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The influence of family background on educational expectations: a comparative study

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ABSTRACT

It has been well documented that East Asian students in primary and secondary education academically outperform their Western counterparts. One prominent explanation points to the role of culture. This study explores the cultural explanation from a comparative perspective. Analyzing data from mainland China, Taiwan, South Korea, the U.S., Germany, and Australia, we examine the variation across social contexts in the importance of family SES to parents' and children's educational expectations, paying particular attention to comparison between East-Asian and Western societies. We find that educational expectations are much less dependent on family background in East Asian societies than in the West, in that parents and children in the former all tend to hold high educational expectations, irrespective of family socioeconomic status.

Introduction

A significant gap in academic achievement between East-Asian and Western countries has been widely known and publicized. For example, two international standardized tests—the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS)—have consistently shown top performances of students in East Asian countries, including China, Japan, South Korea, and Singapore (OECD 2019; Provasnik et al. 2016). Most recent results from the 2018 PISA survey indicates that 15-year-old students from China outperformed their peers in all the other 78 participating countries

and economies in all three subjects, i.e. reading, mathematics, and science (OECD 2019). Among researchers studying American students, it is also well known that relative to whites and other racial/ethnic groups, Asian Americans achieve higher levels of school performance and educational attainment (Jerrim 2015; Kao 1995; Xie and Goyette 2003). Given the central role of education in determining labor market outcomes and socio-economic status in modern societies (Fischer and Hout 2006), the East-West, as well as Asian-White, education gaps have been of interest to scholars who study social inequality and stratification.

Reasons why East-Asian students consistently outperform their Western counterparts have long been debated. One prominent explanation emphasizes the role of culture. It is maintained that differences in cultural traditions about education are responsible for the observed East-West disparities in educational outcomes. According to Stevenson and Stigler (1994), Confucian culture exerts a positive influence on East Asians through its emphasis on educational effort and attainment. Researchers have also presented evidence that Asian Americans in the U.S.—both students and their parents—tend to place a higher value on education, possess higher educational aspirations, and exert greater effort in studying than whites even among families with low socio-economic status (SES), all of which benefit students' academic achievement (Goyette and Xie 1999; Hsin and Xie 2014; Jimenez and Horowitz 2013; Liu and Xie 2016). In contrast, for most Americans, parenting and childhood outcomes vary greatly by social class so as to disadvantage educational outcomes of children from low-SES families (Heckman 2006; Lareau 2011).

In this article, we evaluate the cultural explanation empirically from a cross-culture comparative perspective. Capitalizing on recently available survey data from six societies, we examine the variation across social contexts in the importance of family SES to parents' and children's educational expectations, paying particular attention to comparison between East-Asian and Western societies. As a form of educational beliefs, values, and practices, educational expectations have long been identified to be a significant predictor of later educational achievement (e.g., Sewell, Haller, and Portes 1969). This study improves our understanding of the known education gap between East-Asian and Western countries and, more broadly, the causal mechanisms driving educational achievement in a broad international context.

Theoretical issues

A cultural explanation for the East-West education gap

Why do students in East Asia generally outperform their European and American counterparts academically? To answer this question, let us first

consider the Asian Americans' educational advantage over whites in the U.S., a widely studied topic in social science. If culture plays a role, it should hold the same explanatory power for both the East-West differences across societies and the Asian-White gap in the U.S.

Decades of research have focused on two main explanations for Asian Americans' educational advantage over whites. The first explanation suggests that Asian Americans' academic advantage is attributable to socioeconomic advantages of their families. Relative to whites, Asian Americans tend to have parents with better educations and higher incomes, giving them an advantage in the provision of educational resources (Sakamoto, Goyette, and Kim 2009). However, research has found that family SES has only limited explanatory power for the Asian-White achievement gap (Goyette and Xie 1999; Kao 1995). More importantly, it has been observed that even Asian-American children from disadvantaged family backgrounds academically outperform their white peers (Lee and Zhou 2014; Liu and Xie 2016).

The second explanation posits that Asian Americans' advantage in education is due to their greater work ethic and motivation for educational achievement rooted in East-Asian cultures. Confucian cultures that emphasize the importance of education for upward social mobility play a role in shaping East Asians' achievement values—educational achievement is universally believed to be attainable through hard work and persistence for all. In addition, East Asian children's educational achievement has an important social meaning, as it brings honor to the family, a fulfillment of filial piety (Hawkins 1994). While these cultural beliefs originated in East Asia, numerous studies have shown that Asian-American parents and children in the U.S. hold similar views, placing high values on educational success, and investing great energy into academic endeavors, whereas white Americans tend to believe in the importance of innate talents and abilities (Corwyn and Bradley 2008; Ogbu 1978; Peng and Wright 1994; Sun 1998; Xie and Goyette 2003). A study by Hsin and Xie (2014) also found that the Asian-Americans' achievement premium contributes mainly to their work ethic rather than to advantages in socioeconomic resources.

However, although most existing studies on Asian Americans' educational advantage have treated socioeconomic status and culture as two independent and additive factors, recent research has proposed the interactive relationship between culture's and SES's effects on the Asian-White achievement gap. A study by Liu and Xie (2016) showed, for example, that Asian-American students' education-related beliefs and practices are much less influenced by family SES than those of white students. In contrast, strong socio-economic gradients in parenting and children's academic achievement have been well documented as being normative in the

West, particularly in the U.S. Generally speaking, high-SES, but not low-SES Americans, hold high educational expectations for their children and foster their children's educational outcomes by incorporating organized activities (Lareau 2011). In other words, it is among low-SES families where we observed the greatest disparity between Asians and whites. Liu and Xie (2016) attributes this differential SES gradient, much flatter for Asian Americans than for whites, to a culture-based difference that helps generate Asian Americans' overall advantage in achievement. Nevertheless, much less is known about the relationship between family background and educational attitudes and practices across societies that differ by cultural traditions. We fill this empirical gap in this study.

In the past research on the East-West education gap, the role of culture has already received significant attention. In a landmark study, Stevenson and Stigler (1994) conducted a cross-cultural comparison of education-related beliefs and practices of parents, children, and teachers across the U.S., Japan, Taiwan, and Mainland China. Compared with American whites, East Asians were found to be more likely to adopt attitudes and practices conducive to academic success, such as stricter work ethics and higher educational aspirations. It is worth noting that child-rearing practices in the East Asian societies are actually quite differential compared with the Western countries, and the influence culture plays is profound (Hu and Yeung 2019). Recent work on East-Asian countries, including China, South Korea, and Japan, provides substantial empirical support for the posited cultural explanation—educational beliefs and practices are of great importance to children's achievement (Byun, Schofer, and Kim 2012; Gu and Yeung 2019; Liu and Xie 2015; Yamamoto and Brinton 2010).

In short, the existing literature has established that certain cultural beliefs and practices contribute to East Asians' advantage in education. However, this research is largely concerned with the overall differences between students in East-Asian societies and those in the West. Statistically speaking, the literature has been mostly concerned with the "additive effect." Liu and Xie's (2016) study on Asian Americans calls for an interactive model of culture, meaning that SES-performance gradients should be less pronounced for students in East Asian societies than for those in the West. In a more recent study, Lyu, Li, and Xie (2019) have indeed revealed that family SES plays a much smaller role in affecting students' academic achievement in China than in the U.S. and Germany. However, it remains unclear what accounts for this cross-cultural variation in the SES-performance relationship. In our study, we focus on educational expectations, both of children and their parents, as a potential causal mechanism in explaining this variation. That is, we wish to examine cross-society variations in the importance of family SES for

educational expectations to test the moderating effect of cultural values for the overall academic advantage of East Asians over Americans and Europeans.

Family SES, educational expectations and children's outcomes

Ever since the classic Blau-Duncan model revealed a high correlation between family background and education (Blau and Duncan 1967), a large body of literature has been devoted to examining the mechanisms by which family characteristics affect children's development. In this literature, educational expectations have long been identified as an important vehicle through which parents transmit family advantages or disadvantages to their children, attributable to the pioneering work by Sewell and his colleagues in what is commonly known as the Wisconsin Model of status attainment (Sewell, Haller, and Portes 1969; Sewell and Hauser 1975). According to the Wisconsin Model, the influences of family SES on children's education and their later career success are mediated by social-psychological factors, important ones being educational and occupational expectations. A series of subsequent studies have provided further support for the role of educational expectations—both parents' and children's—in the social attainment process (Bozick et al. 2010; Davis-Kean 2005; Hanson 1994; Schneider and Stevenson 1999; Wang and Shi 2014). This body of research has well established the empirical pattern that students' educational achievement and attainment are positively influenced by their own educational expectations for themselves and/or others' expectations for them.

Research in psychology and sociology has also uncovered underlying processes through which educational expectations affect educational outcomes. On the one hand, young people's future orientation is believed to promote positive self-concepts and motivate ongoing behaviors conducive to achieving desired future outcomes (Bandura et al. 1996; Nurmi 1991). For example, empirical studies have shown that students with higher expectations generally expend more time and effort on academic endeavors (Beal and Crockett 2010; Domina, Conley, and Farkas 2011). On the other hand, parental expectations for a child's education play a crucial role in determining how parents invest both monetary and nonmonetary resources in raising their children (Hao and Yeung 2015). Not surprisingly, parents who have high expectations tend to prioritize their investment in children, which, in turn, enhances their developmental outcomes. Positive parental expectations are also transmitted from parents to their children, which promote greater academic effort and achievement (Bandura et al. 1996; Bandura et al. 2001; Fan and Chen 2001).

Importantly, prior research has long established that family SES exerts a strong and positive influence on educational expectations, with children from low-SES families and their parents generally being less ambitious than their counterparts from more affluent families (Goyette and Xie 1999; Hanson 1994). Moreover, young people from higher SES families are more likely to sustain their high expectations over time than lower-SES youths (Bozick et al. 2010). However, we recognize that the SES gradient in educational expectations is not simple or universal. There may be variations across racial and ethnic groups. For example, Asian Americans expect to, and are expected to, achieve higher levels of education, irrespective of their own socioeconomic status (Glick and White 2004; Goyette and Xie 1999; Hao and Bonstead-Bruns 1998; Lee and Zhou 2015; Kao and Tienda 1995; Vartanian et al. 2007). Although there are many studies on Asian immigrants in the U.S. on this subject, little attention has been paid to the variation in the relationship between family SES and educational expectations across different social contexts. A recent study in China indicates that parenting practices, including parents' expectations for their children, do not vary greatly by family socioeconomic resources (Liu and Xie 2015). As discussed earlier, it is plausible that the association between family SES and educational expectations may be weaker in East-Asian than in Western societies.

Research questions

In this study, we examine the societal variation in the importance of family background to educational expectations, comparing East-Asian and Western societies. We analyze data from a series of large-scale, high-quality, and nationally representative datasets to address the following research question: How does family SES affect parents' and children's educational expectations differentially in three East-Asian societies (mainland China, Taiwan, and South Korea) and three Western societies (the U.S., Germany and Australia)?

We choose to focus on six societies—mainland China, Taiwan, South Korea, the U.S., Germany, and Australia—for both theoretical and practical reasons. The practical reason is that we were able to secure high-quality data for these six societies so that a comparison across them is possible. We are aware that any comparative study is difficult and inevitably requires unverifiable assumptions about comparability, as societies differ in geography, political structure, economic development, and regional culture. However, the presence of these differences also facilitates the comparison, as they allow us to focus on the key contextual variation of interest to us (Nauck and Ren 2018; Nauck, Gröpler, and Yi 2017)—cultural beliefs and practices pertaining to education. Among the six societies, three of them—mainland China, Taiwan, and South Korea—share a

Confucian ethical philosophy, although they have their own cultural peculiarities. The importance of education as emphasized by Confucianism is deeply rooted in all three societies, despite their differences in political and economic systems. Meanwhile, the Western world also varies greatly, covering many countries in Europe, North America, and Oceania. In our study, the U.S., Germany, and Australia resemble each other in their broad cultural traditions, although they differ greatly with regard to welfare state regimes and educational systems (Nauck, Gröpler, and Yi 2017).

The previous literature suggests that the relationship between socioeconomic status and education-related attitudes and behaviors should be moderated by the societal-level cultural characteristics, i.e. more emphasis on education. It can be assumed that educational expectation is less dependent on family SES if education is viewed as a pathway of upward social mobility for all, as in the Confucian cultures, in contrast with Western cultures. Hence, we propose a hypothesis that family background has relatively weaker importance for both parents' and children's educational expectations in mainland China, Taiwan, and South Korea than in the U.S., Germany and Australia.

Data and measures

Data

In this study, we examine how family SES affects educational expectations differently between East-Asian and Western societies. We draw on data from the following survey projects in six societies, mostly being nationally representative ones: (1) mainland China: the 2014 wave of the China Family Panel Studies (CFPS), the 2013–2014 baseline wave of the China Education Panel Studies (CEPS), and the 2015 baseline wave of the Huachi survey; (2) Taiwan: the 2000 baseline wave of the Taiwan Youth Project (TYP); (3) Korea: the 2003 baseline wave of the Korea Youth Panel Survey (KYPS); (4) the U.S.: the 1998 baseline wave and 2007 wave of the Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K); (5) Germany: the 2010 wave of the German National Educational Panel Study (NEPS) (Blossfeld Rossbach, and von Maurice 2011); (6) Australia: the 2009 wave of the Longitudinal Surveys of Australian Youth (LSAY). In addition to children's information, those survey projects also collected information from parents. A detailed description of these surveys is provided in the [Appendix. Table 1](#) summarizes these datasets with basic information about interview date, sample coverage, and sample size.

All eight datasets have common independent variables and so are suitable for comparative analysis. For comparability, we restrict our analysis

Table 1. Basic information about datasets.

Society	Data source	Interview date	Coverage of children	Sample size (no. children)
Mainland China	CFPS	2014	Aged 0–15	8,616
	CEPS	2013–2014	Grade 7/9	19,487
	Huachi	2015	Aged 0–21 months	1,587
Taiwan	TYP	2000	Grade 7/9	5,447
South Korea	KYPS	2003	Grade 8	3,697
U.S.	ECLS-K	1998	Kindergarten	2,1409
		2007	Grade 8	9,725
Germany	NEPS	2010	Grade 9	16,425
Australia	LSAY	2009	Age 15	14,251

to junior middle-school students in the main analyses, most of whom were aged 10–16 when interviewed. Of note here is that, unlike the other datasets being analyzed, the CFPS is not a survey of a cohort of students but a household survey that covers all household members in a sampled household, with information on children under age 10 collected through proxy by the childcare person, or guardian, in most cases a parent. For the CFPS data, we divide young respondents into four age groups in this study: 0–6 years, 7–9 years, 10–12 years, and 13–15 years.

Measures

All variables used in each dataset are harmonized *ex post* to make comparative survey research possible (Hoffmeyer-Zlotnik and Warner 2014). The variables are operationalized as follows.

Parents' expectations

We rescale a parent's (or guardian's) educational expectations for his or her child as expected years of schooling so as to be comparable across countries, as follows: less than high school = 11, high school graduation = 12, finish 2- or 3-year college = 14, obtain a 4-year college degree or equivalent and above = 16. Of note here is that education systems vary widely across societies. Germany has a dual education system that combines apprenticeship with formal vocational education (Thelen and Busemeyer 2012), whereas a comprehensive school system is used in all the other societies in this study. We borrow from the International Standard Classification of Education in its version of 1997 (ISCED-97) (UNESCO Institute for Statistics 2006) mappings to ensure international comparability. [Appendix Table A](#) shows detailed information for comparability of educational expectations across surveys. To ensure that our results are not sensitive to the specification of parents' educational expectations as a continuous outcome variable, we also enter it in a regression

analysis as a dichotomous variable (those who expected their children to finish a 4-year college =1, otherwise = 0) in alternative models. The models yield comparable results, shown in [Appendix Figure A](#). We note that the NEPS and KYPS asked children to report parents' educational expectations with the question, "How much education would your parents like you to obtain?" Although the practice of using children's proxy reports has been used in earlier research (e.g., Gill and Reynolds 1999), we know this difference in measurement of parents' education expectations for the German and South Korean data and should thus interpret the results with caution.

Children's expectation

As respondents, children were asked, "How far in school do you think you will get?" For our main analyses in this paper, children's educational expectations are also measured continuously as years of education in linear models and dichotomously in linear probability models. The results from linear probability models are presented in [Appendix Figure B](#).

Family socio-economic status

Family SES is commonly measured by parents' education, occupation, and family income. Because parents' education is well measured in all surveys and is relatively comparable across societies, we choose the highest education of parents as the main explanatory variable in our analysis. Based on the ISCED-97, a six-fold educational classification is operationalized that is identical for the six countries, namely, from "no schooling" to "tertiary" ([Appendix Table B](#)). We then assign the consistent number of years of schooling to the relevant educational level. If this information is missing for one parent, we use years of schooling for the other parent.

Control variables

The basic control variables in our analysis are the target child's gender, age, majority-minority status, and number of siblings. For gender, female is coded as one, with male coded as zero. For majority-minority status, minority membership applies to (1) non-Han people in Mainland China; (2) Hakka, Chinese mainlander, and indigenous people in Taiwan; (3) African, Hispanic, Asian, Native Americans and those of mixed race in the U.S.; (4) those with immigration background in Germany and Australia. However, it is not applicable to the South Korea data because South Korea is a homogeneous society in which over 99% of the population is ethnically Korean. Co-residing siblings are coded as one if the

target child currently lives with siblings in the household, with no siblings coded as zero.

Analytic strategies

To assess the relative importance of family SES on parents' and children's educational expectations, we first construct a series of linear regression models across countries, with parents' and children's expectations as dependent variables and parents' education as the key independent variable, as in the following equation:

$$Y = \beta_0 + \beta_1 EDU + \beta_2 X + \varepsilon, \quad [1]$$

where Y alternatively represents parents' or children's educational expectations, EDU denotes parents' highest education, X refers to social demographic control variables, and ε is the unexplained residual. Our focal interest is the coefficient of parents' education β_1 in each estimated model.

To ensure the robustness of our results, we also present the partial effects of parents' education and other co-factors on the probability of expecting a 4-year college graduation with a linear probability model, which is the same model as Equation (1), with Y as a dichotomous variable denoting whether a parent expected his or her child to finish college (yes = 1) or whether a student expected to finish college (yes = 1). The results from the linear probability model corroborate our main findings from the linear regression model.

Results

SES gradients in parents' expectations

We summarize our main findings pertaining to the SES effects on parents' educational expectations in [Figure 1](#), which displays the estimated coefficients of parents' education, β_1 in equation (1), for the same model specification across the eight datasets (see [Appendix Table C](#) for more detail). The results confirm our hypothesis concerning differential effects of family SES on parents' educational expectations across the societies being studied. As shown in the figure, while the effect sizes of parents' education on parental expectations vary greatly, there are systematic patterns by society. On average, a 1-year increase in parents' education is associated with a 0.01–0.11 increase in the years of schooling that a parent or guardian expected his or her child to attain in mainland China, Taiwan, and South Korea. Likewise, in the U.S. and Germany, the corresponding increase in parents' expectations is roughly 0.17. In a supplementary analysis, we split the U.S. sample into whites and Asians to

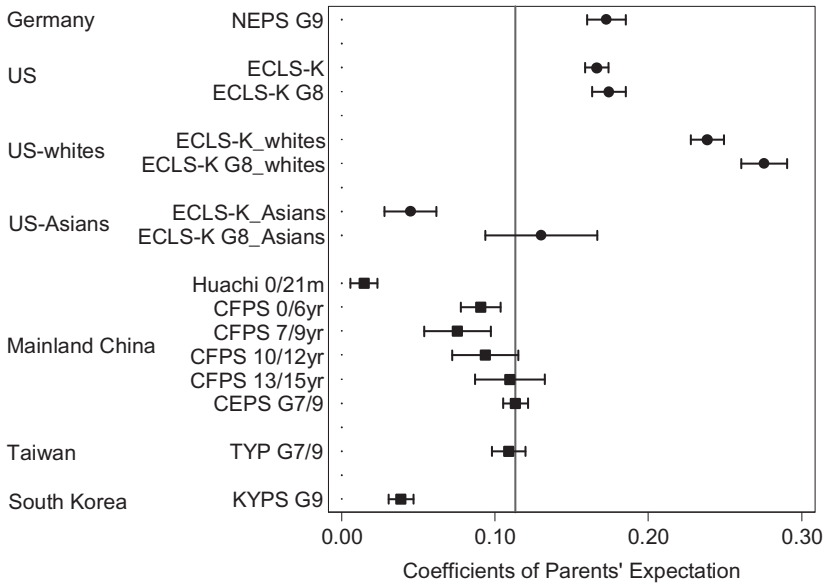


Figure 1. Coefficients from OLS regression of parental educational expectations on family background.

test the hypothesized explanation for the Asian-white gap in cultural orientation. The results reveal that the influence of parents' education is weaker among Asian Americans than among whites. For instance, using the data from ECLS-K, a 1-year increase in an Asian-American parent's education is associated with 0.13 more years of parental expectations, while the increase is 0.28 among their comparable whites.

A different visual display of the same results can be found in [Figure 2](#), which shows steeper estimated slopes for the U.S. whites and Germans, indicating stronger positive effects of SES on parental expectations than for East Asian counterparts. Asians' flatter slopes, together with larger intercepts, of the regression line, indicate that the East-West gap in educational expectations varies across family SES levels—being greater at the lower than at the upper end of the family SES distribution. This is also true for the Asian-White gap in the U.S. sample.

In addition, it has been clearly established that the early academic performance plays a role in shaping the educational expectations of children and their parents (Andrew & Hauser, 2011). If children fall behind their peers academically, they and their parents may become discouraged and thus lower their educational expectations. Therefore, we examine the relationship between parents' education and parental expectations at different ages. In particular, we assess differences in educational expectations between Chinese and Americans parents of very young children, investigating the "ideal" (overly optimistic) thoughts of parents at the beginning

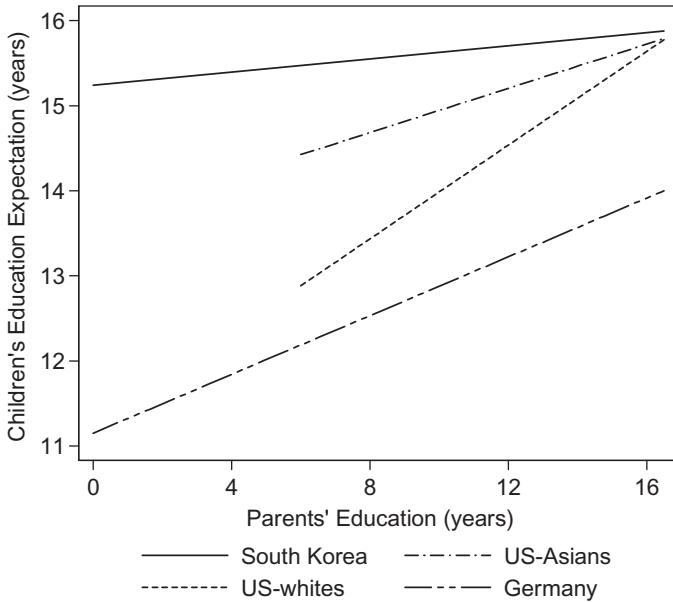


Figure 2. The influences of parents' education on parental education expectations.

of their children's lives, when children are too young for parents to observe their educational potential. The 2015 baseline survey of the Huachi project interviewed all children aged 0–21 months in Huachi county, a national-level poor county in Gansu province, China. Even parents in poor rural areas hoped that their children would have great educational attainments, 96% expecting their children to finish 4-year college and 53% doctorate degrees. Meanwhile, the results from the ECLS-K data showed that 75% of U.S. parents with children in Kindergarten expected their children to get bachelor's degrees, and only 15% expected their children to achieve Ph.Ds. Not only do we observe an overall difference in education for young children between China and the U.S., we also find a large difference in the SES gradient consistent with earlier results: the SES difference in parental expectations for young children was far greater in the U.S. than in China. A 1-year increase in parents' education in the U.S. was associated with a 0.17 increase in expected years of schooling, seventeen times as large as that among Chinese parents (0.01).

In Figure 3, we display the SES variations in parental expectations across age groups in China. The fitted line for SES on parental expectations among newborn babies is almost flat, implying that all parents, regardless of family background, have high expectations for their children's future. These results also reveal the pattern that the younger the children, the smaller the association between parents' education and parents' expectations. That is, SES gradients in parents' expectations increase with age, as SES gradients in

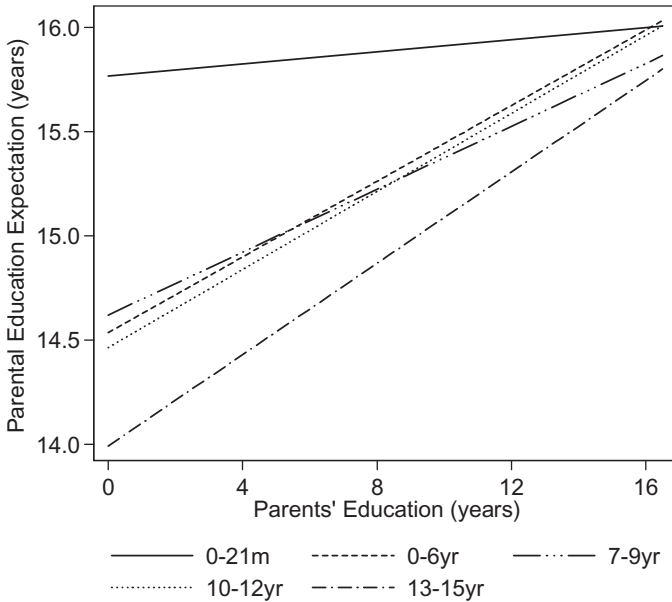


Figure 3. The influences of parents' education on parental education expectations in China. *Note.* The newborns sample is from Huachi survey. The CFPS sample is divided into four age groups: 0–6 years, 7–9 years, 10–12 years, and 13–15 years.

academic performance may emerge after children begin schooling, and earlier SES-performance gradients may strengthen later SES-expectations gradients. The fitted line plot suggests that the SES gradients in parental expectations become stronger as children grow older.

For robustness, we also examine an alternative outcome variable, a dichotomous variable indicating whether parents expect a child to complete a 4-year college education. The results of the linear probability models, as presented in [Appendix Figure A](#), are consistent with those of the linear regression models. As expected, as parents themselves are more educated, they are more likely to expect their children to attain a bachelor's degree. Consistent with earlier findings using the continuous measure of parents' educational expectations, the influence of parents' education on college education expectations is smaller in East Asian than in Western societies.

In sum, our results confirm a pattern consistently found in the prior literature: strong SES gradients in parental expectations in Western societies, with parents from lower-SES families holding much lower expectations of their children than their counterparts from higher-SES families. In contrast, Asian parents report high expectations for their children's academic success even if they do not have education themselves. That is, consistent with the cultural orientation hypothesis, these results reveal high emphasis of Asians on education, regardless of SES.

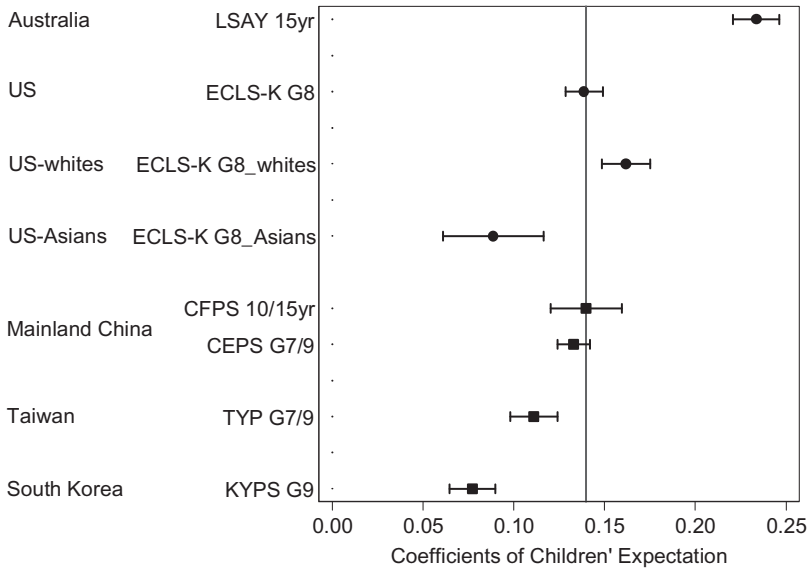


Figure 4. Coefficients from OLS regression of children's educational expectations on family background.

SES gradients in children's expectations

In [Figure 4](#), we present similar results, parallel to [Figure 1](#), pertaining to the influence of parents' education on children's expectations in each of these datasets. The OLS regression results in the [Appendix Table D](#) provide more detail. Consistent with the literature, we find a positive effect of parents' education: the more educated parents are themselves, the higher the educational expectations of their offspring. The cultural orientation explanation suggests smaller effects among Asians, due to their cultural beliefs that emphasize the importance of effort for educational achievement regardless of family background. Indeed, parents' educational attainment explains only a smaller portion of educational expectations for East Asians. A 1-year increase in parents' education is associated with 0.08–0.14 more years in Asian children's expectations.

In contrast with the results for East Asians, parents' education indeed exerts a stronger influence on children's expectations in the West, with the coefficient of parents' education ranging from 0.14 to 0.23. Another notable result in this figure is the Asian-white difference in the U.S. sample. We find that, compared to Asian Americans, white students' education plans are more strongly influenced by their parents' educational attainment.

For ease of interpretation, [Figure 5](#) presents the summary results from regression models. The patterns of the relationship between parents' education and children's expectations in [Figure 5](#) are similar to those for parental expectations in [Figure 2](#), with the slopes of the fitted lines less steep

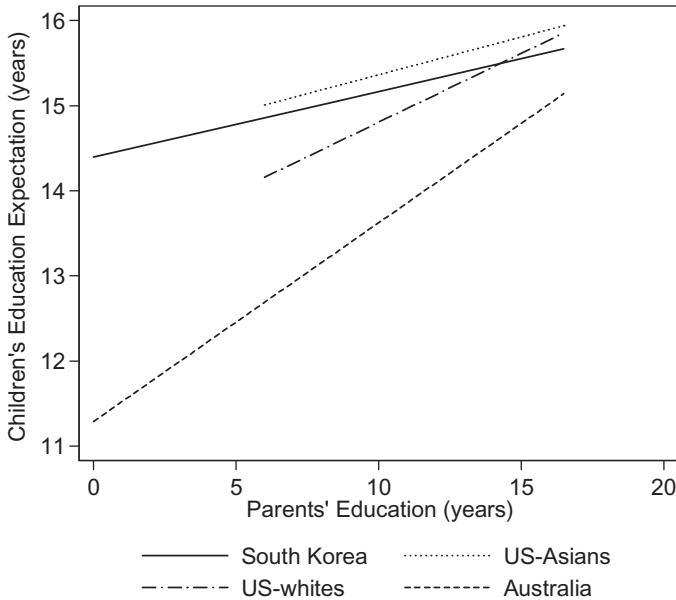


Figure 5. The influences of parents' education on children's educational expectations.

and the intercepts greater for Asian than for Western young people. The differences in slope and intercept indicate that the Asians' advantage over Western youths in educational expectations is greater at lower than at higher levels of family SES.

We further evaluate the relative contribution of family SES in explaining the children's expected transition to a 4-year college education. The results are shown in [Appendix Figure B](#). Again, they confirm that parents' education is less important for Asian children's expectations to attain bachelor's degrees than for those of Western children.

Altogether, our evidence suggests that parents' educational backgrounds play a smaller role in determining students' educational ambitions in the East-Asian than in the Western societies. In other words, East-Asian young people, as well as Asian Americans, benefit from cultural orientations that reinforce the relevance and importance of education even when their parents have no education.

Conclusion and discussion

Numerous studies have found that East Asians, including Asian immigrants and their descendants in the U.S., academically outperform their Western/white counterparts. The most popular explanation has been cultural—Asians are more likely than whites to believe in the value of education. Although there is a growing body of research on the role of culture in explaining the

East-West educational gap, hitherto our knowledge has been limited about how the effect of family socioeconomic background on education-related attitudes and behaviors may differ between East-Asian and Western societies. Drawing on recently available data from many large-scale survey projects, we examine the differential importance of family SES to parents' and children's educational expectations in mainland China, Taiwan, South Korea, the U.S., Germany, and Australia. For the purpose of this study, output harmonization is performed for all variables in each dataset.

Results from our analyses reveal substantial variation in the influence of family SES on parents' and children's educational expectations across Eastern and Western societies. There is an empirical pattern that, compared with Western societies, both parents' and children's educational expectations are less dependent on parents' education in East-Asian societies. In the West, parents' education holds high explanatory power for between-family differences in educational expectations. When parents are educated, they are likely to hold high expectations for their children's education, and children have high expectations for themselves. Both parents' and children's expectations are highly constrained by family socio-economic resources. The story, however, is quite different for East Asians. Asian parents hold high expectations for their children, and Asian children also hold high expectations themselves, irrespective of family socioeconomic status.

These findings support our argument that East Asians' educational attitudes and behaviors are less influenced by family SES than those of Westerners. This societal difference may well be attributable to Confucian cultural traditions in East Asia. East Asians place high values on educational effort and attainment, even when parents have low socioeconomic status. This important cultural difference between East Asia and the West, and between Asian Americans and whites, may help explain Asians' achievement premium over Westerners, as well as Asian Americans' higher academic achievement than that of whites in the U.S.

While we believe that our results significantly advance our understanding of the East-West education gap internationally and the Asian-white education gap in the U.S., we are aware that they are only suggestive. As in any international comparative study, the analysis presented here is constrained by having to make best use of available data. In all eight survey projects, we did our best in harmonizing similar data regarding parent's education and educational expectations of children and their parents, although the data were collected by different research teams with different sample designs and survey instruments. Our analyses also suffer from a lack of other explanatory variables. For example, we measured family SES by the highest level of education completed by either parent due to data limitations. Ideally, we would want to use a more comprehensive set of measures of family socioeconomic resources, including but not limited to

parents' education, parents' occupation, and family income. Although educational expectations have been found to be important to academic success, the research reported in this paper is only a first step toward understanding how and why Asians are able to achieve higher achievement relative to that of whites. Future research should explore the potential variation in the role of educational expectations in explaining how family background affects later achievement across countries.

Despite these concerns, our study contributes to a better understanding of how culture works interactively with family socioeconomic characteristics—well known social determinants of education—to influence children's education and to generate between-society or between-group achievement differences. We urge researchers in the future to pay attention to how culture, defined as beliefs and values at the group level passed on through tradition, may serve as causal mechanisms mediating family resources and children's educational outcomes.

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Appendix

Data. To measure the differential effect of family SES on educational expectations across countries, we use data from eight survey projects in the six selected countries, most of them nationally representative, longitudinal surveys.

China. The CFPS is a large-scale, nationally representative, panel survey of Chinese individuals, families, and communities. The 2010 baseline survey interviewed 14,960 households in 25 provinces, along with 33,600 adults and 8,990 children within these households. The individuals are tracked through biennial follow-up surveys. The CFPS has a child module for all respondents below age 15 and, therefore, those aged 0–15 are selected in this study (<http://www.iss.pku.edu.cn/cfps/en/>). The CEPS is a nationally representative, longitudinal survey that followed the 7th and 9th graders in the 2013–2014 academic year. It is designed to collect information about early school experiences beginning from middle school (<https://ceps.ruc.edu.cn/>). The baseline survey of the Huachi project interviewed all children aged 0–21 months in 2015 in Huachi County, a national-level poor county in Gansu Province, China. It was jointly launched by the Development Research Foundation and the Center for Social Research at Peking University.

Taiwan. The TYP is a youth longitudinal survey in Taiwan. The survey followed the 7th and 9th graders in 2000. To date, 11 waves of data have been collected (<http://www.typ.sinica.edu.tw/E>).

South Korea. The KYPS includes two longitudinal studies in South Korea. One is a sample of children followed from the 7th grade in 2003 throughout 1 year after graduating from high school in 2008 (<http://www.nypi.re.kr/>).

U.S. The ECLS-K is a longitudinal study that followed the same children from kindergarten through the 8th grade in the U.S. The ECLS-K focuses on children's status at entry into school, their transition into school, and their progression through 8th grade. It is noted that the children in the ECLS-K were not asked to report the highest level of education they themselves expect to complete (<https://nces.ed.gov/ecls/>).

Germany. The German dataset NEPS is to collect longitudinal data on education and development throughout the life span. This paper uses data from the NEPS: Starting Cohort Grade 9, 10.5157/NEPS:SC4:7.0.0 (<https://www.neps-data.de/Mainpage>). From 2008 to 2013, NEPS data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network.

Australia. The LSAY project includes six cohorts starting in 1995, 1998, 2003, 2006, 2009 and more recently in 2015. In 2009, a nationally representative sample of 14,251 students aged 15 years was selected to participate in PISA and this sample became the fifth cohort of the LSAY (<https://www.lsay.edu.au/>).

Table A. Description of educational expectations.

Dataset	Educational expectations
CFPS/Huachi	Primary school = 2; Junior high school = 3; Senior high school = 4; 2- or 3-year college = 5; 4-year college = 6; Master's degree = 7; Doctorate degree = 8; No need to go to school = 9
CEPS	Drop out now = 1; Junior high school = 2; Vocational secondary school = 3; Vocational high school = 4; Senior high school = 5; 2- or 3-year college = 6; Bachelor's degree = 7; Master's degree = 8; Doctorate degree = 9; I don't care = 10
TYP	Junior high school = 1; Senior (Vocational) high school = 2; 2- or 3-year college = 3; 4-year college = 4; Master's degree = 5; Doctorate degree = 6
KYPS	Junior high school = 1; High school = 2; 2- or 3-year college = 3; 4-year college = 4; Master's or Ph.D. degree = 5
ECLS-K	To receive less than a high school diploma = 1; To graduate from high school = 2; To attend 2 or more years of college = 3; To finish a 4- or 5-year college degree = 4; To earn a Master's degree or equivalent = 5; To finish a Ph.D., MD, or other advanced degree = 6
NEPS	Leave school without any qualification = 1; Leaving certificate from the Hauptschule [basic secondary school] = 2; Leaving certificate from the Realschule [intermediate secondary school] = 3; Abitur [higher education entrance qualification] = 4
LSAY	Year 10 = 1; Year 10 or 11 and then a TAFE certificate = 2; Year 12 = 3; A TAFE training certificate = 4; A TAFE diploma = 5; A university degree = 6

Table B. Harmonization of educational credentials across countries.

ISCED-97	China					South Korea KYPs	U.S. ECLS-K	Germany NEPS	Australia LSAY
	CFPS/Huachi	CEPS	Taiwan TYP						
0 Pre-primary education	Illiterate/ semi-illiterate	No schooling	Never received formal education	No schooling	Never went to school	No schooling	No school-leaving qualification	Didn't complete primary school	Didn't complete primary school
1 Primary education	Primary school	Primary school	Elementary school	Elementary school	8th grade or below	Elementary school	Junior high school/ elementary qualification, 8th grade POS (Hauptschule, Realschule)	Completed primary school only	Completed primary school only
2 Lower secondary education	Junior high school	Junior high school	Junior high school	Middle school	9th–12th grade	Middle school	High school level I/junior high school qualification, 10th grade EOS (Lehre; Berufsfachschule)	Completed some secondary school, but didn't complete year 10	Completed some secondary school, but didn't complete year 10
3 Upper secondary education; advanced vocational/sub-degree	Senior high school; vocational secondary school; vocational high school	Senior high school; vocational secondary school; vocational high school	Senior high school; vocational senior high school	High school	High school diploma or equivalent; VOC/TECH program after high school	High school	Technical high school, high school qualification, 12th grade EOS (Fachhochschulreife; Abitur; Meister Fachakademie)	Completed year 10 or 11; completed year 12	Completed year 10 or 11; completed year 12
5B Tertiary-type B education	2- or 3- year college	2- or 3- year college	Junior college	Junior college (2–3 years)	Some college but no degree; associate's degree	Junior college (2–3 years)	Technical college (Fachhochschule)	A TAFE training certificate; A TAFE diploma	A TAFE training certificate; A TAFE diploma
5A, 6 Tertiary-type A education and above	Bachelor's degree; Master's degree; doctorate degree	Bachelor's degree; Master's degree and above	University; Graduate school	College or university (4 years); Master's degree; Ph. D degree	Bachelor's degree; Graduate or professional school but no degree; Master's degree; Doctorate degree; Professional degree after Bachelor's degree	College or university (4 years); Master's degree; Ph. D degree	University; Doctorate degree (Fachhochschule)	A university degree— Bachelor, Graduate Diploma or Masters; A doctorate or equivalent doctoral program	A university degree— Bachelor, Graduate Diploma or Masters; A doctorate or equivalent doctoral program

Table C. OLS regression of parental educational expectation on family background.

	Mainland China										Taiwan		South Korea			
	CFPS 0–6 years		CFPS 7–9 years		CFPS 10–12 years		CFPS 13–15 years		CEPS Grade 7/9		Huachi 0–21 m		TYP Grade 7/9		KYP5 Grade 8	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
Parents' education	0.091	0.007***	0.075	0.011*	0.094	0.011***	0.110	0.012***	0.113	0.004***	0.014	0.004**	0.109	0.006***	0.039	0.004***
Female	-0.070	0.045	-0.062	0.078	0.075	0.080	0.067	0.091	0.218	0.022***	0.000	0.029	0.110	0.033**	0.033	0.023
Age	-0.007	0.012	-0.019	0.047	-0.066	0.048	-0.057	0.056	-0.088	0.009***	-0.054	0.030+	0.010	0.015	0.011	0.027
Minority	-0.155	0.064*	-0.184	0.110+	0.072	0.112	-0.021	0.126	0.251	0.032***	-	-	-0.100	0.047*	-	-
Co-residing siblings	0.023	0.047	0.020	0.085	-0.214	0.086*	-0.036	0.095	-0.058	0.023*	-	-	-0.010	0.055	0.077	0.040+
Constant	14.557	0.090***	14.770	0.398***	15.186	0.540***	14.798	0.800***	15.022	0.129***	15.813	0.052***	13.960	0.232***	15.087	0.387***
N	3,597		1,549		1,439		1,411		18,352		1,563		5,329		3,226	

	US										Germany			
	ECLS-K		ECLS-K-whites		ECLS-K-Asians		ECLS-K G8		ECLS-K G8-whites		ECLS-K G8-Asians		NEPS G9	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
Parents' education	0.166	0.004***	0.239	0.006***	0.045	0.009***	0.174	0.006***	0.276	0.008***	0.130	0.019***	0.173	0.006***
Female	0.094	0.019***	0.093	0.024***	0.009	0.046	0.182	0.027***	0.210	0.031***	-0.010	0.109	0.138	0.039***
Age	-0.155	0.027***	-0.131	0.034***	0.102	0.069	-0.092	0.029**	-0.079	0.033*	-0.076	0.131	-0.423	0.028***
Minority	0.284	0.020***	-	-	-	-	0.238	0.029***	-	-	-	-	0.841	0.043***
Co-residing siblings	-	-	-	-	-	-	0.031	0.037	-0.074	0.042+	0.076	0.159	0.002	0.049
Constant	13.764	0.166***	12.607	0.213***	14.606	0.420***	13.962	0.431***	12.369	0.491***	14.719	1.908***	17.365	0.436***
N	17,437		9,962		916		8,410		5,330		435		13,188	

Standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$.

Table D. OLS regression of children’s educational expectation on family background.

	China				Taiwan		South Korea	
	CFPS 10–15 years		CEPS G7/9		TYP G7/9		KYPS G7/9	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
Parents’ education	0.140	0.010***	0.133	0.005***	0.111	0.007***	0.077	0.006***
Female	0.458	0.075***	0.439	0.024***	0.279	0.040***	0.002	0.035
Age	−0.097	0.021***	−0.051	0.009***	0.167	0.017***	−0.055	0.042
Minority	0.207	0.104*	0.306	0.036***	−0.145	0.056**	0.183	0.062**
Co-residing siblings	−0.075	0.079	−0.107	0.025***	−0.007	0.064	–	–
Constant	14.240	0.300***	13.945	0.143***	11.418	0.274***	15.158	0.590***
N	2,513		18,218		5,454		3,378	

	US						Australia	
	ECLS-K G8		ECLS-K G8-whites		ECLS-K G8-Asians		LSAY 15 years	
	coef.	s.e.	coef.	s.e.	coef.	s.e.	coef.	s.e.
Parents’ education	0.139	0.005***	0.162	0.007***	0.089	0.014***	0.234	0.006***
Female	0.236	0.025***	0.264	0.028***	0.103	0.083	0.586	0.031***
Age	0.049	0.027+	0.051	0.029+	0.270	0.098**	0.029	0.053
Minority	0.032	0.027	–	–	–	–	0.689	0.037***
Co-residing siblings	0.008	0.034	−0.097	0.037*	−0.047	0.118	0.066	0.053
Constant	12.757	0.397***	12.459	0.432***	10.631	1.423***	10.304	0.846***
N	7,065		4,599		346		13,179	

Standard errors in parentheses, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$.

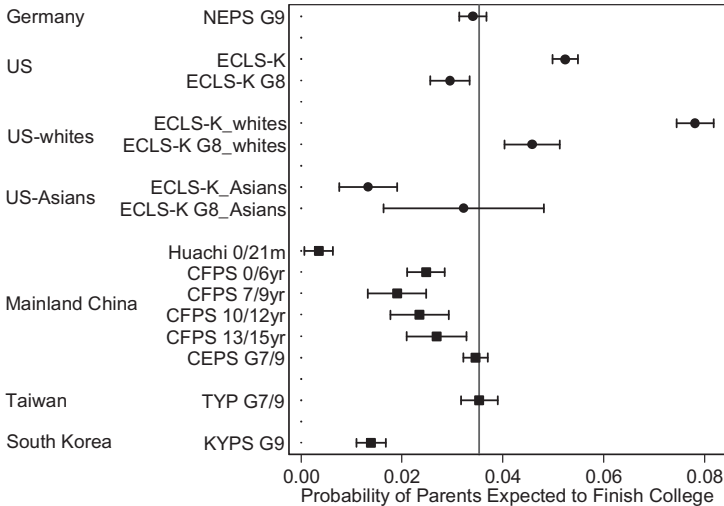


Figure A. Coefficients from probability linear regression of parental educational expectations on family background.

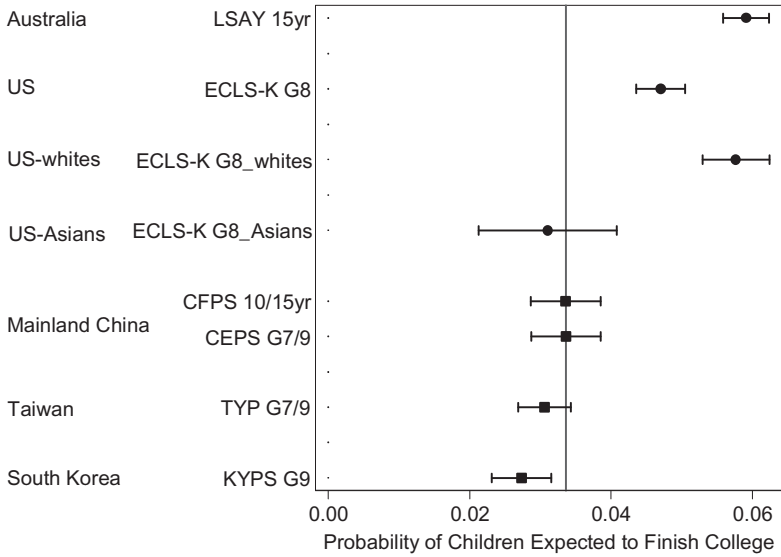


Figure B. Coefficients from probability linear regression of children's educational expectations on family background.