Preprint – Forthcoming in the British Journal of Sociology

Cultural capital and perception of teacher-student relationships: uncovering inequalities at schools in China

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Abstract

A long tradition in stratification research argues students with higher cultural capital (CC) are likely to be treated by their teachers as possessing the "right culture," which positively affects their academic performance. Nevertheless, the literature has paid little attention to the role of students' perception in this process. Using two waves of the China Educational Panel Survey, we investigate how students' CC affects their own understanding of teacher-student interactions, including its gender difference. Fixed effects regressions show a substantially positive effect of CC on the perceived frequency of teachers praising and calling on students to answer questions across subjects. Nonetheless, we also find the lack of CC is not punished and that the CC's effect varies across its specific components and gender. These findings pave the way for elucidating the entire causal chain of intergenerational social inequality via CC, teacher bias, students' perception, and their educational outcomes.

Keywords: cultural capital, teacher bias, gender, social inequality, China.

Introduction

The relationship between teacher-student interactions and students' outcomes is one of the substantial theoretical mechanisms of social reproduction (Bourdieu and Passeron 1990; DiMaggio 1982). Sociologists of stratification and education suggest that teachers are not neutral to students' cultural capital. Teachers pay more attention, communicate preferentially, and perceive students who possess and engage in elite culture as more intelligent than other students (DiMaggio 1982; Jæger and Møllegaard 2017; Sortkaer 2019). These arbitrary treatments amplify social inequalities, favouring students with higher levels of cultural capital (Bodovski and Farkas 2008; Lareau 2011). Although such an unequal structure incorporating cultural capital and teacher bias seems evident, there is one important missing piece in this line of research: students' perception of their relationship with teachers. Paying close attention to this cognitive dimension in respect of cultural capital, the current study contributes to scholarship in three ways.

First, the role of cultural capital in social reproduction can be better explained. A vast literature explains that students' socioeconomic background induces certain teacher attitudes/bias, which directly affects students' outcomes. However, students are not passively rewarded nor penalized by their cultural codes; rather, they may develop a particular way of seeing the world and behaving in accordance with their cultural norms. Recent ethnographic research (Calarco 2018) examines the agency of advantaged

children and shows how they challenge rules and request teachers' actions beyond what is fair and required. In practice, students with higher cultural capital may be more empowered to ask for help, for instance, by having teachers' phone numbers (Richards 2022) or going directly to the teacher's desk in the classroom to ask a clarifying question (Calarco 2018). Given this active involvement of students, it is also logical to assume that teacher attitudes—possibly influenced by students' cultural capital—do not determine students' outcomes in a direct manner. Instead, students may perceive their relationship with teachers differently across cultural capital, such that advantaged students navigate/negotiate institutions and positively interpret teacher attitudes, leading to favourable consequences. The present article thus sheds light on the heterogeneity in students' perception of teacher-student interactions, while its effect on educational outcomes qualifies as the topic for future research.

Second, the aforementioned approach advances the body of knowledge not only in stratification research but also in social psychology. As far as the role of students' perception is concerned, social psychologists have made great progress in evaluating how the cognitive dimension of the teacher-student interaction drives educational performance. They argue that the way in which students recognize the relationship influences such outcomes as academic motivation, school engagement, and educational attainment (Davis 2003; Finn et al. 2009; Thijs and Fleischmann 2015). Nevertheless, this line of study has not paid adequate attention to the potentially unequal distribution of this perception across the board. In particular, the association between cultural capital and how students enculture their relationship with teachers (i.e., teacher bias) is missing in social psychological research, arguably because their focus is on the overall effects rather than the heterogeneities associated with students' background. This paper therefore shows how cultural capital explains students' experience in the classroom from their own perspective, thus, bridging stratification and social psychological studies.

Third, the research target is strategically selected to elucidate the function of cultural capital from a comparative perspective. Most literature on the link between social origin and teacher-student interaction has focused on WEIRD (western, educated, industrialized, rich, and democratic) countries. We seek to expand our knowledge by using the case of China, where student achievement is remarkable in comparison to other parts of the world (OECD 2019). Nevertheless, recent research detects growing inequalities in performance between advantaged and disadvantaged students in China (Golley and Kong 2018; Hannum et al. 2019). Indeed, in contrast to other East Asian societies such as Korea and Taiwan, the effect of social origin on children's education (using both absolute and relative measures) has been significantly exacerbated despite educational proliferation in China (Jiang and Tam 2015). This within-country inequality may be substantially attributed to the abovementioned process of social reproduction embedded in students' perceptions of their relationship with teachers. In China, teaching has the highest social status among professions (Dolton et al. 2018), and there is an emphasis on a transmission teaching approach that relies on teacher-directed and teacher-centred pedagogies under an

exam-oriented system (Tan 2017). Examining the perceived teacher-student relations in this non-WEIRD case is therefore imperative to better understand how cultural capital operates in forming social stratification and inequality.

Thus, this study leverages two waves of a representative, probabilistic, and school-based large-scale survey of Chinese middle-school students, their parents, teachers, and principals to investigate the association between cultural capital and students' perception of their interaction with their teachers. In so doing, we examine heterogeneous effects by students' gender, given that one of the main criticisms of Bourdieu's cultural capital theory is that he mainly focused on the social class without adequate attention to other attributes, including gender (Hall 1992; McNay 1999). In what follows, we review the relevant literature to form hypotheses, followed by a brief description of the Chinese education system, data and methods, and analysis results. Our findings show, on average, students with higher cultural capital perceive their relationship with their teachers more preferentially, but there is no significant effect on the perception of criticism. We also find that despite girls' higher cultural capital, the level at which students incorporate and engage in the dominant culture has a stronger positive effect on their perception of teacher-student relationships among boys. Some implications and directions for future research are discussed in the final section.

Cultural capital and perception of teacher-student relations

In the cultural capital approach, students' outcomes are affected by a set of subtle cultural conventions that exist in society and are transmitted from parents to children through investment and socialization (Bourdieu and Passeron 1990; Jæger and Breen 2016; Jæger and Karlson 2018). At the more general level, cultural capital can be understood as the knowledge of the dominant conceptual and normative cultural codes in a society (Jæger 2009; Jæger and Breen 2016). A central argument in reproduction theory (Bourdieu and Passeron 1990) is that this type of capital is rewarded based on the taste of those who hold power in the educational system and does not necessarily reflect the true skills of students. Thus, schools are "catalysing" factors that convert cultural capital into educational outcomes (Breinholt and Jæger 2020). At the same time, qualitative evidence suggests that higher cultural capital equips students with the cultural knowledge and sense of entitlement that enable them to navigate interactions with adults and be seen as persons worthy of adult attention and interest (Calarco 2018; Lareau 2011). In consequence, cultural capital may affect the relationship between students and their teachers.

The literature has suggested teacher bias as a prominent mechanism in the relationship between cultural capital and educational success (Dumais 2006), which has been emphasized in Bourdieu's work (Bourdieu and Passeron 1979, 1990). In this argumentation, cultural capital signals are misinterpreted "*as manifestations of actual academic brilliance and develop upwardly biased perceptions of children*" (Jæger 2011:283) by teachers. Students with higher cultural capital are arbitrarily rewarded due to their

fit with gatekeepers' implicit norms. As DiMaggio pointed out (1982), teachers communicate more easily, give more attention, and provide more special assistance to students who signal high-status culture than students who lack cultural capital. This is highly consequential for future success because besides affecting rewards at schools, studies in psychology have confirmed a positive effect of teachers' caring behaviour on students' cognitive skills and abilities (for a review, see Davis 2003). More recent literature indicates that school resources, such as teachers, could (a) amplify, (b) reduce, or (c) maintain differences produced by cultural capital (Li et al. 2021; Marteleto and Andrade 2014). If cultural capital generates favourable interactions, teachers will amplify inequalities already generated by differences in embodied capital. On the other hand, if higher levels of cultural capital generate the opposite effects on teacher-student interaction, this may reduce social inequalities. Likewise, if there is no effect, the interaction would not intervene in the process of social reproduction, and it may follow other mechanisms.

Additionally, social hierarchies are not only reproduced through objective social conditions but also through the effect on how individuals perceive and understand the world. Following this argument, researchers have asked how cultural capital could also affect social cognition (e.g., Kim & Kim, 2009). As Bourdieu explained, cultural dispositions operate as a "*matrix of perceptions, appreciations, and actions*" (1977:95). Thus, it is meaningful to analyse the effect of the perception of teacher-student relations because this could also be a path of social reproduction and, as mentioned above, likely affects educational outcomes. However, this is a glaring gap in the literature that this study attempts to fill.

Social psychologists have long argued that the perception of social relationships is explained more by the dispositional characteristics of individuals than by the actual nature of the social environment (Lee et al. 2017; Sarason, Sarason, and Shearin 1986). On the other hand, scholars have also discussed how power affects the perception of social relationships (Simpson, Markovsky, and Steketee 2011). From an interpersonal perspective, power is a structural aspect of society and emerges from the stratification of social groups (Depret and Fiske 1993). Moreover, differences in power result in dispositions that positively affect the perception of social relations, such as self-esteem, self-enhancement, and the feeling that one can control their environment (Wang 2015; Wojciszke and Struzynska–Kujalowicz 2007). As a central stratifying factor and a source of power differential, cultural capital may therefore play a pivotal role in how students perceive their social environment and social relationships. A recent study in the Chinese context shows that cultural capital enhances the perception of one's own worth and capacities to achieve goals (i.e., self-esteem and self-efficacy, respectively), which explains differences in educational outcomes (Hu and Wu 2019). Similarly, perceived preferential attitudes toward students, such as praising or asking questions, could also be possible rewards in teacher-student relations because being partial to one student gives them advantages over others. Nevertheless, we know little about how cultural capital affects perceptions of relations with others, including teacher-student relations. Thus, we hypothesize:

Hypothesis 1: The higher the student's cultural capital, the more preferential the students perceive their interaction with teachers.

Most empirical studies on the effect of cultural capital in schools interpret educational success as a sign of how institutions reward those embodying the "right" culture. As mentioned, teachers tend to possess a positive bias towards students with higher cultural capital (e.g., DiMaggio 1982). Nevertheless, the arbitrariness of the institutions is not only manifested through preference towards higher levels of cultural capital or indifference toward those who lack the right culture. The behavioural-analytic literature distinguishes between negative and positive punishments (Skinner 1953). While the former refers to punishments by taking away something, the latter is a punishment that adds something. For instance, not praising or ignoring students can be considered a form of negative punishment that implicitly realizes rewards of cultural capital, whereas criticism in front of the audience is a typical form of positive punishment (Clair 2020). Qualitative studies suggest advantaged students are more likely to avoid corrective teachers' reactions to misbehaviour through positive (e.g., homework-related) or negative (e.g., missing recess) punishments (Calarco 2020; Glass 2014). However, the relationship between students' cultural capital and perceived punishment—especially positive ones— has been empirically elusive. We therefore directly test the effect of cultural capital on perceived positive punishment in teacher-student relations (i.e., perceived criticism) with the following hypothesis:

Hypothesis 2: The higher the student's cultural capital, the lower the perception of teachers' criticism.

Heterogeneous effect by students' gender

Bourdieu's cultural capital theory is often criticized as lacking attention to gender and other stratifying factors (Hall 1992; McNay 1999). Nevertheless, Bourdieu (1979) acknowledged that the use of cultural capital varies between boys and girls. Dumais (2002) explains this phenomenon through the distinction between capital and habitus. Boys and girls may have the same amount of cultural capital, but the orientation they have toward using those resources (i.e., habitus) may be quite different based on their socialization and their perceptions of the social environment. Combining this gender perspective and our focus on cognitive dimensions, we explore how the link between cultural capital and the perception of teacher-student relations differs across students' gender.

A long-standing body of literature has suggested that boys are less popular at school when they engage in arts than physical activities because their masculinity is questioned (Lehman and Dumais 2017). The same judgment may be reproduced by teachers as they also have internalized traditional gender dispositions (Dumais 2002). As DiMaggio (1982) argued, cultural interests and activities were strongly prescribed for girls but less or even negatively sanctioned for boys. Considering that teachers

tend to pay more attention to boys than girls (Bassi et al. 2018), one may assume cultural capital can compensate for preferential attention and make girls more visible in the classroom (Dumais 2002).

On the other hand, despite better academic achievement, evidence shows that girls are more likely than boys to have negative self-beliefs (Diseth, Meland, and Breidablik 2014), and to underrate their abilities (Furnham, Hosoe, and Tang 2001). This means that lower levels of self-efficacy and self-confidence could potentially hinder the translation of cultural capital into better perceptions of the social environment for girls. Thus, we extend the two previous hypotheses by exploring gendered effects of cultural capital on the perception of teacher-student relations. Two logically plausible hypotheses are stated as follows:

> *Hypothesis 3: The effect of cultural capital on perceived teacher-student relationships is stronger for girls than boys.*
>
> *Hypothesis 4: The effect of cultural capital on perceived teacher-student relationships is stronger for boys than girls.*

The Chinese educational system

Over the last decade, social scientists in China have conducted large-scale and probabilistic surveys of families and children, including the China Family Panel Survey and the China Educational Panel Survey. This permits high-quality empirical inquiry into education and social inequality in a non-WEIRD country, whereby one may better understand not only China as such but also other societies from the comparative viewpoint. In this section, we briefly describe the Chinese education system as a background of analyses and discussions that follow.

The pre-higher education system can be divided into compulsory and post-compulsory education. First, six years of primary education and three years of junior high school have been part of compulsory education since 1986. Second, there are three years of senior high school. Our study focuses on two waves of a cohort that started in seventh grade. Compulsory education is free, which aims to reduce unequal distribution of educational resources across families/schools, and thus cultural capital may have a more important role in forming class divide than in other contexts. At the end of ninth grade, students sit their first citywide standardized exam to compete for admission opportunities to senior high schools.

Since 2014, the Chinese government has sought to establish a proximity-based admission policy to enrol students in primary, middle, and high schools (Dong and Li (2019). The policy entitles students to enrol in schools in the area of residence free of charge. Thus, the proportion of students allocated to academically higher-performing schools should be similar in each district. Despite such an officially no-

choice system, however, evidence suggests that affluent families and highly educated parents manage to get their children into these "hot" schools (Zhou, Mau, and Jordan 2020).

From a comparative perspective, Gruijters et al. (2019) also delineate four characteristics of the Chinese educational system. First, China has a moderate level of horizontal differentiation or tracking, which is comparable to the United States and lower than the Netherlands and Germany. Only the United Kingdom exhibits a lower level of tracking. Similarly, the level of funding centralization in China and the United States are low, with the other countries classified as (very) high levels of centralization. In contrast, China has the highest level of standardization of curricula and testing among the five countries compared. This feature is particularly relevant because variation in educational outcomes between schools cannot be attributed to curriculum-related differences. Regarding the payment of tuition fees, the amount of education cost for Chinese parents is larger than in Germany and the Netherlands but lower than in the United Kingdom and the United States. This also indicates that in China non-economic attributes should play a certain role in forming inequalities among students.

Data and methods

Data

The data for this study are from the first and second waves of the China Educational Panel Survey (CEPS). This is the first longitudinal, large-scale, probabilistic, and representative school-based student survey in China. The data can be accessed from public repositories for replications and further analyses (National Survey Research Center 2015). In the baseline, seventh and ninth graders from 438 classes at 112 schools in 28 counties were surveyed with a follow-up of the youngest cohort one year later. The survey follows a stratified, multistage sampling design with probability proportional to size. First, 28 primary sampling units from a total of 2,870 counties/districts were drawn. Second, from each of those counties/districts, 4 middle schools were sampled. Third, 2 classrooms from seventh grade and 2 classrooms from ninth grade in each school were selected. Finally, all the students from those classrooms were surveyed. The sampling units of the first three stages were randomly selected.

The analyses in this work consider student, teachers, parents, and school principals' questionnaires. The sample used in this study is comprised of two waves: The baseline of 10,279 seventh graders who were first surveyed in 2013-14, and those who were surveyed again in eighth grade with a 91.9% response rate (N = 9,449). In addition, we restricted the sample to those observations with complete observations. Since teacher characteristics are crucial confounders to be considered, the analytical sample includes only students with information about their teachers (N = 8,300).

Variables

Dependent variable. This study utilizes multiple dependent variables. Teacher attitudes are measured by students' perceptions. We included perceptions about homeroom teachers and subject-specific teachers (Mathematics, Chinese, and English) concerning (1) preferential relationships and (2) criticism. In regard to the former perception, the survey asked students whether they agree with the phrase that the teacher "*always praises them*" for each of the four teachers. In addition, for the three subject-specific teachers, students are asked whether they agree that the teacher "*always calls on me to answer questions in class.*" The variables range from 1 "strongly disagree" to 4 "strongly agree." As to perception of positive punishment, we used the perceived criticism from homeroom teachers as the main indicator, since it has a strong and negative connotation in Chinese (批评). The survey asked students to state the frequency of being criticized by homeroom teachers based on the same 4-point scale. All the variables are assumed as continuous in the analysis for the sake of simplicity, while analyses are replicated using ordered logistic fixed effects models for robustness checks.

Independent variable. Since its popularization, researchers of cultural capital (Lamont and Lareau 1988) have acknowledged the need to discuss whether the concept of cultural capital is applicable in a context different from France, where it was originally conceived. In our case, a growing body of literature has suggested its applicability in East Asia (Byun, Schofer, and Kim 2012; Yamamoto and Brinton 2010) and in the Chinese context in particular (Gao 2011; Hu and Wu 2019). These studies show there is a legitimate culture in China that generates social and cultural exclusion. To measure this, we used six items following the literature that captures different aspects of cultural capital (Jæger and Karlson 2018). An exploratory factor analysis suggests a single factor with an eigenvalue greater than 1. Since the items demonstrate a Cronbach's alpha of 0.54 in wave 1 and 0.48 wave 2, we used them as an aggregated index and separately. Previous studies in sociology of education (Dumais 2002) have also adopted this twofold strategy to examine the effects of cultural capital on educational outcomes.

First, *familiarity with legitimate culture* is captured with three indicators measuring children's high cultural involvement (DiMaggio, 1982). In China, Gao (2011) argues high-brow cultural activities cover not just western *beaux-arts* but also traditional forms of arts such as calligraphy or memorizing Chinese poems. Thus, we included (1) the hobby of calligraphy as a context-specific high-brow cultural activity; (2) the hobby of playing musical instruments as a western *beaux art*; and (3) visiting museums, zoos, or science museums alone or with parents. The second aspect is *reading*, which is quantified by the number of books owned by their family, excluding textbooks or magazines. The third aspect is *extracurricular activities* captured by a broad indicator of (1) whether any activity is taken, and (2) a more specific indicator of whether the student attends summer/winter camps.

We constructed a summary scale of students' cultural capital using a polychoric principal component analysis (PPCA) for ordinal variables. The index has mean zero and standard deviation 1. All are assumed to have the same weight. Tetrachoric correlations are used when each of the ordinal

variables has only two categories. The details of questions and categories are reported in Table S1 of the supplementary material. Slight differences in the phrasing of questions between waves in some of the items do not substantively modify their meaning.

Control variables. Several time-variant control variables are included. First, teacher bias can be attributed to cultural capital if its effect is net of educational performance, cognitive skills, self-concept, and social connections. Therefore, we include the grade ranks in midterm exams for Mathematics, Chinese, and English. In CEPS, cognitive skills are measured based on a test assessing students' aptitudes over 22 items on reasoning and problem-solving (Zhao et al. 2017). The test is unrelated to the school curriculum. To facilitate the comparability across students, CEPS provides scores estimated using an item response theory (IRT) model and z-scores. In addition, self-concept could explain differences in perceived teacher attitudes. Therefore, we incorporated the declared difficulty of each of the subjects with students' confidence in their own future. For the first set of indicators, the original variables of self-reported difficulty of the subjects at present have been reversed, ranging from 1 "Not difficult at all" to 4 "very difficult." Regarding the self-confidence, students were asked "are you confident in your future?". Answers range from 1 "Not confident at all" to 4 "very confident". Finally, models account for a continuous indicator of the number of friends declared by the students as a measurement of social connections.

Second, since students change their teachers between waves, models are controlled for four crucial teachers' characteristics that could affect both cultural capital development and teacher-student interaction: teachers' age, experience, gender, and educational level (junior college, bachelor from adult education, bachelor from regular education, or master's degree or higher). For models predicting perceptions of relationships with homeroom teachers, we include the particular teaching subject as a control (Mathematics, Chinese, English or others).

Models also incorporate time-invariant variables as controls when assumptions are relaxed to examine heterogeneous effects of cultural capital by gender. We controlled for the highest educational level of parents as continuous, students' migrant status (1 = local, 2 = within-province migrant, 3 = cross-province migrant), students' *hukou* status[1] (1 = agricultural, 0 = non-agricultural), and the higher occupational status of parents (0 = technical worker, ordinary staff in manufacturing industry, ordinary staff in service industry, self-employed worker, peasant, unemployed, other; 1 = Government official, middle/senior management personnel of corporations, teacher, engineer, doctor, lawyer).

[1] Differences between rural and urban areas are considered one of the most important sources of inequality in post-reform China (Wu 2019). The Chinese household registration (*hukou*) system divides the country into two societies, where residents of rural areas are entitled to fewer rights and benefits than the urban population.

Analytical strategy

As explained by Jæger (2011), a common limitation of previous studies on cultural capital has been the lack of control for unmeasured characteristics of individuals that are correlated with cultural outcome and educational outcomes. For instance, parents who belong to a higher social class may select teachers with particular teaching styles, and may also positively affect the embodiment of cultural capital among students. Since social class is unlikely to change in an interval of one year, we can use fixed effect models to address the endogeneity generated by this variable and other unobserved time-invariant variables:

$$y_{it} = \beta_1 x_{it} + G_1 c_{it} + a_i + u_{it} \quad (1)$$

Where y_{it} represents the observed perception of teacher-student relation of student i and time t, x_{it} is the focal independent variable (i.e., cultural capital of this student), and β is the estimate for the cultural capital effect. We analyse an aggregated indicator of cultural capital and a vector of specific indicators. *C* stands for a vector of control variables. The latter includes a control for time effects due to possible unexpected variations or events affecting the outcome variable. The equation includes two components of the error term. First, u_{it} is an idiosyncratic error that varies across subjects and over time. Second, a_i denotes stable student-specific characteristics that may be related to the covariates. Thus, it captures unobserved time-constant individual heterogeneity. Nevertheless, it is dropped by subtracting the variables from their student-specific means over t

$$y_{it} - \bar{y}_i = \beta_1(x_{it} - \bar{x}_i) + G_1(c_{it} - \bar{c}_i) + u_{it} - \bar{u}_i \quad (2)$$

Or in a shorter form representing the time-demeaned data

$$\ddot{y}_{it} = \beta_1 \ddot{x}_{it} + G_1 \ddot{c}_i + \ddot{u}_{it} \quad (3)$$

Although this fixed effect estimator allows for arbitrary correlation between the explanatory variable and a_i, any time-invariant explanatory variable is swept away by the fixed effect transformation. Nevertheless, since it is a stable student-characteristic, we cannot include students' gender as a moderator of the cultural capital effect. To estimate the effect, we assume that the unobserved effect a_i is uncorrelated with our explanatory variables and utilize random effects models. The key feature of this model is that the composite error term is defined as the sum of the stable student-specific characteristics that may be related to the covariates and the idiosyncratic error v_{it}. Thus, a general intercept is included, and student-specific intercepts are treated as random components of the error term. Therefore, we can rewrite equation (1) as

$$y_{it} = \beta_0 + \beta_1 x_{it} + G_1 c_{it} + v_{it} \quad (4)$$

Since the sampling strategy randomly selects classes within schools, residuals are likely to be correlated at that level. Therefore, we incorporated clustered random errors at the class level for all the models.

Results

Descriptive statistics

Table 1 provides a general description of the students in the analytical sample. Regarding the perception of teacher-student relationships in wave 1, the average ranges from 1.63 for always being criticized by the homeroom teacher to 2.77 for always being called on to answer questions by the Chinese teacher. In wave 2, perceived criticism (M = 1.86) is also the variable with the lowest average, but the perception of being called on by the English teacher (M = 2.61) is the highest. Regarding covariates, on average, the students score 0.1 points in the Cultural Capital Index within a range from -1 to 3 for wave 1. The average is lower in wave 2 (M = 0.02). Moreover, we estimated the differences in this indicator between wave 1 and wave 2 within students to examine the change in cultural capital in the measured period. As suggested in Figure 1, there is a substantial level of variability in students' cultural capital.

Among the time-variant variables, the mean of academic performance indicators is 0.5 in wave 1 and 0.26 in wave 2. The cognitive skills score is also centred around mean 0 in wave 1, but higher in wave 2 (M = 0.81). On average, students declared having a similar number of friends (M_{W1} = 11.91 and M_{W2} = 10.78) and a high level of self-confidence (M_{W1} = 3.33 and M_{W2} = 3.14) in both waves. The average level of subject-specific declared difficulty is between 2 “a bit difficult” and 3 “not very difficult” for the three subjects and both waves. Finally, regarding time-invariant characteristics, half of the sample are boys (M = 0.51) and students with rural hukou (M = 0.51). Non-migrant students account for 82% and 14% of them have at least one parent with a college degree.

[Table 1 about here]

[Figure 1 about here]

Teachers’ characteristics for both waves are reported in Table 2. There is slight variation between measurement periods. On average, teachers are around 37 to 39 years old, with teaching experience between 15 to 17 years. Regarding gender, homeroom and subject-specific teachers are mostly females, with the lowest proportion in Mathematics (M_{W1} = 0.57 and M_{W2} = 0.59). Lastly, the most common degree is a bachelor's degree. However, most of the homeroom (M_{W1} = 0.47 and M_{W2} = 0.49) and mathematics teachers (M_{W1} = 0.47 and M_{W2} = 0.50) obtained their degrees through regular education, while Chinese (M_{W1} = 0.46 and M_{W2} = 0.44) and English (M_{W1} = 0.45 and M_{W2} = 0.44) teachers mostly obtained their degree through adults’ education. The proportion of teachers with a postgraduate degree is lower than 4% for each of the categories in both waves.

[Table 2 about here]

Effect of cultural capital

Before examining the effects of within-students' variation in cultural capital, models in Table 3 indicate whether higher levels of cultural capital between students across time are associated with perceived teacher-student relations. As suggested from Model 1 to Model 4, students with higher cultural capital perceived more preferential interactions by being praised by homeroom ($B = 0.139$, $p < .001$), mathematics ($B = 0.156$, $p < .001$), Chinese ($B = 0.165$, $p < .001$), and English ($B = 0.161$, $p < .001$) teachers. Moreover, from Model 5 to Model 7, a similar effect is confirmed for the perception of receiving questions from the mathematics ($B = 0.136$, $p < .001$), Chinese ($B = 0.127$, $p < .001$), and English ($B = 0.133$, $p < .001$) teachers. In contrast, there is no significant association between students' cultural capital and their perception of criticism by the homeroom teachers.

[Table 3 about here]

In the second stage, we incorporated students' fixed effects to estimate how within-student variations in cultural capital affect the dependent variables. As aforementioned, these models control for additional time-invariant confounders (e.g., gender, *hukou* status, school administration). The slight reduction in the effect size of the cultural capital coefficient could be attributed to this unobserved heterogeneity. Hausman's test for each model suggests that random effects models do not adequately estimate the effects. Models in Table 4 using fixed effects linear regression models are consistent with the between-students estimations. An increase in the cultural capital level of students increases the perception of being praised by homeroom ($B = 0.062$, $p < .05$), mathematics ($B = 0.118$, $p < .001$), Chinese ($B = 0.121$, $p < .001$), and English teachers ($B = 0.145$, $p < .001$). Regarding the perception of being called on by teachers, an increase in cultural capital between waves also increases the perceived preferent relationship with mathematics ($B = 0.127$, $p < .001$), Chinese ($B = 0.111$, $p < .001$), and English ($B = 0.097$, $p < .001$) teachers. Finally, the relationship between cultural capital and perceived criticism by the homeroom teacher is not significant. Overall, these findings support the argument that higher levels of cultural capital foster perceived preferential relationships with teachers (hypothesis 1). In contrast, the argument that students with lower levels of cultural capital may perceive higher levels of positive punishment, as measured by the perception of higher frequency of perceived criticism, is not supported (hypothesis 2).

[Table 4 about here]

Control variables provide important information for our analysis. First, the effect of the standardized cognitive skills test is not different from zero at conventional levels of statistical precision across models. This result contrasts with the effect of cultural capital, which suggests that the teacher-student relationship could be driven by the embodiment of cultural norms and not by traditional human capital indicators. Second, regarding indicators of performance, there are a few significant effects. An

increase in performance in Chinese increases the perception of being praised by homeroom (B = 0.155, p < .05) and Chinese (B = 0.178, p < .05) teachers. Likewise, an increase in performance in English measured through the class rank also increases perceived praising by the teacher of that subject (B = 0.189, p < .05). In contrast, the same increase reduces the perception of being preferentially called on by Mathematics (B = -0.137, p < .05) and Chinese (B = 0.181, p < .05) teachers. Third, changes in students' self-confidence about their future increase the perception of preferential relations with their teachers across models. At the same time, an increase in the self-reported difficulty of a particular subject reduces the perception of being praised and called on by the teacher of the subject involved. Both results corroborate the validity of our analyses.

For the sake of simplicity and parsimonious visualizations, we have assumed that our dependent variables are continuous in order to use linear regression models. However, they are discrete and ordinal with more than two categories. Therefore, some researchers may argue that ordered logit models are more suitable for analysing the data. A large and inconclusive debate provides reasons to choose either linear or logit-based models when the dependent variables are not continuous (e.g., Mood 2010). For instance, logistic regressions are less robust given the effect of confounding variables that only affect the outcome. While in linear regressions, confounders must affect both dependent and independent variables. Considering this debate, we also estimated ordered logistic regression models to show their equivalence. Consistent with our previous findings, Table S2 in the supplementary material suggests significant and positive effects of the cultural capital index on the perception of teacher-student relationships, except for criticism by the homeroom teacher. Although the effect of the perception of being praised by the homeroom teachers is not significant, it is in the same direction as predicted and supported by the linear models above.

Another possible concern is that the use of longitudinal data does not solve the possibility of reverse causality (Vaisey and Miles 2014). It is plausible to think that perceived teacher-student interactions could foster the acquisition of cultural capital. Therefore, we estimated auto-regressive cross-lagged models for homeroom teachers and subject-specific teachers separately to examine this question (Figure S1 in the supplementary material). These models are a specific type of structural equation model that can be used if two or more variables have been measured longitudinally and the interest is in their reciprocal effects or in untangling bidirectionality. The analysis shows that the effects of cultural capital on perceptions of teacher-student relationships are more than twice the effects in the opposite direction, and these differences are statistically significant in every model using standard statistical tests. The models are controlled for both time-invariant and time-variant attributes. These findings suggest that the direction is as hypothesized.

Moreover, as reported in Table 5, we also estimated the effect of the cultural capital items separately following previous studies in the sociology of education (Dumais 2002; Jæger 2011). Besides informing the mechanisms of social reproduction, this analysis enables us to identify actionable

dimensions of cultural capital that affect the perception of teacher-student relationships when simultaneously controlling for the other items. Of particular interest is the frequency of students visiting museums with their parents, which has positive effects on being preferentially praised by homeroom (B = 0.046, p < .001), mathematics (B = 0.045, p < .01), Chinese (B = 0.034, p < .05), and English (B = 0.038, p < .01) teachers. Likewise, an increase in this item also leads to an increase in the perception of being called on by mathematics (B = 0.029, p < .05) and English (B = 0.032, p < .05) teachers, but not Chinese teachers. Similarly, the number of books at home also exhibits a positive effect on being praised (B = 0.046, p < .01) and called on (B = 0.044, p < .01) by the mathematics teacher, and on being called on by the English teacher (B = 0.034, p < .05). Calligraphy also shows significant effects on a set of dependent variables: the perceptions of being praised (B = 0.088, p < .05) and being called on (B = 0.112, p < .05) by English teachers, and being called on by mathematics teachers (B = 0.111, p < .01). Summer and winter camps have a positive and significant effect on being preferentially praised (B = 0.086, p < .05), and being called on (B = 0.092, p < .05) by English teachers. In contrast to the perceptions of being praised and being called on, the coefficient of perceived criticism by the homeroom teacher is not only insignificant but also close to zero for all the items. In sum, the item-specific analysis indicates that visiting museums, the number of books at home, calligraphy as a hobby, and attending winter/summer camps have a positive effect on being praised and being called on, net of the shared variance between all the cultural capital items, unobserved time-invariant variables, and relevant time-variant controls.

[Table 5 about here]

The results raise the question of whether the shift in students' perception just mirrors changes in the actual relationship with their teachers. This is a reasonable question because changes in the objective relationship are likely to affect the development of cultural capital and thus may violate the unconfoundness assumption by time-variant variables. We therefore leveraged the parents' questionnaire to incorporate two measurements of the teacher-student relationship as control variables. For both waves, parents indicated whether they had been contacted by their child's teachers to discuss their (1) academic performance or (2) conduct. The results are reported in Table S3 of the supplementary material. The sample size is slightly reduced due to the additional variables. The findings for subject-specific variables and homeroom teachers' criticism are consistent when accounting for objective relationships. However, although in the same direction, the effect size of the perception of being praised by homeroom teachers is smaller and insignificant for conventional thresholds. Thus, as suggested, part of the effect on students' perception, but not all, can be attributed to objective relationships.

Another potential concern may be that the effect of cultural capital could be driven by replacements of teachers across waves. We control for some of the teachers' key features (i.e., gender, credential, age, and experience), but it does not fully address unobserved confounders. Therefore, we leveraged teachers' questionnaires and replicated the analyses for the subsample of teachers that did not

change across waves. As shown in Table S4 in the supplementary material, results are consistent with the findings reported above using the whole sample. These fixed-effect models are also robust against confounding effects of unobserved time-invariant teacher characteristics.

Overall, higher cultural capital leads to students' perception of more preferential attitudes in the case of homeroom teachers and across subjects. Nevertheless, there is no evidence supporting the idea that a lack of cultural capital could generate a higher or lower perception of criticism.

Gender difference

The second analytical focus of the study is on the heterogeneity of cultural capital effects by students' gender. As shown in Figure 2, there is an unequal distribution of cultural capital between boys and girls in our analytical sample. The median for girls ($Median_{W1}$ = 0.17 and $Median_{W2}$ = 0.18) is higher than the median for boys ($Median_{W1}$ = -0.21 and $Median_{W2}$ = -0.23) in both waves.

[Figure 2 about here]

When examining the heterogeneity of the effect by students' gender, there is a significant difference in the effect of cultural capital on the perceived frequency of mathematics (B = 0.061, $p < .01$), Chinese (B = 0.059, $p < .01$), and English (B = 0.081, $p < .001$) teachers asking questions in class (see Table S5 in the supplementary material). For boys and girls, cultural capital positively affects the perceived frequency of students receiving questions. However, this effect is stronger for boys than girls, which supports hypothesis 4. As Figure 3 shows, at the minimum level of cultural capital, there is no difference across gender in Mathematics, Chinese, and English. This finding is supported by the insignificant coefficient for the main effect of males in the interactive models (see Table S5 in the supplementary material). When considering the perception of the teacher-student relationship, these findings contradict previous studies that suggest stronger returns to cultural capital for girls in terms of being called on by teachers.

[Figure 3 about here]

At the same time, although no average effect on the perception of being criticized by the homeroom teacher is confirmed for the whole sample, there is a significant interaction between cultural capital and gender when predicting perceived criticism (B = 0.045, $p < .05$). As shown by Panel A in Figure 3, an accumulation of cultural capital does not affect the perception of criticism for girls but enhances boys' perception. Thus, even though girls have higher cultural capital, boys recognize being called on and criticized by teachers more than girls when their cultural capital increases.

Discussion and Conclusion

Teacher bias is one of the central mechanisms explaining the role of educational institutions in forming social inequalities (Breinholt and Jæger 2020; Dumais 2002; Jæger and Møllegaard 2017; Sortkaer 2019). Teachers often favour students who possess and demonstrate high-status cultural codes (DiMaggio 1982). Extending the traditional approach focused on objective attributes, recent studies have started to consider the agency of students and how they use that capital to navigate institutions (Calarco 2018). In this study, we join these new efforts by shedding light on how cultural capital affects the perceptual dimension of teacher-student relationships.

Our findings indicate the positive link between cultural capital and students' perception of preferential relationships with teachers both cross-sectionally and longitudinally, net of performance, cognitive skills, and social connections, among other important possible paths and confounders. Of particular interest, students who embody the "right" culture perceived a higher frequency of being called on and praised by teachers. This effect is largely driven by student behaviours and characteristics, such as whether they attend museums, the number of books they have at home, and whether they do calligraphy as a hobby. In contrast to these perceived interactional rewards, there are no significant effects of cultural capital on the perception of criticism from teachers. That is, higher levels of cultural capital are perceived as rewarded, but they do not affect perceived criticism.

In interpreting these results, one must note the possibility that the children of this study are going through the process of socialization whereby they enculture interpretative cognitive structures (Lizardo 2021). Since the work of Bourdieu (1977), these cognitive structures are considered a matrix of perceptions that structures the environment. Thus, it is logical to assume that students with more cultural capital could possess a preferable perspective of the world, possibly by mobilizing more resources and seeing its consequences. Although the impact of positive perception on educational outcomes is out of the scope of the present paper, these findings pave the way for new research to better understand the path of social reproduction.

Despite such a positive linkage between cultural capital and preferential teacher-student relationships, the lack of cultural capital is not positively punished. This result is in contrast to recent studies in other institutions and contexts that suggest individuals who do not manage the expected cultural codes are punished (Clair 2020). Further investigations are needed to completely rule out the idea that students with lower cultural capital perceive more punishment in the formal educational system. However, one may assume, at least in the context of China, where teacher-directed/centred pedagogies strongly operate, students are generally passive and do not proactively recognize teacher attitudes unless they possess higher cultural capital. Consequently, whereas higher cultural capital operates as a positive factor of perceived praising and calling on, the absence of it does not necessarily result in punishments.

Additionally, this study detects a substantial gender difference in the link between cultural capital and the perception of teacher-student relationships. Our findings indicate that although girls have higher levels of cultural capital, like in other contexts (Aschaffenburg and Maas 1997; DiMaggio 1982; Dumais 2002), the effect of cultural capital on being called on by teachers is stronger for boys. In this case, boys may feel a stronger sense of entitlement which increases their perception of cultural capital returns. Furthermore, despite the insignificant result in the whole sample, cultural capital affects the perceived criticism among boys. A possible explanation is that boys are more visible than girls, as previous studies suggest (Bassi et al. 2018), and cultural capital enlarges that visibility. Moreover, some unique characteristics of the Chinese context could potentially explain this finding. For instance, we show that girls have more cultural capital, and recent evidence about gender gaps in China (Xu and Qiujie 2018) indicates that girls outperform boys in mathematics, Chinese, and English. Thus, the higher returns of cultural capital for boys could be explained because there is less competition when they mobilize or show off their cultural capital. More comparative research is needed to identify country-level characteristics that could drive these gendered effects.

These findings are also important for understanding the processes of social reproduction in East Asia. Research on cultural capital and intergenerational inequality in the Global North has recently been extended to countries in this region (Byun et al. 2012; Yamamoto and Brinton 2010). Given teachers' centrality in such Confucian cultures, the teacher-student relationship, including students' cognition, should be a crucial aspect to better explain the mechanism of inequality in the school setting and beyond. This perspective is of particular importance to contemporary East Asian countries, especially China, where growing within-country inequalities are reported despite their averagely remarkable performance in international standardized assessments like the OECD PISA test. It is also noteworthy from the methodological viewpoint that we incorporated the measurement of calligraphy as an indicator of cultural capital, which showed a certain effect in our models. Future studies in the region can replicate this measure to quantify context-specific traits of high-status cultural distinctions.

Finally, our findings point to at least three implications. First, the robust effect of cultural capital on perceptual dimensions opens avenues to incorporate subjective aspects of inequality into the equation of social reproduction. Advantages are not only passed from parents to children through objective social relations but also through how these children perceive the world. Second, the findings illustrate how a bridge between social psychological and stratification theories can provide a more comprehensive understanding of social cognition. Recent efforts in sociology have also attempted to make this link (Brett and Miles 2021). Thus, by examining how a particular perception varies by cultural capital, we can further elucidate how different socio-demographic characteristics are translated into differential cognitive processes. Third, we show the gendered effects of cultural capital on students' perception of teachers in relation to educational and other societal settings. This finding on gender

difference extends a growing body of literature on the role of cultural knowledge in social inequalities (Clair 2020; Lareau 2015), which primarily focuses on the class divide in the Western context.

Overall, our research offers a foundation for further investigations of the whole causal chain ranging from cultural capital to educational outcomes through the perception of teacher-student relations. To this end, many studies in social psychology support the effect of the perceptual dimensions of the relationship, but more waves are required to answer the extent to which perception can explain social reproduction. In addition, the (in)consistency between perceived and objective teacher-student interactions should be further examined. We control part of this inconsistency with alternative indicators, but future research must develop measurement strategies to examine students' perceptions and teachers' behaviour. Moreover, extending our finding on the substantial variation in cultural capital between waves, a longer time span may provide additional evidence of how individuals embody those changes and stabilize them as part of their habitus. In so doing, comparative studies are essential to detect both country-specific and universal structures. With these directions for future research, the current study significantly advances scholarship in this vein conceptually and methodologically.

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Table 1. Descriptive statistics—Students' time-variant characteristics.

	Wave 1				Wave 2			
Variable	M	SD	Min.	Max.	M	SD	Min.	Max.
Dependent variables								
Praised by homeroom teacher	2.44	0.89	1	4	2.33	0.89	1	4
Praised by Mathematics teacher	2.50	0.94	1	4	2.34	0.95	1	4
Praised by Chinese teacher	2.54	0.91	1	4	2.44	0.93	1	4
Praised by English teacher	2.57	0.93	1	4	2.39	0.94	1	4
Asked by Mathematics teacher	2.75	0.88	1	4	2.47	0.93	1	4
Asked by Chinese teacher	2.78	0.87	1	4	2.57	0.89	1	4
Asked by English teacher	2.88	0.88	1	4	2.61	0.93	1	4
Criticized by homeroom teacher	1.64	0.82	1	4	1.86	0.83	1	4
Independent variables								
Cultural Capital Index	0.12	0.79	-1	3	0.10	0.75	-1	3
Visiting museums	2.06	1.10	1	5	2.22	1.26	1	5
Musical instruments	0.18	0.38	0	1	0.21	0.41	0	1
Calligraphy	0.12	0.33	0	1	0.12	0.32	0	1
Books at home	3.30	1.23	1	5	3.20	1.13	1	5
Extracurricular activities	0.52	0.50	0	1	0.54	0.50	0	1
Summer/winter camps	0.14	0.34	0	1	0.11	0.31	0	1
Time-variant covariates								
Grade rank in Mathematics	0.50	0.28	0	1	0.27	0.16	0	1
Grade rank in Chinese	0.50	0.28	0	1	0.27	0.16	0	1
Grade rank in English	0.50	0.27	0	1	0.27	0.16	0	1
Cognitive Skills	0.07	0.85	-2	2	0.38	0.80	-3.14	2.06
Number of best friends	11.91	14.96	0	99	10.78	16.28	0	99
Self-confidence	3.33	0.68	1	4	3.14	0.70	1	4
Difficulty Mathematics	2.56	0.91	1	4	2.52	0.87	1	4
Difficulty Chinese	2.28	0.79	1	4	2.15	0.75	1	4
Difficulty English	2.42	0.96	1	4	2.58	0.98	1	4
Time-invariant covariates[1]								
Male	0.51	0,50	0	1				
Rural hukou	0.51	0.50	0	1				
Non-migrant status	0.82	0.39	0	1				
At least parent with college	0.14	0.34	0	1				

Note: values for both waves.

Table 2. Descriptive statistics—Teachers' time-variant characteristics.

	Wave 1				Wave 2			
Variable	M	SD	Min.	Max.	M	SD	Min.	Max.
Homeroom								
Age	37.92	6.70	23	61	38.84	38.84	25	55
Experience	15.17	8.48	0	45	16.63	16.63	2	39
Female	0.66	0.47	0	1	0.68	0.68	0	1
Junior college degree	0.07	0.26	0	1	0.09	0.09	0	1
Bachelor degree (adult education)	0.43	0.49	0	1	0.39	0.39	0	1
Bachelor degree (regular)	0.47	0.50	0	1	0.49	0.49	0	1
Master degree or higher	0.03	0.16	0	1	0.02	0.02	0	1
Subject: Mathematics	0.11	0.32	0	1	0.14	0.14	0	1
Subject: Chinese	0.32	0.47	0	1	0.27	0.27	0	1
Subject: English	0.30	0.46	0	1	0.30	0.30	0	1
Subject: Other	0.26	0.44	0	1	0.29	0.29	0	1
Mathematics								
Age	38.95	7.51	23	62	39.45	8.17	20	62
Experience	16.26	8.68	0	42	18.07	9.04	1	40
Female	0.57	0.50	0	1	0.59	0.49	0	1
Junior college degree	0.13	0.34	0	1	0.11	0.32	0	1
Bachelor degree (adult education)	0.39	0.49	0	1	0.37	0.48	0	1
Bachelor degree (regular)	0.47	0.50	0	1	0.50	0.50	0	1
Master degree or higher	0.01	0.11	0	1	0.02	0.13	0	1
Chinese								
Age	38.25	7.83	23	61	38.95	7.79	23	61
Experience	15.33	9.23	0	45	16.58	8.89	1	50
Female	0.75	0.43	0	1	0.75	0.43	0	1
Junior college degree	0.08	0.27	0	1	0.09	0.29	0	1
Bachelor degree (adult education)	0.46	0.50	0	1	0.44	0.50	0	1
Bachelor degree (regular)	0.42	0.49	0	1	0.43	0.49	0	1
Master degree or higher	0.04	0.20	0	1	0.04	0.20	0	1
English								
Age	37.67	7.79	23	62	38.99	7.85	24	79
Experience	14.51	8.98	0	39	16.66	8.95	1	50
Female	0.90	0.31	0	1	0.85	0.36	0	1
Junior college degree	0.10	0.30	0	1	0.12	0.32	0	1
Bachelor degree (adult education)	0.45	0.50	0	1	0.44	0.50	0	1
Bachelor degree (regular)	0.43	0.49	0	1	0.42	0.49	0	1
Master degree or higher	0.03	0.16	0	1	0.02	0.15	0	1

Table 3. Random effects linear regression models on perceived teacher-student relationship.

	Praising				Asking			Criticizing
	Homeroom	Mathematics	Chinese	English	Mathematics	Chinese	English	Homeroom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	B	B	B	B	B	B	B	B
Cultural Capital Index	0.139***	0.156***	0.165***	0.161***	0.136***	0.127***	0.133***	0.016
	(0.011)	(0.020)	(0.018)	(0.016)	(0.020)	(0.017)	(0.017)	(0.012)
Grade rank in Mathematics	0.064	0.134**	-0.007	-0.080	-0.035	-0.038	-0.106*	-0.091
	(0.047)	(0.052)	(0.050)	(0.051)	(0.052)	(0.049)	(0.052)	(0.052)
Grade rank in Chinese	0.099*	-0.068	0.162***	-0.093	-0.078	0.090	-0.060	-0.279***
	(0.046)	(0.048)	(0.046)	(0.047)	(0.051)	(0.048)	(0.052)	(0.047)
Grade rank in English	0.231***	0.072	0.078	0.387***	0.016	0.012	0.231***	-0.067
	(0.053)	(0.060)	(0.058)	(0.059)	(0.058)	(0.059)	(0.062)	(0.053)
Cognitive Skills	-0.042***	-0.049**	-0.044**	-0.042**	-0.023	-0.016	0.016	-0.046***
	(0.010)	(0.015)	(0.015)	(0.014)	(0.016)	(0.013)	(0.016)	(0.011)
Number of best friends	0.002***	0.002***	0.002***	0.003***	0.002***	0.003***	0.001*	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.221***	0.232***	0.224***	0.227***	0.191***	0.186***	0.180***	-0.036**
	(0.011)	(0.017)	(0.017)	(0.017)	(0.014)	(0.015)	(0.015)	(0.012)
Difficulty Mathematics	-0.052***	-0.179***	-0.005	-0.005	-0.107***	-0.023*	-0.022	0.009
	(0.010)	(0.015)	(0.012)	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)
Difficulty Chinese	-0.065***	0.024	-0.143***	0.019	0.001	-0.105***	0.027*	0.064***
	(0.011)	(0.013)	(0.014)	(0.013)	(0.014)	(0.013)	(0.014)	(0.010)
Difficulty English	-0.036***	0.008	0.000	-0.178***	0.006	0.009	-0.154***	0.042***
	(0.010)	(0.013)	(0.012)	(0.012)	(0.015)	(0.013)	(0.013)	(0.011)
Wave	0.024	-0.074*	-0.011	-0.043	-0.258***	-0.173***	-0.203***	0.138***
	(0.017)	(0.029)	(0.027)	(0.029)	(0.031)	(0.027)	(0.028)	(0.023)
Constant	1.872***	1.920***	1.790***	2.159***	2.387***	2.294***	2.685***	1.786***
	(0.099)	(0.161)	(0.191)	(0.160)	(0.162)	(0.190)	(0.192)	(0.139)
Teachers' covariates	YES	YES	YES	YES	YES	YES	YES	YES
Observations	13,266	13,266	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300

Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table 4. Fixed effects linear regression models on perceived teacher-student relationship.

	Praising				Asking			Criticizing
	Homeroom	Mathematics	Chinese	English	Mathematics	Chinese	English	Homeroom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	B	B	B	B	B	B	B	B
Cultural Capital Index	0.062*	0.118***	0.121***	0.145***	0.127***	0.111***	0.097***	0.022
	(0.030)	(0.034)	(0.031)	(0.029)	(0.029)	(0.026)	(0.028)	(0.025)
Grade rank in Mathematics	0.093	0.120	0.071	0.030	0.024	-0.018	-0.070	-0.095
	(0.071)	(0.074)	(0.077)	(0.075)	(0.079)	(0.073)	(0.085)	(0.084)
Grade rank in Chinese	0.155*	-0.046	0.178*	-0.027	-0.036	0.141	-0.053	-0.118
	(0.070)	(0.072)	(0.071)	(0.079)	(0.074)	(0.074)	(0.071)	(0.075)
Grade rank in English	0.029	-0.052	-0.063	0.189*	-0.137*	-0.181*	-0.146	0.013
	(0.083)	(0.081)	(0.090)	(0.091)	(0.068)	(0.082)	(0.087)	(0.092)
Cognitive Skills	-0.004	-0.033	-0.005	0.006	-0.008	0.032	0.019	-0.027
	(0.018)	(0.021)	(0.020)	(0.020)	(0.026)	(0.018)	(0.019)	(0.019)
Number of best friends	0.001	-0.000	0.000	0.001	0.001	0.001	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.140***	0.121***	0.101***	0.110***	0.088***	0.099***	0.099***	-0.061**
	(0.026)	(0.029)	(0.028)	(0.029)	(0.022)	(0.022)	(0.022)	(0.021)
Difficulty Mathematics	-0.034*	-0.116***	0.003	-0.001	-0.049*	0.002	-0.019	0.020
	(0.017)	(0.021)	(0.018)	(0.019)	(0.020)	(0.018)	(0.019)	(0.021)
Difficulty Chinese	-0.020	0.030	-0.087***	0.034	0.013	-0.068***	0.006	0.025
	(0.019)	(0.021)	(0.022)	(0.022)	(0.022)	(0.020)	(0.020)	(0.022)
Difficulty English	-0.032	0.008	0.004	-0.112***	0.004	0.016	-0.079***	0.010
	(0.019)	(0.018)	(0.018)	(0.019)	(0.021)	(0.019)	(0.021)	(0.018)
Wave	-0.048	-0.117**	-0.064	-0.095**	-0.287***	-0.239***	-0.308***	0.184***
	(0.038)	(0.036)	(0.034)	(0.034)	(0.035)	(0.032)	(0.032)	(0.032)
Constant	1.823***	2.198***	2.265***	2.379***	2.693***	2.763***	2.446***	1.861***
	(0.369)	(0.219)	(0.271)	(0.390)	(0.233)	(0.308)	(0.386)	(0.308)
Teachers' covariates	YES	YES	YES	YES	YES	YES	YES	YES
Observations	13,266	13,266	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300

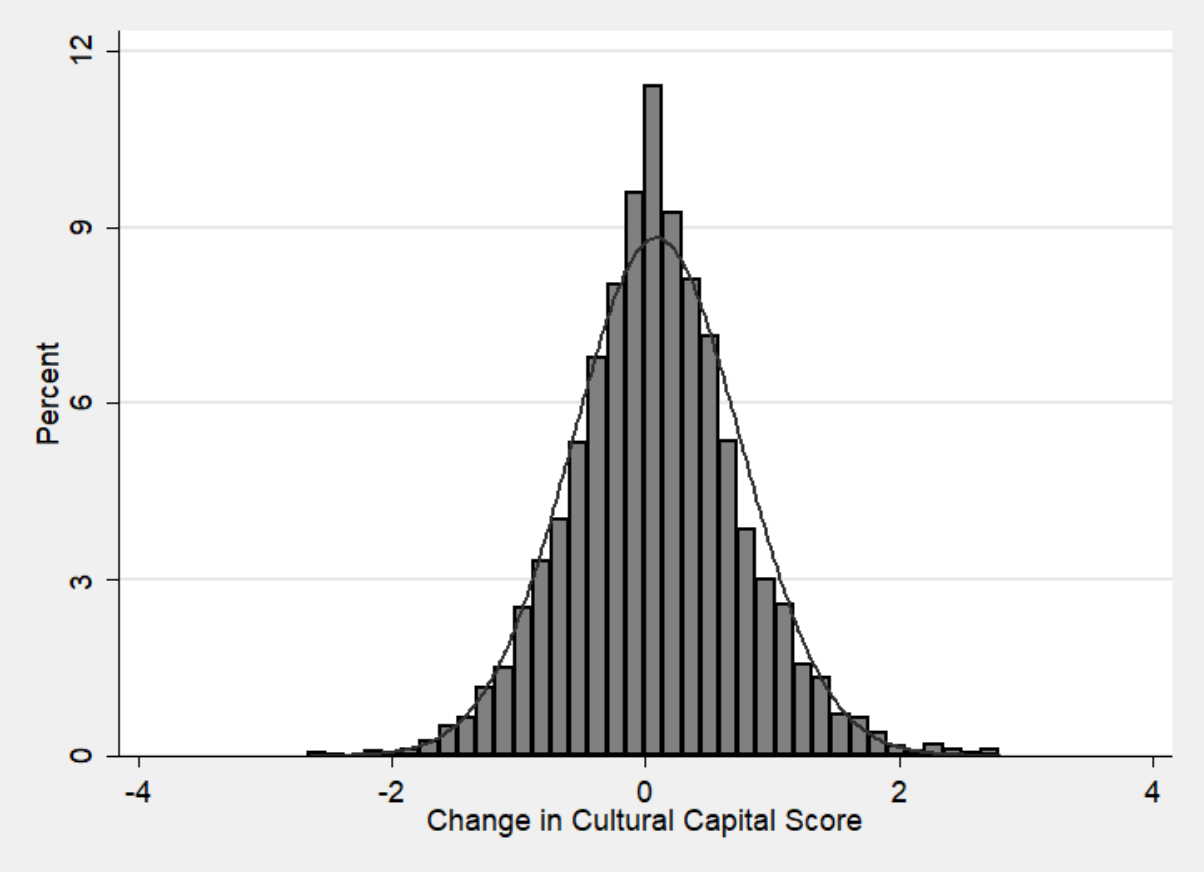
Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table 5. Effects of specific items from fixed effect linear regression models.

	Praising				Asking			Criticizing
	Homeroom	Mathematics	Chinese	English	Mathematics	Chinese	English	Homeroom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	B	B	B	B	B	B	B	B
Visiting museums	0.046***	0.045**	0.034*	0.038**	0.029*	0.020	0.032*	0.001
	(0.012)	(0.014)	(0.013)	(0.012)	(0.014)	(0.012)	(0.012)	(0.011)
Musical instruments	0.033	0.079	0.057	0.068	0.043	0.053	0.029	0.024
	(0.038)	(0.042)	(0.041)	(0.040)	(0.042)	(0.037)	(0.035)	(0.036)
Calligraphy	0.014	0.061	0.069	0.088*	0.111**	0.054	0.112*	-0.079
	(0.042)	(0.047)	(0.045)	(0.044)	(0.038)	(0.042)	(0.044)	(0.042)
Books at home	0.002	0.046**	0.032	0.023	0.044**	0.026	0.034*	-0.004
	(0.016)	(0.017)	(0.017)	(0.015)	(0.017)	(0.015)	(0.016)	(0.014)
Extracurricular activities	-0.039	-0.036	-0.014	0.009	0.024	0.044	-0.009	0.028
	(0.037)	(0.037)	(0.038)	(0.037)	(0.033)	(0.031)	(0.034)	(0.032)
Summer/winter camps	0.063	0.017	0.052	0.086*	0.064	0.045	0.092*	0.019
	(0.032)	(0.040)	(0.037)	(0.035)	(0.036)	(0.040)	(0.039)	(0.035)
Grade rank in Mathematics	0.088	0.108	0.064	0.025	0.016	-0.021	-0.077	-0.093
	(0.071)	(0.074)	(0.077)	(0.075)	(0.079)	(0.074)	(0.085)	(0.085)
Grade rank in Chinese	0.154*	-0.053	0.172*	-0.034	-0.043	0.138	-0.059	-0.113
	(0.070)	(0.071)	(0.071)	(0.079)	(0.074)	(0.074)	(0.072)	(0.075)
Grade rank in English	0.025	-0.053	-0.064	0.188*	-0.135*	-0.180*	-0.146	0.010
	(0.083)	(0.080)	(0.089)	(0.092)	(0.068)	(0.082)	(0.087)	(0.092)
Cognitive Skills	-0.005	-0.033	-0.005	0.005	-0.008	0.032	0.019	-0.027
	(0.018)	(0.021)	(0.020)	(0.020)	(0.027)	(0.018)	(0.019)	(0.019)
Number of best friends	0.001	-0.000	0.000	0.001	0.001	0.001	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.140***	0.121***	0.102***	0.111***	0.088***	0.099***	0.097***	-0.061**
	(0.025)	(0.028)	(0.027)	(0.029)	(0.022)	(0.022)	(0.022)	(0.021)
Difficulty Mathematics	-0.035*	-0.119***	0.001	-0.004	-0.050*	0.000	-0.019	0.019
	(0.017)	(0.021)	(0.018)	(0.018)	(0.020)	(0.018)	(0.019)	(0.021)
Difficulty Chinese	-0.022	0.030	-0.088***	0.031	0.012	-0.070***	0.005	0.024
	(0.019)	(0.021)	(0.022)	(0.022)	(0.022)	(0.021)	(0.020)	(0.022)
Difficulty English	-0.032	0.007	0.002	-0.114***	0.002	0.015	-0.081***	0.011
	(0.019)	(0.018)	(0.018)	(0.019)	(0.021)	(0.019)	(0.021)	(0.018)
Wave	-0.058	-0.128***	-0.074*	-0.108**	-0.293***	-0.246***	-0.313***	0.182***
	(0.037)	(0.036)	(0.035)	(0.034)	(0.035)	(0.033)	(0.032)	(0.032)

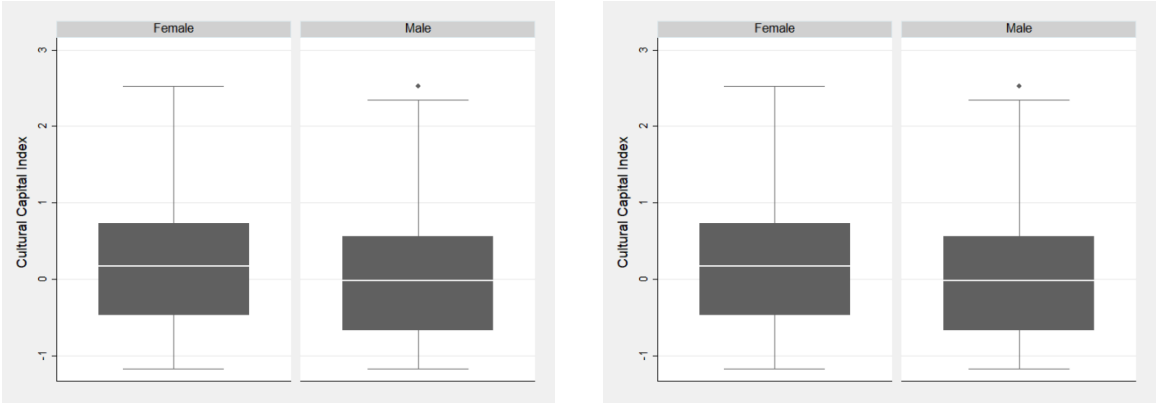
Constant	1.401***	1.538***	1.705***	1.969***	2.251***	2.247***	1.831***	2.149***
	(0.298)	(0.174)	(0.243)	(0.266)	(0.171)	(0.236)	(0.262)	(0.304)
Observations	13,266	13,266	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300	8,300	8,300

Note: Clustered standard errors at class level in parentheses. Teachers' covariates included but not reported. *** p<0.001, ** p<0.01, * p<0.05.



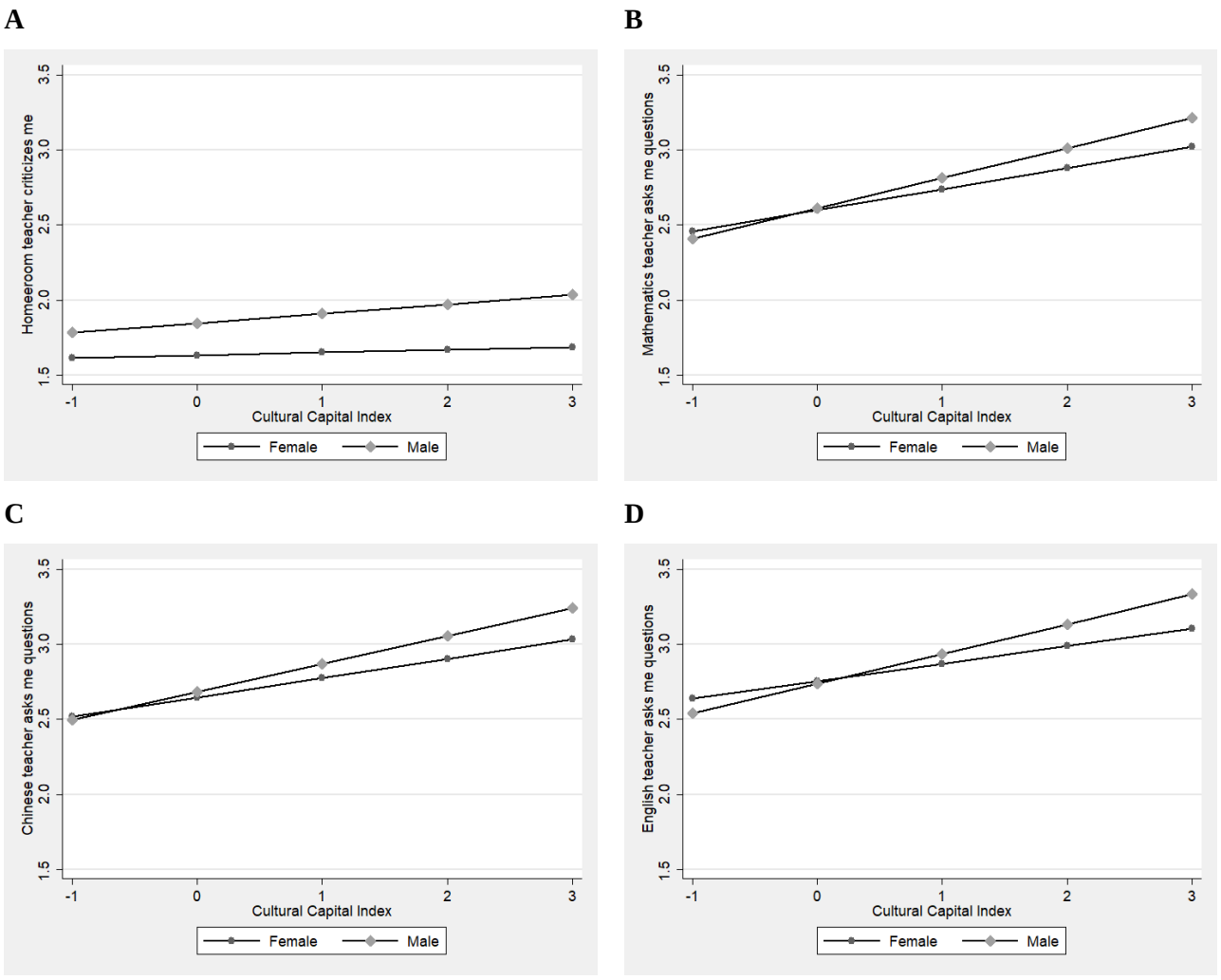
Note: The index has mean zero and standard deviation one.

Figure 1. Within-student change in cultural capital.



Wave 1 Wave 2

Figure 2. Boxplots of Cultural Capital Index by gender and wave.



Note: Adjusted predictions. Covariances at means.

Figure 3. Predicted values of teachers' attitudes by students' cultural capital and gender.

Table S1. Detail of cultural capital items.

Item	Wave	Question	Categories
Visiting museums, zoos, science museums, etc., with parents	T1	How often do you do the following with your parents? Visiting museums, zoos, science museums, etc.	From never (1) to more than once a week (6)
	T2	How often do you visit museums, zoos, science museums, etc. with your parents?	From never (1) to more than once a week (6)
Hobby: Playing musical instruments	T1 / T2	What hobbies do you have? Playing musical instruments	Binary (no/yes)
Hobby: Calligraphy	T1 / T2	What hobbies do you have? Calligraphy	Binary (no/yes)
Books at home	T1 / T2	How many books do your family own? (not including textbooks or magazines)	From very few (1) to a great number (5)
Extracurricular courses	T1	What kind of extra-curricular courses do you take?	Binary (none/any)
	T2	What kind of extra-curricular courses do you take IN THE PAST YEAR?	Binary (none/any)
Summer/winter camps	T1	What do you usually do in winter and summer vacations? Attending summer/winter camps	Binary (no/yes)
	T2	What did you usually do in winter and summer vacations IN THE PAST YEAR?	Binary (no/yes)

Table S2. Fixed effects ordered logit models.

		Cultural Capital Index	
DEPENDENT VARIABLES		B	S.E.
Praising	Homeroom	0.150	(0.086)
	Mathematics	0.281**	(0.090)
	Chinese	0.321***	(0.088)
	English	0.376***	(0.080)
Asking	Mathematics	0.317***	(0.080)
	Chinese	0.286***	(0.076)
	English	0.234**	(0.077)
Criticizing	Homeroom	0.094	(0.075)

Note: Clustered standard errors at class level in parentheses. Student and teacher's time-variant control variables included. *** p<0.001, ** p<0.01, * p<0.05.

Table S3. Fixed effects linear regression models including objective teacher-student relationship.

	Praising				Asking			Criticizing
	Homeroom	Mathematics	Chinese	English	Mathematics	Chinese	English	Homeroom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	B	B	B	B	B	B	B	B
Cultural Capital Index	0.052	0.124***	0.121***	0.146***	0.124***	0.109***	0.098***	0.014
	(0.031)	(0.034)	(0.033)	(0.030)	(0.029)	(0.026)	(0.028)	(0.026)
Grade rank in Mathematics	0.119	0.126	0.093	0.055	0.042	0.009	-0.053	-0.060
	(0.076)	(0.074)	(0.079)	(0.079)	(0.080)	(0.075)	(0.087)	(0.085)
Grade rank in Chinese	0.178*	-0.005	0.192**	-0.001	-0.008	0.129	-0.049	-0.106
	(0.076)	(0.074)	(0.074)	(0.079)	(0.077)	(0.079)	(0.071)	(0.078)
Grade rank in English	0.001	-0.071	-0.096	0.140	-0.140	-0.156	-0.153	-0.001
	(0.090)	(0.085)	(0.090)	(0.095)	(0.078)	(0.088)	(0.092)	(0.091)
Cognitive Skills	-0.001	-0.036	-0.012	-0.002	-0.011	0.029	0.014	-0.032
	(0.018)	(0.023)	(0.021)	(0.020)	(0.027)	(0.019)	(0.020)	(0.019)
Number of best friends	0.002*	0.000	0.001	0.002	0.002	0.002	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.148***	0.129***	0.103***	0.116***	0.087***	0.098***	0.108***	-0.056*
	(0.027)	(0.029)	(0.028)	(0.031)	(0.022)	(0.023)	(0.022)	(0.023)
Difficulty Mathematics	-0.028	-0.108***	0.011	0.008	-0.044*	0.007	-0.013	0.024
	(0.017)	(0.022)	(0.019)	(0.019)	(0.021)	(0.019)	(0.020)	(0.021)
Difficulty Chinese	-0.015	0.040	-0.083***	0.033	0.021	-0.058**	0.013	0.026
	(0.019)	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)	(0.021)	(0.022)
Difficulty English	-0.035	0.002	-0.004	-0.115***	-0.003	0.008	-0.086***	0.012
	(0.020)	(0.019)	(0.018)	(0.020)	(0.022)	(0.019)	(0.021)	(0.019)
Wave	-0.035	-0.106**	-0.055	-0.088*	-0.273***	-0.223***	-0.301***	0.196***
	(0.039)	(0.039)	(0.035)	(0.035)	(0.036)	(0.034)	(0.033)	(0.032)
Schoolwork	0.009	0.061*	0.069*	0.054	0.087**	0.051	0.060*	0.022
	(0.029)	(0.029)	(0.030)	(0.029)	(0.028)	(0.029)	(0.025)	(0.027)
Conduct	0.003	-0.019	0.012	0.033	-0.025	0.026	0.011	0.005
	(0.027)	(0.026)	(0.025)	(0.027)	(0.027)	(0.026)	(0.024)	(0.028)
Constant	1.823***	2.198***	2.265***	2.379***	2.693***	2.763***	2.446***	1.861***
	(0.369)	(0.219)	(0.271)	(0.390)	(0.233)	(0.308)	(0.386)	(0.308)
Teachers' covariates	YES	YES	YES	YES	YES	YES	YES	YES
Observations	12,850	12,850	12,850	12,850	12,850	12,850	12,850	12,850
Number of ids	8,170	8,170	8,170	8,170	8,170	8,170	8,170	8,170

Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table S4. Fixed effects linear regression models for subsample of teachers with followed-up in wave 2.

	Praising				Asking			Criticizing
	Homeroom	Mathematics	Chinese	English	Mathematics	Chinese	English	Homeroom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	B	B	B	B	B	B	B	B
Cultural Capital Index	0.066*	0.108**	0.140***	0.118***	0.133***	0.108***	0.092**	0.024
	(0.031)	(0.039)	(0.031)	(0.035)	(0.031)	(0.029)	(0.032)	(0.027)
Grade rank in Mathematics	0.103	0.110	0.048	-0.019	0.029	-0.015	-0.117	-0.006
	(0.077)	(0.084)	(0.076)	(0.079)	(0.084)	(0.086)	(0.091)	(0.085)
Grade rank in Chinese	0.166*	0.035	0.065	-0.024	-0.004	0.058	-0.060	-0.064
	(0.075)	(0.082)	(0.080)	(0.087)	(0.083)	(0.082)	(0.075)	(0.081)
Grade rank in English	0.078	-0.054	-0.034	0.246*	-0.076	-0.143	-0.122	-0.048
	(0.086)	(0.088)	(0.096)	(0.095)	(0.082)	(0.094)	(0.096)	(0.099)
Cognitive Skills	-0.012	-0.024	-0.022	0.029	0.009	0.016	0.039	-0.037
	(0.018)	(0.023)	(0.020)	(0.021)	(0.020)	(0.018)	(0.021)	(0.020)
Number of best friends	0.002	-0.000	0.001	0.001	0.002	0.002*	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.154***	0.135***	0.083**	0.089**	0.086***	0.104***	0.102***	-0.067**
	(0.027)	(0.031)	(0.025)	(0.032)	(0.025)	(0.025)	(0.025)	(0.023)
Difficulty Mathematics	-0.031	-0.133***	0.012	-0.003	-0.059**	0.020	-0.008	0.025
	(0.018)	(0.023)	(0.018)	(0.020)	(0.022)	(0.021)	(0.021)	(0.022)
Difficulty Chinese	-0.037	0.061**	-0.105***	0.037	0.016	-0.077**	0.004	0.032
	(0.019)	(0.022)	(0.023)	(0.024)	(0.025)	(0.023)	(0.022)	(0.024)
Difficulty English	-0.020	-0.007	0.003	-0.111***	-0.001	0.019	-0.058*	0.002
	(0.021)	(0.021)	(0.020)	(0.021)	(0.022)	(0.022)	(0.024)	(0.019)
Wave	-0.024	-0.098*	-0.049	-0.119**	-0.270***	-0.218***	-0.331***	0.225***
	(0.041)	(0.042)	(0.033)	(0.036)	(0.039)	(0.033)	(0.037)	(0.033)
Constant	1.735***	2.096***	2.007***	2.135***	2.943***	3.122***	2.538***	1.435***
	(0.297)	(0.234)	(0.514)	(0.335)	(0.258)	(0.404)	(0.436)	(0.254)
Observations	10,607	9,568	9,429	9,611	9,568	9,429	9,611	10,607
Number of ids	6,281	5,681	5,576	5,683	5,681	5,576	5,683	6,281

Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table S5. Interaction between gender and Cultural Capital Index.

	Homeroom					
	Praising	Praising	Praising	Criticizing	Criticizing	Criticizing
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	B	B	B	B	B	B
Cultural Capital Index	0.150***	0.152***	0.154***	0.039**	0.016	-0.010
	(0.017)	(0.020)	(0.043)	(0.013)	(0.015)	(0.039)
Grade rank in Mathematics	0.062	0.062	0.062	-0.143**	-0.143**	-0.143**
	(0.048)	(0.048)	(0.048)	(0.052)	(0.052)	(0.052)
Grade rank in Chinese	0.107*	0.107*	0.108*	-0.190***	-0.189***	-0.188***
	(0.047)	(0.047)	(0.047)	(0.048)	(0.048)	(0.048)
Grade rank in English	0.228***	0.228***	0.227***	0.002	0.000	0.002
	(0.056)	(0.056)	(0.056)	(0.053)	(0.052)	(0.052)
Cognitive Skills	-0.039**	-0.039**	-0.039**	-0.048***	-0.048***	-0.048***
	(0.012)	(0.012)	(0.012)	(0.011)	(0.010)	(0.011)
Number of best friends	0.002**	0.002**	0.002**	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.220***	0.220***	0.220***	-0.044***	-0.044***	-0.044***
	(0.015)	(0.015)	(0.015)	(0.012)	(0.012)	(0.012)
Difficulty Mathematics	-0.051***	-0.051***	-0.051***	0.028*	0.027*	0.027*
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Difficulty Chinese	-0.066***	-0.066***	-0.066***	0.054***	0.054***	0.054***
	(0.014)	(0.014)	(0.014)	(0.010)	(0.010)	(0.010)
Difficulty English	-0.039**	-0.039**	-0.039**	0.025*	0.025*	0.026*
	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)
Wave	0.025	0.025	0.025	0.164***	0.164***	0.164***
	(0.026)	(0.026)	(0.026)	(0.023)	(0.023)	(0.023)
Highest education level of father/mother	-0.013*	-0.013*	-0.014*	-0.005	-0.005	-0.006
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)
Migration status (Ref. cat.: local)						
Floating within-province	-0.082*	-0.082*	-0.081*	-0.031	-0.030	-0.039
	(0.034)	(0.034)	(0.034)	(0.030)	(0.030)	(0.031)
Floating cross-province	-0.039	-0.039	-0.035	-0.034	-0.033	-0.036
	(0.032)	(0.032)	(0.033)	(0.026)	(0.026)	(0.026)
Agricultural *hukou* status	0.040	0.040	0.041*	0.043*	0.042*	0.041*
	(0.021)	(0.021)	(0.021)	(0.019)	(0.019)	(0.019)
Male	0.016	0.017	0.017	0.218***	0.213***	0.213***
	(0.021)	(0.021)	(0.021)	(0.018)	(0.018)	(0.018)
Highest occupational level of parents	0.056*	0.056*	0.062*	-0.006	-0.006	0.015
	(0.024)	(0.024)	(0.027)	(0.020)	(0.020)	(0.022)
Male#Cultural Capital Index		-0.004	-0.003		0.046*	0.045*
		(0.021)	(0.021)		(0.019)	(0.019)
Constant	1.880***	1.880***	1.882***	1.657***	1.662***	1.662***
	(0.175)	(0.175)	(0.175)	(0.132)	(0.132)	(0.132)
Time-variant covariates	YES	YES	YES	YES	YES	YES
Multiple interactions	NO	NO	YES	NO	NO	YES
Observations	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300

Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table S5. Interaction between gender and Cultural Capital Index (continued).

	Mathematics					
	Praising	Praising	Praising	Asking	Asking	Asking
	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	B	B	B	B	B	B
Cultural Capital Index	0.175***	0.170***	0.207***	0.171***	0.140***	0.160**
	(0.019)	(0.022)	(0.044)	(0.019)	(0.022)	(0.054)
Grade rank in Mathematics	0.122*	0.122*	0.122*	-0.038	-0.037	-0.038
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
Grade rank in Chinese	-0.046	-0.046	-0.046	-0.071	-0.069	-0.069
	(0.048)	(0.048)	(0.048)	(0.051)	(0.051)	(0.051)
Grade rank in English	0.083	0.082	0.083	0.010	0.007	0.009
	(0.060)	(0.060)	(0.060)	(0.057)	(0.057)	(0.057)
Cognitive Skills	-0.046**	-0.046**	-0.046**	-0.017	-0.017	-0.017
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Number of best friends	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.230***	0.230***	0.230***	0.189***	0.189***	0.188***
	(0.017)	(0.017)	(0.017)	(0.014)	(0.014)	(0.014)
Difficulty Mathematics	-0.175***	-0.175***	-0.175***	-0.106***	-0.107***	-0.107***
	(0.014)	(0.014)	(0.015)	(0.013)	(0.013)	(0.013)
Difficulty Chinese	0.021	0.021	0.021	0.001	0.001	0.001
	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)
Difficulty English	0.000	0.000	0.001	-0.002	-0.001	-0.001
	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)
Wave	-0.069*	-0.069*	-0.068*	-0.256***	-0.256***	-0.255***
	(0.029)	(0.029)	(0.029)	(0.031)	(0.031)	(0.031)
Highest education level of parents	-0.015*	-0.015*	-0.015*	-0.021***	-0.022***	-0.020**
	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Migration status (Ref. cat.: local)						
Floating within-province	-0.048	-0.048	-0.048	-0.077	-0.077	-0.083
	(0.036)	(0.036)	(0.038)	(0.040)	(0.041)	(0.042)
Floating cross-province	-0.004	-0.004	-0.004	-0.050	-0.049	-0.054
	(0.036)	(0.036)	(0.038)	(0.038)	(0.038)	(0.040)
Agricultural *hukou* status	0.047	0.047	0.047	0.075**	0.074**	0.073**
	(0.025)	(0.025)	(0.025)	(0.028)	(0.028)	(0.028)
Male	0.054**	0.053*	0.054*	0.018	0.012	0.012
	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Highest occupational level of parents	0.036	0.036	0.039	-0.009	-0.009	-0.014
	(0.025)	(0.025)	(0.029)	(0.024)	(0.024)	(0.027)
Male#Cultural Capital Index		0.010	0.010		0.061**	0.061**
		(0.023)	(0.023)		(0.023)	(0.023)
Constant	1.923***	1.924***	1.921***	2.420***	2.425***	2.419***
	(0.160)	(0.160)	(0.161)	(0.159)	(0.159)	(0.158)
Time-variant covariates	YES	YES	YES	YES	YES	YES
Multiple interactions	NO	NO	YES	NO	NO	YES
Observations	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300

Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table S5. Interaction between gender and Cultural Capital Index (continued).

	Chinese					
	Praising	Praising	Praising	Asking	Asking	Asking
	(13)	(14)	(15)	(16)	(17)	(18)
VARIABLES	B	B	B	B	B	B
Cultural Capital Index	0.178***	0.185***	0.192***	0.158***	0.128***	0.133**
	(0.019)	(0.021)	(0.042)	(0.018)	(0.021)	(0.044)
Grade rank in Mathematics	-0.018	-0.018	-0.018	-0.047	-0.047	-0.048
	(0.051)	(0.051)	(0.051)	(0.049)	(0.049)	(0.049)
Grade rank in Chinese	0.182***	0.182***	0.181***	0.104*	0.106*	0.106*
	(0.046)	(0.046)	(0.046)	(0.049)	(0.048)	(0.048)
Grade rank in English	0.088	0.089	0.088	0.016	0.014	0.014
	(0.059)	(0.059)	(0.059)	(0.058)	(0.058)	(0.058)
Cognitive Skills	-0.041**	-0.041**	-0.041**	-0.011	-0.011	-0.011
	(0.015)	(0.015)	(0.015)	(0.013)	(0.013)	(0.013)
Number of best friends	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.222***	0.222***	0.222***	0.184***	0.184***	0.184***
	(0.017)	(0.017)	(0.017)	(0.015)	(0.015)	(0.015)
Difficulty Mathematics	-0.001	-0.001	-0.001	-0.020	-0.021	-0.021
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Difficulty Chinese	-0.145***	-0.145***	-0.145***	-0.106***	-0.106***	-0.106***
	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Difficulty English	-0.006	-0.006	-0.006	0.001	0.001	0.001
	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Wave	-0.005	-0.005	-0.005	-0.169***	-0.169***	-0.168***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Highest education level of parents	-0.011	-0.011	-0.012	-0.012*	-0.012*	-0.011
	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Migration status (Ref. cat.: local)						
Floating within-province	-0.051	-0.051	-0.045	-0.084*	-0.084*	-0.087*
	(0.035)	(0.035)	(0.038)	(0.037)	(0.037)	(0.038)
Floating cross-province	-0.004	-0.004	-0.004	-0.011	-0.010	-0.012
	(0.035)	(0.035)	(0.035)	(0.037)	(0.037)	(0.038)
Agricultural *hukou* status	0.045*	0.046*	0.046*	0.065**	0.064**	0.062**
	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.021)
Male	0.052*	0.053**	0.053**	0.044*	0.038	0.038
	(0.020)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Highest occupational level of parents	0.043	0.043	0.042	-0.034	-0.034	-0.050
	(0.025)	(0.025)	(0.028)	(0.025)	(0.025)	(0.027)
Male#Cultural Capital Index		-0.014	-0.013		0.059**	0.059**
		(0.021)	(0.021)		(0.020)	(0.020)
Constant	1.764***	1.762***	1.761***	2.282***	2.289***	2.290***
	(0.191)	(0.191)	(0.190)	(0.189)	(0.189)	(0.188)
Time-variant covariates	YES	YES	YES	YES	YES	YES
Multiple interactions	NO	NO	YES	NO	NO	YES
Observations	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300

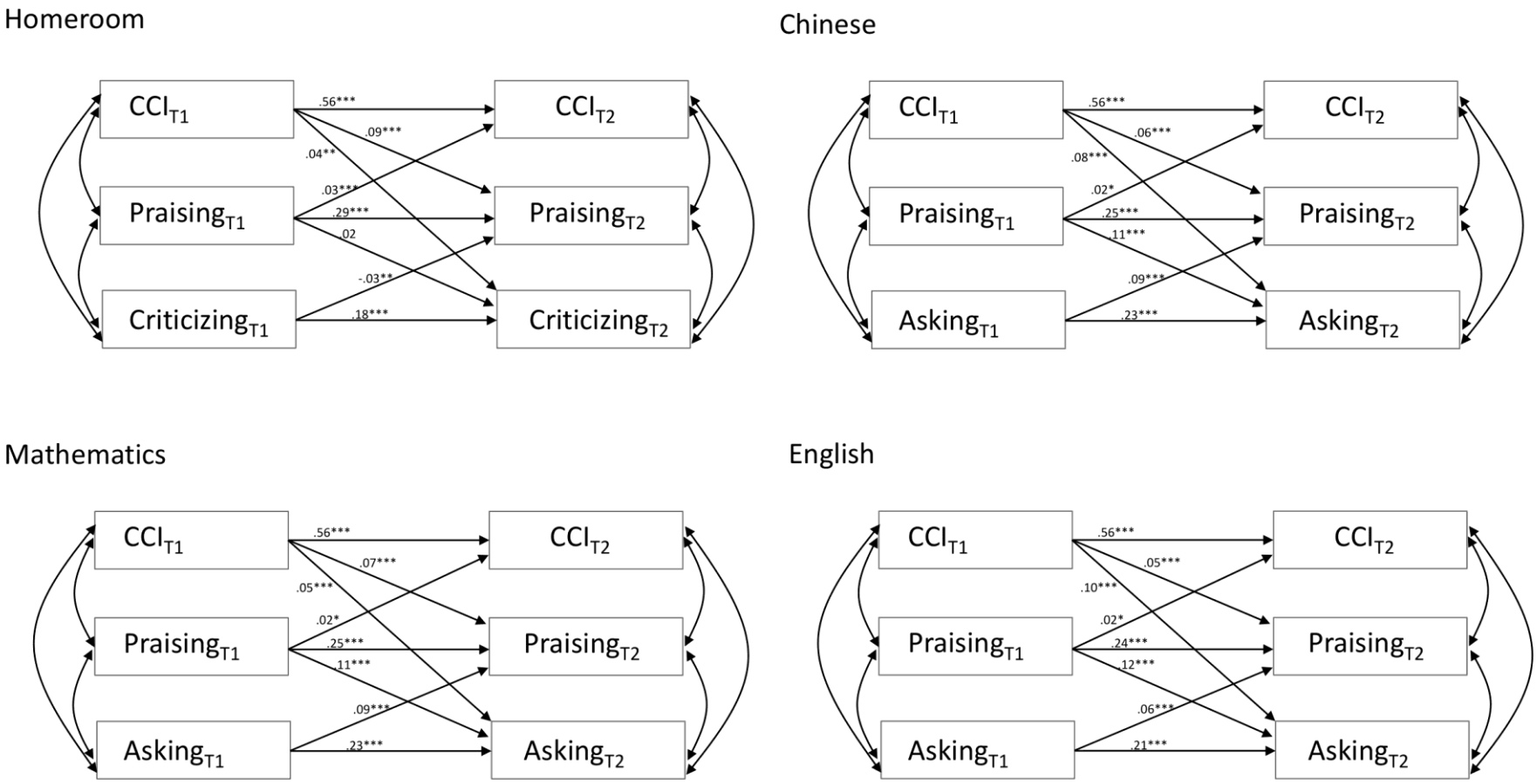
Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Table S5. Interaction between gender and Cultural Capital Index (continued).

	English					
	Praising	Praising	Praising	Asking	Asking	Asking
	(19)	(20)	(21)	(22)	(23)	(24)
VARIABLES	B	B	B	B	B	B
Cultural Capital Index	0.179***	0.187***	0.215***	0.157***	0.115***	0.179***
	(0.017)	(0.020)	(0.040)	(0.018)	(0.021)	(0.047)
Grade rank in Mathematics	-0.091	-0.091	-0.090	-0.103*	-0.103*	-0.103*
	(0.051)	(0.051)	(0.051)	(0.052)	(0.052)	(0.052)
Grade rank in Chinese	-0.072	-0.073	-0.074	-0.063	-0.061	-0.060
	(0.048)	(0.048)	(0.048)	(0.052)	(0.052)	(0.051)
Grade rank in English	0.397***	0.398***	0.397***	0.221***	0.218***	0.219***
	(0.060)	(0.060)	(0.060)	(0.062)	(0.062)	(0.062)
Cognitive Skills	-0.039**	-0.039**	-0.039**	0.021	0.022	0.021
	(0.014)	(0.014)	(0.014)	(0.016)	(0.016)	(0.016)
Number of best friends	0.002***	0.002***	0.002***	0.001*	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-confidence	0.225***	0.225***	0.225***	0.179***	0.179***	0.179***
	(0.017)	(0.017)	(0.017)	(0.015)	(0.015)	(0.015)
Difficulty Mathematics	-0.002	-0.002	-0.001	-0.024*	-0.024*	-0.025*
	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Difficulty Chinese	0.017	0.017	0.017	0.028*	0.028*	0.028*
	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)
Difficulty English	-0.184***	-0.184***	-0.184***	-0.158***	-0.157***	-0.157***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
Wave	-0.038	-0.038	-0.038	-0.204***	-0.204***	-0.203***
	(0.029)	(0.029)	(0.029)	(0.028)	(0.028)	(0.028)
Highest education level of parents	-0.016**	-0.016**	-0.016**	-0.012*	-0.012*	-0.009
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Migration status (Ref. cat.: local)						
Floating within-province	-0.012	-0.012	-0.004	-0.077*	-0.077*	-0.084*
	(0.033)	(0.033)	(0.034)	(0.038)	(0.038)	(0.039)
Floating cross-province	-0.024	-0.024	-0.025	-0.036	-0.034	-0.039
	(0.033)	(0.033)	(0.033)	(0.046)	(0.046)	(0.047)
Agricultural *hukou* status	0.026	0.026	0.027	0.036	0.035	0.033
	(0.022)	(0.022)	(0.022)	(0.025)	(0.025)	(0.025)
Male	0.049*	0.050*	0.051*	-0.007	-0.016	-0.015
	(0.022)	(0.022)	(0.022)	(0.019)	(0.019)	(0.019)
Highest occupational level of parents	0.021	0.021	0.019	-0.033	-0.033	-0.032
	(0.024)	(0.024)	(0.026)	(0.024)	(0.024)	(0.026)
Male#Cultural Capital Index		-0.015	-0.014		0.083***	0.081***
		(0.022)	(0.022)		(0.022)	(0.022)
Constant	2.169***	2.167***	2.169***	2.709***	2.720***	2.719***
	(0.158)	(0.158)	(0.157)	(0.188)	(0.188)	(0.187)
Time-variant covariates	YES	YES	YES	YES	YES	YES
Multiple interactions	NO	NO	YES	NO	NO	YES
Observations	13,266	13,266	13,266	13,266	13,266	13,266
Number of ids	8,300	8,300	8,300	8,300	8,300	8,300

Note: Clustered standard errors at class level in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Figure S1. Auto-regressive cross-lagged structural equation models



Note: Standardized coefficients. Time-invariant control variables included with path to variables in time 1 and time 2. Reciprocal effects of time-variant controls included as well as their covariances. CCI = Cultural Capital Index. Non-significant paths omitted. *** p<0.001, ** p<0.01, * p<0.05.