the same individual controls described in Table 2 (coefficients not reported). The ''Long Term Orientation'' variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. We describe in details all the variables on the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 6A
Long-Term Orientation and School Choice

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	School Letter Score at t-1 (pre-) kindergarten	School Letter Score at t-1 (pre-) kindergarten	School Letter Score at t-1 (pre-) kindergarten	School Letter Score at t-1 (from A to F)	School Letter Score at t-1 (from A to F)	School Letter Score at t-1 (from A to F)
Long-Term Orientation	**0.374*****	**0.319*****	**0.284*****	**0.330*****	**0.296*****	**0.263*****
	(0.125)	**(0.088)**	**(0.090)**	**(0.110)**	**(0.077)**	**(0.078)**
Male	0.002	0.003	0.003	-0.003	-0.009***	-0.009***
	(0.002)	(0.005)	(0.004)	(0.002)	(0.003)	(0.002)
Age in months	0.010***	0.010***	0.010***	-0.005***	-0.002**	-0.002***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Free-or-reduced priced	-0.436***	-0.265***	-0.258***	-0.385***	-0.255***	-0.239***
lunch eligible	(0.041)	(0.013)	(0.013)	(0.037)	(0.013)	(0.013)
Special education	0.061***	0.045***	0.039***	0.009	0.028***	0.020***
	(0.011)	(0.012)	(0.010)	(0.016)	(0.007)	(0.006)
Limited English proficient	-0.053***	-0.039***	-0.031***	-0.092***	-0.080***	-0.082***
	(0.015)	(0.009)	(0.009)	(0.018)	(0.009)	(0.007)
Math score, 8th grade						
Observations	241,492	140,511	140,511	3,478,527	1,401,802	1,401,802
R-squared	0.215	0.324	0.338	0.248	0.279	0.296
Year*school FE	-	-	-	-	-	-
District FE	YES	NO	YES	YES	NO	YES
Zipcode at birth FE	NO	YES	YES	NO	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Grade FE	-	-	-	YES	YES	YES
Dependent Variable (mean)	4.097	4.076	4.076	4.125	4.210	4.210
Dependent Variable (sd)	1.000	1.012	1.012	1.013	0.977	0.977
Long-Term Orientation (mean)	0.217	0.208	0.208	0.220	0.208	0.208
Long-Term Orientation (sd)	0.152	0.140	0.140	0.160	0.143	0.143
Long-Term Orientation (beta)	0.057	0.044	0.039	0.052	0.043	0.039
Number of clusters	92	69	69	96	76	76

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample pools together first generation immigrants defined using the information on both the country of origin and the language spoken at home and second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. See details in the text and the appendix for how the matching between language and countries has been implemented. In columns 1-3, the sample includes students enrolled the first time they enter the school system either in Kindergarten or pre-Kindergarten class and the dependent variables is the score earned by their school in year t-1. In column 4-6, the sample includes students in all grades and the dependent variable is the score earned by their school in year t-1. These school scores are calculated by the Florida Department of Education to measure schools' quality. All the regressions include the same individual controls described in Table 2. The ''Long Term Orientation'' variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. We describe in details all the variables on the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 6B

Long-Term Orientation and Enrollment in advanced classes and participation in gifted program

	(1)	(2)	(3)
VARIABLES	Fraction of advanced classes	Fraction of advanced classes (scientific subjects)	Gifted in grade 4
Long-Term Orientation	**0.081*** **	**0.032*** **	**0.095*** **
	(0.018)	**(0.007)**	**(0.017)**
Male	-0.016***	-0.002***	0.002
	(0.001)	(0.000)	(0.004)
Age in months	0.000	0.000***	-0.003***
	(0.000)	(0.000)	(0.001)
Free-or-reduced priced lunch eligible	-0.017***	-0.004***	0.025***
	(0.002)	(0.001)	(0.007)
Special education	0.010***	0.005***	
	(0.002)	(0.001)	
Limited English proficient	0.012***	0.007***	0.005
	(0.002)	(0.001)	(0.011)
Math score, 8th grade	0.046***	0.013***	
	(0.005)	(0.002)	
Observations	512,070	512,070	26,308
R-squared	0.336	0.215	0.419
Year*school FE	YES	YES	YES
District FE	-	-	-
Zipcode at birth FE	-	-	-
Year FE	-	-	-
Grade FE	YES	YES	-
Dependent Variable (mean)	0.058	0.013	0.112
Dependent Variable (sd)	0.145	0.054	0.316
Long-Term Orientation (mean)	0.222	0.222	0.276
Long-Term Orientation (sd)	0.162	0.162	0.205
Long-Term Orientation (beta)	0.090	0.096	0.062
Number of clusters	93	93	88

Notes. The table reports OLS estimates, with standard errors clustered at the language/country level. The unit of observation is a student born between 1992 and 2002 and observed during the academic years 2002-2012. The sample pools together first generation immigrants defined using the information on both the country of origin and the language spoken at home and second generation immigrants (extended definition) defined using the information on the country of origin of the mother when available (Canada, Mexico, and Puerto Rico), or the language spoken at home for the remaining students for which the country of origin of the mother is not available. See details in the text and the appendix for how the matching between language and countries has been implemented. In columns (1) and (2), the sample is restricted to the students enrolled in grades 9^{th} to 12^{th} and the dependent variables are respectively the fraction of advanced classes (AP, IB, and/or AICE) taken by the student over the total number of classes taken by the student during a given academic year, the fraction of advanced classes in scientific or math subjects (AP, IB, and/or AICE) taken by the student over the total number of classes taken by the student during a given academic year. In column (3), the sample includes all students who were present in the data both in grade 3^{rd} and 4^{th}, were not enrolled in a gifted program in 3rd grade, and were top performers in FCAT math and reading in third grade. The dependent variable is equal to one if the student is enrolled in a gifted program in grade 4 and equal to zero otherwise. All the regressions include the same individual controls described in Table 2. Columns 1 and 2 also control for the math score in grade 8. The ‘‘Long Term Orientation’’ variable is based on Hofstede, Hofstede, and Minkov (2010) and is measured on a 0-1 scale. We describe in details all the variables on the online Appendix. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.