MIGRANT YOUTH DISADVANTAGES IN CHINA: HOW TEACHER BIASES SHAPE STUDENT OUTCOMES

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Abstract

Over the past three decades, rural to urban migration in China has had unprecedented implications for millions of migrant children. Many of them have been excluded from urban public schools due to their Hukou (residence) status. Those fortunate enough to enter public schools often encounter stereotyping and subtle discrimination from peers and teachers, which may lead to lower academic outcomes. This paper uses a value-added model to analyze the correlation between teachers’ perceptions towards migrant students and their respective Chinese and math test performances in public middle school settings. With a nationally representative panel dataset, we find that rural migrant students are performing at least as well as their local peers on 8th grade midterm exams. However, having a teacher with negative biases against migrant students’ is harmful to their academic outcomes, while having a teacher with a preference for teaching local students over migrant students is not. We conclude by discussing the implications of our findings.

Key Words: Migrant Students, Teacher Perceptions, Stereotype Threat, Value-added Model, China, Public Schools
**Introduction**

Over the past three decades, rural to urban migration in China has had unprecedented implications for the children of migrant workers. According to a report by China's Ministry of Education, the total number of rural children who followed their parents into urban areas exceeded 14 million in 2017 (MOE of China, 2018). Many of these children have been excluded from urban public schools due to their *Hukou*¹ status and have had to opt for lower quality private migrant schools (Chan and Buckingham, 2008; Montgomery, 2012). The migrant children who have been fortunate enough to access public schooling have often faced discrimination and isolation (Fan et al., 2012; Fang et al., 2008). Access to equitable educational opportunities and support for migrant children are of great importance, since continuous urbanization and internal migration processes mean that more urban public schools will need to accommodate even more migrant students (Wang et al., 2018).

One of the most problematic issues is that rural migrant children often face stereotyping and subtle discrimination from peers and teachers for their accents, dialect, appearance, and academic abilities (Chen, 2014; Wang et al., 2015). Anecdotal evidence suggests that migrant students are considered to be poorer in behavior and academics (Lu and Zhou, 2012). Additionally, evidence from experimental studies show that migrant students who are primed to be aware of stereotypes performed worse in tasks involving cognitive skills and working memory compared to their local counterparts (Afridi et al., 2015; Sun et al., 2015). More importantly, migrant children enrolled in public schools also tend to feel less cared for by their teachers, in part due to policies that disqualify them from partaking in the requisite tests for...

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¹ *Hukou* is the residence registration system employed by the Chinese government to control population migration within the country. Generally speaking, a citizen can only enjoy comprehensive public service at the place where their *Hukou* is registered. Details about *Hukou* can be found in the Background section below.
admission to the next level of schooling (Yiu, 2016). As such, in this paper we focus attention on the effect of negative stereotypes and attitudes from teachers on students' academic development.

Researchers have found that teachers' stereotypes and other attitudes (or expectations more generally) are shaped by student characteristics such as gender, race, and socioeconomic background (Diamond, 2004; Liu, 2014; Gershenson, Holt, and Papageorge). Previous studies have also found that teacher expectations of students' academic abilities may influence students’ outcomes and self-perceived competencies (Cole, 1991; Jussim, Eccles, and Madon, 1996; Rubie-Davies, Hattie, and Hamilton, 2006). However, few studies have examined the effect of teachers’ perceptions on migrant students' academic outcomes, given the negative stereotypes associated with migrant students. More importantly, although many studies have identified an academic achievement gap between local public schools and poorer quality migrant schools, few studies have explored the achievement of migrant students enrolled in public schools. Moreover, few studies focus on migrant students' performance in public schools over time, and how teachers' perceptions relate to students' academic performance.

Given this gap in the literature, the goal of our study is to examine whether public school teachers show biased perceptions of migrant students. We focus in particular on the way in which teachers perceive students’ abilities and their attitudes toward the students. We then seek to explore how teachers’ perceptions relate to the academic achievement of migrant students enrolled in public schools. Specifically, we seek to explore three research questions: First, is there an academic achievement gap in Chinese language and/or math between migrant students and local students in public school settings? Second, to what extent do teachers hold negative perception against migrant students? Third, what is the relationship between teachers’ perceptions of migrant students and migrant students' academic performance?
To address these questions, we draw on a longitudinal data set from the China Education Panel Survey collected from 2013 to 2015. The data include 19,487 middle school students from schools randomly selected at the national level and supplemental sampling frames from high migrant density counties. We analyze this data set using a value-added model, comparing the gains in test scores of migrant and local students with teachers who are biased against migrant students to those with non-biased teachers. We also explore how migration status relates to teachers' perceptions of students and whether they relate to students' achievement. We operationalize migration status by identifying students in two ways: we consider those who hold a *Hukou* that is agricultural and non-local to the school they are enrolled in as a "migrant" student, and those who hold local and urban *Hukou* as "local" students.

This study contributes to further understanding the extent to which teachers' perception of students, based on their migration status, might influence students' academic outcomes. Policy makers, teacher educators, and teachers could gain valuable insights as to how to improve migrant students' educational outcomes. The study also suggests possible recommendations for mitigating the impact of teachers' personal biases on students' academic outcomes.

**Background**

*Intra-state Migration in China*

China has been experiencing rapid urbanization since the economy opened up in 1979. As of 2018, China's urbanization rate has increased from 38.53% to 58.52% (Central Government of PRC, 2018), meaning more than half of China's population now resides in urban areas. During the last few years, while the country's economic growth has slowed down, the
massive migration from rural to urban regions has not. Since 2004, China's urbanization process has progressed faster than its economic growth (Chen, Liu, and Tao, 2013).

Because of the unbalanced development between urban and rural China, large-scale population migration from rural to urban areas has been taking place alongside urbanization. As a result, the number of children whose parents left rural regions to pursue better career opportunities in urban cities has been increasing as well. By 2010, the total number of migrant children grew by over 80% and reached 38.5 million; among them, 14 million are from rural areas (MOE of China, 2018). Compared to urban local students, rural migrant children are less advantaged in many aspects, by metrics such as family income, parental education level, access to public services, and education (Chen and Feng, 2013; Lu and Zhou, 2013).

**Hukou Policy: An Overview**

In order to understand the experiences of migrant students, one must understand the Hukou system, which restricts migrant students' access to public education. Hukou is China's unique household registration system. Developed in the first decade following the establishment of the People's Republic of China, the Hukou policy has functioned as an administrative tool, providing population statistics, identifying individuals' status, and directly regulating the distribution and movement of populations across the country (Chan and Zhang, 1999).

Generally, the Hukou system sorts the Chinese population into two categories: People born in rural areas are registered with "Agricultural" status, whereas people born in urban areas are registered with "Non-agricultural" status. Reassignment between these two statuses is highly restricted. Agricultural Hukou holders do not have full access to public services if they live outside their Hukou registration city (Liu, 2005). The originally dichotomous Hukou system was
launched to better implement the centrally-planned economy and prioritize economic
development in urban areas by controlling population mobility (Chan, 2009).

Established in the 1950s, the original Hukou system gradually became outdated and was
subject to much criticism. In response, the Chinese government made several adjustments to the
Hukou system, such as issuing temporary residential permits and introducing the "blue card," a
supplemental status that allows rural people to obtain Non-Agricultural status after working in
urban cities for two to five years (Liu, 2005). More recently, the central Chinese government and
many provinces have been reforming the Hukou system, aiming to replace the Agricultural and
Non-Agricultural status with Residence status, and to make public services more accessible to
people with an Agricultural Hukou.

Hukou Policy and Migrant Children's Education Dilemma

Even though Agricultural Hukou holders do not have full access to public services in
urban areas, as urbanization accelerates, more and more rural residents have left their hometown
and migrated to urban cities to pursue better economic opportunities. Consequently, their
children either were left in rural regions and have become "left-behind" children, or have
followed them to urban cities and become migrant children. Since individuals can only attend the
public schools that are in the district where their Hukou was registered (Solinger, 1999), rural
migrant students' access to urban public schools is limited.

Recently, the restriction on migrant students' access to the urban education system has
loosened due to changes in the Hukou system. For example, some provincial governments,
including Henan and Shanghai, have been replacing Agricultural and Non-Agricultural Hukou
with "Resident" Hukou to make the transition between rural and urban areas easier. However,
even though migrant students now have more opportunities to attend urban public schools, they
still have to pay a substantially higher fee than local students, ranging from 1,000 to 30,000 yuan per semester (150-4500 USD) (Afridi, Li and Ren, 2015; Xinhua News Agency, 2002). Considering that a large proportion of migrant students come from socioeconomically disadvantaged households, many of them are not able to afford expensive public education. Many of them thus choose to attend migrant schools that provide cheap but low-quality education for migrant students (Chen and Feng, 2013). Migrant students who can afford the cost of attending public schools are not only relatively socioeconomically advantaged, but also have better family backgrounds (e.g., higher family income and parental education level). However, some evidence suggests that they still face discrimination from teachers, local students, and local parents (New Citizen, 2016). For example, teachers of urban schools show less care for migrant students (Yiu, 2016). To further illuminate the discriminatory experiences that migrant students face, this study explores how teachers’ negative perceptions of migrant students relate to their academic outcomes in public schools.

Critical Literature Review

*How teachers’ perceptions of students differ by students’ characteristics*

A large body of literature focuses on teachers’ perceptions of students. These perceptions differ based on student characteristics such as race, gender, and socioeconomic background. For instance, prior research shows that teachers have different expectations for male and female students regarding their academic capacity in different disciplines (Auwarter & Aruguete, 2008; Miyake et al., 2010). More importantly, studies found that in classrooms where teachers perceived male students as being less adept at reading, a gender disparity in reading achievement favoring female students emerged (Retelsdorf et al., 2015; Rubie-Davies, 2006). These findings
suggest that widely held stereotypes about student characteristics such as gender can be endorsed by teachers and socialized to students, in turn affecting students’ academic outcomes.

Socioeconomic characteristics such as a student's family background, parental educational level, and financial status are also at play when it comes to teachers' perceptions and expectations of students' academic performance. Some studies have shown that teachers have lower expectations for students whose parental education level is low (Thompson, Warren, and Carter, 2004). Additionally, teachers and counselors exhibit lower expectations for students from lower SES backgrounds, perceiving low SES students as having less promising futures than high SES students (Auwarter and Aruguete, 2008).

Although the majority of the research on teachers’ perceptions of students is conducted in the U.S., it highlights the differences in teachers' perceptions that result from student characteristics and offers a valuable perspective for our study. As a student's migrant status to some extent reflects his/her family background and living environment, how would teachers' perception of students differ based on this particular factor? More importantly, does this differentiation in teachers’ perceptions matter?

*Teachers’ perceptions of students are related to students' outcomes*

A large body of literature has examined how teachers' perceptions of students influence students' academic outcomes and identified several mechanisms through which teachers' perceptions work. First, teachers' expectations for students are related to students' academic outcomes. For instance, Retelsdorf et al. (2015) found that in classes where reading teachers subscribe to commonly held gender stereotypes (e.g., believing that girls are better in reading than boys), male students have similar perceptions and performed worse on reading tests compared to boys with reading teachers less influenced by gender stereotypes (Retelsdorf et al.,
The result of this study is consistent with previous research on stereotype threat (Steele, 1997), which argues that students who are members of stereotyped groups tend to be more aware of the way they are treated and judged; when the stereotype is negatively associated with an academic domain, their perceptions of how others interact with them will become a barrier that inhibits their success in this domain.

Secondly, teachers' perceptions of students' academic capacity predict students' self-perceived academic capacity, which further influences students' actual performance. Cole (1991) found that teachers' perceptions of students' academic competence predict changes in self-perceived academic competence over time (Cole, 1991), supporting previous research that has showed the significant convergence between teachers' perceptions and students' self-perceived academic competence (Entwisle, 1987; Phillips, 1984). In short, teachers' attitudes towards students influence the ways that they interact with their students, as well as the implicit and explicit messages communicated to students. These factors, in turn, influence students’ learning outcomes (Shepardson, and Pizzini, 1992), motivation (Jiang, Zhang and May, 2016), as well as how students set their goals for learning outcomes (Altermatt, Jovanovic and Perry, 1998).

However, there are some limitations to the aforementioned studies. For example, some research shows a small effect size of teachers' perceptions of students' academic outcomes (Jussim and Eccles, 1995). Moreover, many of the studies mentioned above were conducted in the U.S. context, which is very different from China. For instance, under the influence of Confucian philosophy, teachers in China are more respected and obeyed, regarded as "a fountain of knowledge" by students (Holliday, 1994; Liu, 1998). Their influence on students' academic outcomes is likely to be even greater than that of U.S. teachers.
The academic achievement gap between migrant and local students

Extant literature indicates that there is an academic achievement gap between migrant and local students in China (Cheng and Feng, 2013; Lu and Zhou, 2012). Determining the factors that contribute to such a gap has received much attention from researchers and policymakers concerned with migrant students' education. The main body of literature on this topic compares the academic achievement gap between migrant students who attend migrant schools and urban local students who attend public schools. Once the Chinese government began gradually changing the Hukou policy and allowed a larger number of migrant students to be admitted into urban public schools (Wang, 2008), researchers started to examine the academic outcomes of these students. However, the evidence has been mixed.

While large-scale survey data suggest that the educational outcomes of migrant students enrolled in urban public schools lag behind those of local students (for example, compared to local students, they are more likely to drop out after completing compulsory education) (China Children Information Centre, 2005), research has found no significant difference in the academic performance between migrant and local students in public schools (Lai et al., 2012; Wang et al., 2018). This might partially be attributed to self-selection bias, where it is easier for migrant students with higher socioeconomic status and more access to resources to enroll in public schools. However, one longitudinal study suggested an achievement gap between migrant students enrolled in public schools and their local peers (Lu and Zhou 2012). Inconsistent results call for more in-depth and longitudinal examination of the academic performance of migrant students within public schools.

Although it is believed that policy changes in the Hukou system have made it easier for migrant students to receive good quality public education and therefore have mitigated the rural-
urban education gap, these students still face various educational challenges, such as teachers’ negative biases and a lack of care and attention towards migrant students (Lu and Zhou, 2012; Yiu, 2016; Wang et al., 2018). More empirical evidence on the academic performance of migrant students in urban public schools is needed to inform policy and public opinion on incorporating migrant students into public schools.

*Expectancy Value Theory*

To back up our argument, we draw on the Expectancy-Value Theory of motivation developed by Eccles, Wigfield, and their colleagues. The Expectancy-Value Theory (EVT) stems from motivation theories in psychology. It focuses on the individual's perceptions of how well they perform on certain activities, and how much they value the activities as explanations for their choices, persistence, and performance (Atkinson, 1957; Eccles et al., 1983; Wigfield, 1994). In the Expectancy-Value Model, Eccles et al. (1983) laid out how the cultural milieu, including stereotypes, is linked to how children perceive socializers' beliefs (Wigfield, 1994; Wigfield and Eccles, 2000). Socializers often include parents and teachers who implicitly and explicitly convey their beliefs and expectations to children (Wigfield and Eccles, 2000). The socialization process then indirectly influences students' actual outcomes by shaping students’ motivations and self-concepts. For instance, female students who receive less attention in math class tend to form lower self-efficacy in math skills (Altermatt, Jovanovic, and Perry, 1998). The particular use of the Expectancy-Value Model in the field of education has drawn much research attention over recent decades and is also known as the Pygmalion Effect.

The Pygmalion Effect is a phenomenon where people's performances are affected by the expectations of others. It has been extensively tested in classroom settings and captures the effect of teachers’ expectations on students' actual outcomes. In the teacher expectation model, Brophy
and Good (1983) state that teachers' expectations indirectly affect students' achievement through means such as differential treatment, which condition students’ "attitudes, expectations, and behavior" (p. 639). This process, also known as a "self-fulfilling prophecy," provides a sound theoretical framework for this study. As the effect of teachers' expectations may differ for stigmatized groups such as female and low SES students, these groups might prove to be more vulnerable to teachers’ perceptions. Migrant children in China face marginalization and are considered a vulnerable group. It is therefore important to find out if teachers have biased beliefs about them and if such bias is related to the disparity in educational outcomes. Based on the teacher expectancy model, we hypothesize that students whose teachers expect different outcomes for local and migrant students demonstrate a bigger academic achievement gap by migrant status.

We therefore developed the following hypotheses:

H1. There is an academic achievement gap between migrant and local students who are enrolled in public schools, favoring local students, after controlling for baseline characteristics including prior test scores.

H2. Subject teachers' bias against migrant students' academic foundations will be negatively correlated with migrant students' test scores in the respective subject, after controlling for baseline characteristics including prior test scores.

H3. Subject teachers’ preference for teaching a class in which the majority of students are local will be negatively correlated with migrant students' test scores in the respective subject, after controlling for baseline characteristics including prior test scores.
Data and Methods

Dataset

The data we analyze comes from the China Education Panel Survey (CEPS), a longitudinal data set collected by Renmin University of China, Beijing. We chose this data set because it was not only collected with the purpose of studying migrant students, but is also comprehensive and up to date. The nationally representative dataset includes a total of 19,487 students (10,279 7th grade students and 9,208 9th grade students) from 438 classrooms and 112 schools. The first wave of data collection was conducted in Fall 2013 and Spring 2014. The second wave of data was collected in Fall 2014 and Spring 2015 and successfully followed 9,449 of the 7th grade students (91.9%) from the baseline survey.

This dataset contains survey data collected from students, family members, teachers, and principals, and includes various demographical, psychological, and educational variables. First, we take the core national sampling frame, which is the most representative of the whole country. In order to capture the population of interest, we supplemented the core frame with a sampling frame consisting of 15 randomly drawn counties that have a large population of migrants. For the purpose of the study, we only looked at 7th grade students who were not re-assigned to a new class upon entering 8th grade to better estimate the effects of their 7th grade teachers over one academic year (N=8,426). We further isolated the target population of interest to this study. The data collectors used one variable to represent students’ migration status using two criteria: one is “whether a student’s Hukou is registered in the local area (where the student attends school)”; the other is a student’s Hukou type (Agricultural/Non-Agricultural). Since our study focuses on rural migrant students and aims to compare them with local urban students in public schools, we

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2 High migrant population is defined by the data collectors as: Counties that have more than 196,000 cross-provincial migrants or more than 222,000 within-province migrants.
excluded and dropped local rural students and non-local urban students, comprising 3,466 observations, from the sample.

Variables

The first independent variable, “migration status,” is a dummy variable that distinguishes between rural-to-urban migrant students and urban local students. Our final sample contains 3,446 students; among them, 737 are rural migrant students (21.26%). Table 1 presents students demographics of the final sample. Gender composition is similar for migrant students and local students. However, migrant students’ standardized cognitive ability score, mother’s education level, and family wealth is significantly lower than local students.

[Table 1 about here]

The other independent variables include teachers’ perceptions of students’ academic abilities and preference of class composition. We chose to use item “A19” from the CEPS teacher survey as a proxy of teacher’s underlying perceptions about migrant students’ academic performance. Teachers of each subject are asked to rate, on a three-point Likert scale, what they think the academic foundation of migrant students is compared to that of local students. Since such a rating could reflect either reality or a teacher’s hidden biases, this item cannot be used as a measurement of teachers’ bias. Instead, we tested the differences in 7th grade scores between migrant and local students in each class (N=122), then compared it to the perceptions of teachers who teach that class. Based on these results, a new binary variable was created to represent whether teachers’ perceptions are biased or reflections of reality. The distribution of the original survey item and the computed bias variable can be found in Table 2(a) and Table 2(b). The item “A23” shows how teachers might express preferences towards a certain type of students based on
their migration status. The distribution of this variable can be found in Table 3(a) and Table 3(b).³

[Table 2(a) about here]
[Table 2(b) about here]
[Table 3(a) about here]
[Table 3(b) about here]

Our outcome variables are students’ 8th grade test scores for Chinese and math. The same group of students’ test scores in 7th grade is also present in the dataset. The tests were administered by each school individually near the start of the school year in Fall 2013 (7th grade scores) and Fall 2014 (8th grade scores), and the scores were directly reported by each school.

Models

A value-added model is used to estimate the magnitude of the correlation between teachers’ perceptions and migrant students’ test scores in Chinese language and math. Such a model allows us to reduce omitted variable bias since it addresses the influence of prior factors that might have contributed to students’ achievement (Carnoy, 2005). Specifically, we use students’ test scores in 8th grade as our outcome variable and include students’ 7th grade test scores as a predictor.

The Chinese language test focuses on a student’s ability to read, write, and understand both ancient and modern Chinese texts. The math test focuses on a student’s ability to understand mathematical concepts and tackle problems. Within each subject, students took four types of

³ To test whether teachers’ bias in migrant students’ academic foundation is correlated with teachers’ preferences for class composition, we run a correlation between these two variables and found that they are not highly correlated with each other (r=.031, p>.05 for Chinese; r=.157, p<.05 for math). This suggests that these two variables, despite theoretically both pointing to bias, measure different concepts. Therefore, we use separate models to explore their relationships with migrant students’ academic outcome.
tests with different full scores: 100, 120, 130, and 150. The score range is 0-150 points (the sample score ranges from 1-133 points for 7th grade scores and 0-142.5 points for 8th grade scores). We standardize these scores within each test type to make them comparable across the country.

The independent variable “negative bias” is a binary variable with a value of either 0 or 1. “1” represents a teacher who is biased against migrant students’ academic foundation, whereas “0” represents a teacher who does not have such bias. Similarly, another independent variable, “negative preference for class composition,” is also a binary variable with a value of 0 or 1. “1” indicates that a teacher prefers to teach a class in which the majority of students are local, while “0” indicates that a teacher prefers to teach a class in which over 1/3 of the students are migrant students. To further reduce omitted variable bias and acquire a more precise estimation of the correlation between teachers’ perceptions and migrant students’ academic outcomes, we control for student and family characteristics, including an individual student’s gender, cognitive ability, mother’s education level, and family wealth. Additional teacher characteristics, including individual teacher’s teaching experience, education level, whether a teacher graduated from a pedagogical university or has a pedagogical major, are also included in our model. We also control for school location to address potential geographical differences. Further, we include test fixed-effects and adjust the standard errors at the classroom level to obtain more robust estimates.

To test Hypothesis 1, the regression equation can be written as:

$$ A_{ijkt} = \alpha + \beta_1 A_{ijkt-1} + \beta_2 MS_{ijk} + \beta_3 AS_{ijk} + \beta_4 T_{jk} + \beta_5 S_k + F_t + \epsilon_{ijk} $$

Where $A_{ijkt}$ is standardized 8th grade test scores in Chinese or math (mean=0, SD=1) for student $i$ who has teacher $j$ and attends school $k$. $A_{ijkt-1}$ is the 7th grade test score for the same
student. $MS_{ijk}$ represents the migration status of student $i$. $AS_{ijk}$ is a vector of student and family characteristics of student $i$. $TAF_{jk}$ is a binary variable that represents teacher $j$’s perceptions of migrant students’ academic foundation, in school $k$. $T_{jk}$ is a vector of other characteristics of teacher $j$. $S_k$ is a vector of characteristics of school $k$. $F_t$ represents test-fixed effects. $\epsilon_{ijk}$ is the error term.

To test Hypothesis 2, the regression equation can be written as:

$$A_{ijkt} = \alpha + \beta_1 A_{ijkt-1} + \beta_2 TAF_{jk} + \beta_3 AS_{ijk} + \beta_4 T_{jk} + \beta_5 S_k + F_t + \epsilon_{ijk} \tag{2},$$

Where $TAF_{jk}$ is a binary variable that represents whether teacher $j$ has negative bias against migrant students’ academic foundation, in school $k$. Other variables are the same as (1).

For Hypotheses 3, the regression equation can be written as:

$$A_{ijkt} = \alpha + \beta_1 A_{ijkt-1} + \beta_2 TCP_{jk} + \beta_3 AS_{ijk} + \beta_4 T_{jk} + \beta_5 S_k + F_t + \epsilon_{ijk} \tag{3},$$

Where $TCP_{jk}$ is a binary variable that represents whether teacher $j$ prefers to teach a class in which the majority of students are local, in school $k$. Other variables are the same as (1).

Results

The achievement gap between migrant and local students

Table 4 presents OLS estimates of students’ migration status on their Chinese test scores. In Model 1, the coefficient on migration status is positive, but not statistically significant at the 10% significance level. However, after adding additional controls, as shown in Model 2 and 3, the coefficient becomes significant, while its direction remains the same as in Model 1. This indicates that there is a positive correlation between students’ migration status and Chinese test scores, after controlling for student, teacher, and school characteristics. Substantively, migrant students score .165 standard deviations higher than local students, on average.
By contrast, students’ migration status does not appear to be a significant predictor of their math test scores at the 10% significance level. This pattern is true across models, suggesting that migration status is not correlated with students’ math scores, holding all other control variables constant. The OLS regression results are presented in Table 5 below.

These results suggest that our first hypothesis is unfounded. Migrant students who are enrolled in public schools are not academically lagging behind their local peers. On the contrary, they perform better than local students in Chinese language tests and do as well as local students in math. These results are unexpected, and we consider potential explanations in the discussion section.

Analysis of negative bias

In Tables 6 through 9, we restrict our sample to migrant students in our dataset. Table 6 represents the OLS estimates of Chinese teachers’ negative bias against migrant students’ Chinese foundation on migrant students’ Chinese test scores. The coefficient on negative bias is negative and statistically significant at the .1% significance level. The significance holds after adding control variables into the regression, as shown in Models 2 and 3. This suggests that there is a negative correlation between Chinese teachers having negative biases against migrant students’ baseline Chinese abilities and these students’ Chinese scores, holding all other control variables constant. Such a correlation indicates that migrant perform worse on Chinese tests if they have a biased teacher, compared to those students who have a Chinese teacher who does not have such bias (by .839 standard deviations, on average).
We find a similar pattern in math tests: math teachers with negative biases against migrant students’ math academic foundation are negatively correlated with migrant students’ math scores, after controlling for student, family, teacher, and school characteristics. The OLS estimates can be found in Table 7 below. Substantively, these results suggest that migrant students with a biased math teacher score lower (by .312 standard deviations, on average) in math tests, compared to students with an unbiased math teacher.

Table 7 about here

The results for Chinese and math corroborate our second hypothesis: subject teachers’ negative bias against migrant students’ academic foundations is negatively correlated with migrant students’ test scores in both Chinese language and math, indicating that having biased teachers is harmful to migrant students’ academic outcomes.

Analysis of negative preference

Table 8 presents the OLS estimates of Chinese teachers’ preference for class composition on migrant students’ Chinese test scores. The coefficient on negative preference is not statistically significant at the 10% significance level, holding all other control variables constant. This suggests that there is no significant correlation between a Chinese teacher’s preference to teach a class in which the majority of students are local, and migrant students’ Chinese test scores.

Table 8 about here

Similarly, such a preference does not appear to be a significant predictor of migrant students’ math scores either, after controlling for student, family, teacher, and school characteristics; this indicates that there is no significant difference in math performance between

---

4 Class composition refers to how much the class is made up of migrant students. The exact question asked in the teacher survey can be found in the note of Table 3A.
migrant students whose math teacher prefers to teach a local student-dominated class and those whose teacher does not have such preference. If anything, there is a slightly positive association between a local-student preference and migrant students’ math test scores. The OLS regression results are presented in Table 9 below.

[Table 9 about here]

These results contradict our third hypothesis and show that migrant students whose subject teachers have a preference for teaching a majority local class perform as well as those whose teachers do not have such preferences, in both subjects.

**Discussion and Limitations**

The purpose of this study is to examine how teachers’ biases and perceptions of migrant students relate to their actual academic outcomes. After adjusting standard errors at the classroom level and controlling for student, family, teacher, and school characteristics, we find that students’ migration status is a positive predictor of Chinese language test scores but is not significantly correlated with math scores. Unlike the migrant students who attend private migrant schools in urban cities, these students are performing at least as well as their local peers in Chinese and math, despite being disadvantaged in terms of cognitive ability scores, parental education level, and family wealth. Considering that urban public schools usually enjoy sufficient financial support from the government and are therefore equipped with advanced teaching facilities and qualified teachers, the education quality of these schools are undoubtedly better than migrant schools. Such quality may have contributed to the academic performance of migrant students. In addition, since scoring higher in the College Entrance Examination and being admitted into a prestigious university are deemed to be one of the most important pathways to move to an upper social class (Liu, 2013), socioeconomically disadvantaged migrant
students are likely to attach more importance to education and schoolwork, compared to local students. Therefore, higher self-motivation is also a potential contributor to migrant students’ academic performance.

However, we find that teachers’ negative biases against migrant students’ academic foundation is a significantly negative predictor of migrant students’ test scores, for both Chinese and math. The findings are consistent with the Expectancy-Value Theory framework. Migrant students who are exposed to teachers who perceive them as having lower academic abilities than their peers are more likely to internalize their teachers’ biases. Students might internalize the message communicated to them through classroom interactions with teachers, verbal and non-verbal cues; this may subsequently influence how students perceive their own abilities and how they set their own expectations. In turn, these expectations can manifest in terms of test performance.

By contrast, we do not find a significant correlation between a teacher’s preference for teaching a mainly-local class and migrant students’ academic outcomes in Chinese or math. These results do not support Hypothesis 3. However, despite not being statistically significant, the correlation between teachers’ preferences for a majority-local classroom and migrant students’ Chinese test scores is negative, accounting for the variation in student, teacher, and school characteristics. This may be due to the fact that the preference variable is not as relevant to students’ achievement as other factors, such as students’ behavior and ease of classroom management. In other words, teachers might prefer to teach local students not because of how they perceive students’ future learning outcomes, but because of how disciplined and easily manageable they think the classroom will be.
This study certainly has limitations. Although we used two criteria to isolate our population of interest, we cannot attest that the criteria perfectly captured the rural migrant students that we hoped to study. As a matter of fact, since the “sponsorship fee” policy is still common in China, the migrant students who are able to enroll in urban public schools are likely to be less socioeconomically disadvantaged compared to those who are excluded from urban public schools. Potential measurement error and the absence of a comprehensive codebook of the dataset also limit our ability to make an assertive statement regarding this issue.

The one item that we are using as a proxy of teachers’ biases may not be an accurate measurement. The questionnaire item asks teachers, “According to your understanding or that of other teachers, how is the academic foundation of students from non-local counties/districts compared with that of students from local county/district?” This could be interpreted differently by different teachers. However, there is no other item that gets at our question this closely. Furthermore, a negative bias is not necessarily associated with less effort in educating migrant students. It is possible that teachers who perceive migrant students as academically less prepared would pay more attention and offer more help to them. Therefore, we cannot be sure that our proxy measures teachers’ biases accurately.

The survey item that we are using as a proxy for teachers’ preference for class composition is not ideal either. It asks teachers, “Which type of class would you like to be in charge of if you can make a choice?” Although this item shows teachers’ attitudes, it is not informative in terms of why teachers do not prefer to teach migrant students and how such a preference influences their interactions with migrant and local students. Therefore, we cannot make conclusive claims about how the dynamics between teachers and migrant students differ based on a teacher’s class composition preference.
Further, since the survey data are self-reported, social desirability bias might be a concern. For instance, some teachers who chose “no preference” for the type of class he or she prefers to teach might actually have a preference. They might have answered in a certain way to appear unbiased. The same bias could be present in other factors such as the measure of family wealth. Students and family members might not want to admit that their family is “very poor” or “very rich” for different reasons, such as wanting to save face or not to appear too elitist. Social desirability bias and accompanying measurement error is a common dilemma for self-reported survey results.

Future studies can address these issues by targeting disadvantaged rural migrant students more accurately, examining the interactive mechanisms that shape negative bias and students’ achievement, and incorporating qualitative methods to offer more nuanced explanations. In addition, mixed methods research should be adopted in order to delve deeper into teachers’ perceptions of migrant students and the factors that contribute to potential biases. Qualitative interviews, in particular, will give researchers a richer understanding of the academic ecosystem in which migrant students find themselves. Given the large number of migrant students in present-day China, such studies are needed to inform relevant policies.

**Conclusion and Implications**

Compared to their urban local counterparts, migrant students in China face many challenges in education. Although more migrant students are now able to attend public schools in urban cities, the potential biases and discrimination they face in schools are likely to impede their academic achievement and future career trajectories. As existing research rarely addresses this problem, our study fills this gap in the literature by exploring the extent to which teachers’ perceptions based on students’ migration status influence students’ academic outcomes in China.
The findings of our study not only provide references for further research on migrant students’ education, but also inform teachers, educators, and policymakers about possible ways to improve migrant students’ education. Considering the large number of rural migrant students who are integrating into the public school system and the importance of education to an individual’s upward mobility in Chinese society, understanding and subsequently mitigating the impact of teacher biases is crucial.

Our results show that migrant students’ academic achievement may be sensitive to teachers’ negative perceptions. Given that more and more effort has been put into integrating migrant students into the public school system, it is important to consider the impact of misinformed teacher beliefs on students’ outcomes. Based on the results of this study and the literature review, we recommend that regions with high migrant populations take more initiative in adopting existing policies that allow equal access to public schooling regardless of students’ 
Hukou and migration status. Moreover, it is important for the local Bureau of Education to take additional steps to enforce the policies and to provide teacher training on awareness and inclusivity of migrant students. Of course, more in-depth studies should be conducted with a larger sample size, as well as with more consideration of the role of the intersectionality of identities over a longer period of time in order to make more substantial policy recommendations. Our study serves as a first step towards ensuring that migrant students are treated equally after integrating into public schools, and are expected to achieve in the same ways as other students.
References


Eccles, Jacquelynne. 1983. “Expectancies, values, and academic behaviors.” *Achievement and achievement motivation* (pp. 75–146).


http://www.moe.gov.cn/jyb_sjzl/s5990/201810/t20181018_352057.html


Retelsdorf, Jan, Katja Schwartz, and Frank Asbrock. 2015. ““Michael can’t read!” Teachers’ gender stereotypes and boys’ reading self-concept.” *Journal of educational psychology* 107 (1): 186.


http://www.gov.cn/xinwen/2018-02/04/content_5263778.htm


### TABLE 1
**DISTRIBUTION OF STUDENT DEMOGRAPHIC VARIABLES**

<table>
<thead>
<tr>
<th></th>
<th>Local</th>
<th>Migrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>2,729</td>
<td>737</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>78.74</td>
<td>21.26</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>1334</td>
<td>356</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>48.88</td>
<td>48.30</td>
</tr>
<tr>
<td>Cognitive ability score (Standardized)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obs</td>
<td>2,729</td>
<td>737</td>
</tr>
<tr>
<td>Mean</td>
<td>0.204</td>
<td>-0.033 ***</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.894</td>
<td>0.839</td>
</tr>
<tr>
<td>Mother's education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obs</td>
<td>2,720</td>
<td>735</td>
</tr>
<tr>
<td>Mean</td>
<td>4.98</td>
<td>3.258 ***</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>2.157</td>
<td>1.489</td>
</tr>
<tr>
<td>Family wealth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obs</td>
<td>2,721</td>
<td>734</td>
</tr>
<tr>
<td>Mean</td>
<td>2.946</td>
<td>2.843 ***</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>0.498</td>
<td>0.513</td>
</tr>
</tbody>
</table>

**NOTE.** — Mother’s Education Level is a categorical variable. 1 represents “None”, 2 “Finished elementary school”, 3 “Junior high school degree”, 4 “Technical secondary school or technical school degree”, 5 “Vocational high school degree”, 6 “Senior high school degree”, 7 “Junior college degree”, 8 “Bachelor degree”, and 9 “Master degree or higher”. *Family wealth* is also a categorical variable, with 1 representing “Very poor”, 2 “Somewhat poor”, 3 “Moderate”, 4 “Somewhat Rich”, and 5 “Very rich”.

* p < .05.
** p < .01.
*** p < .001.
TABLE 2(A)
DISTRIBUTION OF TEACHER RATINGS FOR MIGRANT STUDENTS’ ACADEMIC FOUNDATIONS

<table>
<thead>
<tr>
<th></th>
<th>Chinese</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far worse (%)</td>
<td>13.75</td>
<td>22.65</td>
</tr>
<tr>
<td>About the same (%)</td>
<td>68.35</td>
<td>61.75</td>
</tr>
<tr>
<td>Better (%)</td>
<td>17.90</td>
<td>15.60</td>
</tr>
</tbody>
</table>

**Note.** — This survey item asks, “According to your understanding or that of other teachers, how is the academic foundation of students from non-local counties/districts compared with that of students from local county/district?”

TABLE 2(B)
DISTRIBUTION OF TEACHERS’ NEGATIVE BIAS VARIABLE, BY SUBJECT

<table>
<thead>
<tr>
<th></th>
<th>Chinese</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total obs.</td>
<td>100</td>
<td>102</td>
</tr>
<tr>
<td>Number of negatively biased teachers</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>Percentage of negatively biased teachers (%)</td>
<td>19.00</td>
<td>20.59</td>
</tr>
</tbody>
</table>

TABLE 3(A)
DISTRIBUTION OF TEACHERS’ RESPONSE TO CLASS COMPOSITION PREFERENCE

<table>
<thead>
<tr>
<th></th>
<th>Chinese</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only local students (%)</td>
<td>25.87</td>
<td>27.97</td>
</tr>
<tr>
<td>Majority are local (%)</td>
<td>23.08</td>
<td>18.88</td>
</tr>
<tr>
<td>More than one third are migrant students (%)</td>
<td>1.40</td>
<td>6.29</td>
</tr>
<tr>
<td>I don't care (%)</td>
<td>49.65</td>
<td>46.85</td>
</tr>
</tbody>
</table>

**Note.** — This survey item asks, “Which type of class would you like to be in charge of if you can make a choice?”

TABLE 3(B)
DISTRIBUTION OF TEACHERS’ NEGATIVE PREFERENCE VARIABLE, BY SUBJECT

<table>
<thead>
<tr>
<th></th>
<th>Chinese</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total obs.</td>
<td>119</td>
<td>119</td>
</tr>
<tr>
<td>Number of teachers showing negative preference</td>
<td>63</td>
<td>55</td>
</tr>
<tr>
<td>Percentage of teachers showing negative preference (%)</td>
<td>52.94</td>
<td>46.22</td>
</tr>
</tbody>
</table>
TABLE 4
OLS ESTIMATES OF MIGRATION STATUS ON 8TH GRADE CHINESE TEST SCORES

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized 7th grade Chinese scores</td>
<td>0.766***</td>
<td>0.684***</td>
<td>0.683***</td>
</tr>
<tr>
<td></td>
<td>(0.035)</td>
<td>(0.036)</td>
<td>(0.035)</td>
</tr>
<tr>
<td>Student’s migration status</td>
<td>0.099</td>
<td>0.160**</td>
<td>0.165**</td>
</tr>
<tr>
<td></td>
<td>(0.079)</td>
<td>(0.072)</td>
<td>(0.079)</td>
</tr>
<tr>
<td>Student controls</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teacher and school controls</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test fixed-effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.058</td>
<td>-0.199</td>
<td>-1.396*</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.158)</td>
<td>(0.802)</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.523</td>
<td>0.538</td>
<td>0.544</td>
</tr>
<tr>
<td>N</td>
<td>3,293</td>
<td>3,277</td>
<td>3,164</td>
</tr>
</tbody>
</table>

NOTE. — This table presents the regression results using students’ migration status as the independent variable and their 8th grade Chinese scores as the dependent variable. Student controls include gender, cognitive score, mother education level, family wealth. Teacher and school controls include teacher education level, teaching experience, whether the teacher graduated from a pedagogical university or has a pedagogical major, and school location. Test Fixed Effects control for the tests with different full scores (100, 120, 130, 150) that the students took. Cluster (class)-robust standard errors in the parentheses.

* p < .1.
** p < .05.
*** p < .01.
### TABLE 5
**OLS ESTIMATES OF MIGRATION STATUS ON 8TH GRADE MATH TEST SCORES**

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized 7th grade math scores</td>
<td>0.784*** (0.049)</td>
<td>0.632*** (0.053)</td>
<td>0.627*** (0.048)</td>
</tr>
<tr>
<td>Student’s migration status</td>
<td>-0.052 (0.127)</td>
<td>0.061 (0.117)</td>
<td>0.030 (0.101)</td>
</tr>
<tr>
<td>Student controls</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teacher and school controls</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Test fixed-effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Constant</td>
<td>0.114 (0.087)</td>
<td>-0.698*** (0.237)</td>
<td>-0.099 (0.841)</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.501</td>
<td>0.548</td>
<td>0.574</td>
</tr>
<tr>
<td>N</td>
<td>3,294</td>
<td>3,278</td>
<td>3,155</td>
</tr>
</tbody>
</table>

**NOTE.** — This table presents the regression results using students’ migration status as the independent variable and their 8th grade math scores as the dependent variable. Student controls include gender, cognitive score, mother education level, family wealth. Teacher and school controls include teacher education level, teaching experience, whether the teacher graduated from a pedagogical university or has a pedagogical major, and school location. Test Fixed Effects control for the tests with different full scores (100, 120, 130, 150) that the students took. Cluster (class)-robust standard errors in the parentheses.

* p < .1.
** p < .05.
*** p < .01.
<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized 7th grade Chinese scores</td>
<td>0.684***</td>
<td>0.571***</td>
<td>0.598***</td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
<td>(0.060)</td>
<td>(0.056)</td>
</tr>
<tr>
<td>Negative bias</td>
<td>-0.774***</td>
<td>-0.813***</td>
<td>-0.839***</td>
</tr>
<tr>
<td></td>
<td>(0.176)</td>
<td>(0.174)</td>
<td>(0.193)</td>
</tr>
<tr>
<td>Student controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Teacher and school controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Test fixed-effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Constant</td>
<td>0.038</td>
<td>0.334</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.136)</td>
<td>(0.327)</td>
<td>(1.106)</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.528</td>
<td>0.579</td>
<td>0.588</td>
</tr>
<tr>
<td>N</td>
<td>568</td>
<td>564</td>
<td>562</td>
</tr>
</tbody>
</table>

**TABLE 6**

**OLS Estimates of Teachers’ Bias on Migrant Students’ 8th Grade Chinese Test Scores**

NOTE. —This table presents the regression results using Chinese teachers’ bias against migrant students’ Chinese academic foundation as the independent variable and migrant students’ 8th grade Chinese scores as the dependent variable. Student controls include gender, cognitive score, mother education level, family wealth; Teacher and school controls include teacher education level, teaching experience, whether the teacher graduated from a pedagogical university or has a pedagogical major, and school location. Test Fixed Effects control for the tests with different full scores (100, 120, 130, 150) that the students took. Cluster (class)- robust standard errors in the parentheses.

* p < .1.
** p < .05.
*** p < .01.
TABLE 7
OLS ESTIMATES OF TEACHERS’ BIAS ON MIGRANT STUDENTS’ 8TH GRADE MATH TEST SCORES

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized 7th grade math scores</td>
<td>0.694***</td>
<td>0.621***</td>
<td>0.576***</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.060)</td>
<td>(0.066)</td>
</tr>
<tr>
<td>Negative bias</td>
<td>-0.294*</td>
<td>-0.292</td>
<td>-0.312*</td>
</tr>
<tr>
<td></td>
<td>(0.172)</td>
<td>(0.176)</td>
<td>(0.173)</td>
</tr>
<tr>
<td>Student controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Teacher and school controls</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Test fixed-effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Constant</td>
<td>0.062</td>
<td>-0.122</td>
<td>-0.961*</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.210)</td>
<td>(0.546)</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.482</td>
<td>0.504</td>
<td>0.470</td>
</tr>
<tr>
<td>N</td>
<td>623</td>
<td>619</td>
<td>606</td>
</tr>
</tbody>
</table>

NOTE. — This table presents the regression results using math teachers’ bias against migrant students’ Chinese academic foundation as the independent variable and migrant students’ 8th grade math scores as the dependent variable. Student controls include gender, cognitive score, mother education level, family wealth; Teacher and school controls include teacher education level, teaching experience, whether the teacher graduated from a pedagogical university or has a pedagogical major, and school location. Test Fixed Effects control for the tests with different full scores (100, 120, 130, 150) that the students took. Cluster (class)-robust standard errors in the parentheses.

* p < .1.
** p < .05.
*** p < .01.
### Table 8

**OLS Estimates of Teachers’ Preference for Class Composition on Migrant Students’ 8th Grade Chinese Test Scores**

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standardized 7th grade Chinese scores</strong></td>
<td>0.658***</td>
<td>0.549***</td>
<td>0.577***</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.073)</td>
<td>(0.060)</td>
</tr>
<tr>
<td><strong>Negative preference</strong></td>
<td>0.044</td>
<td>0.026</td>
<td>-0.039</td>
</tr>
<tr>
<td></td>
<td>(0.214)</td>
<td>(0.213)</td>
<td>(0.203)</td>
</tr>
<tr>
<td><strong>Student controls</strong></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Teacher and school controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test fixed-effects</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>-0.091</td>
<td>-0.035</td>
<td>-0.265</td>
</tr>
<tr>
<td></td>
<td>(0.165)</td>
<td>(0.331)</td>
<td>(1.089)</td>
</tr>
<tr>
<td><strong>Adjusted R-squared</strong></td>
<td>0.452</td>
<td>0.495</td>
<td>0.506</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>623</td>
<td>619</td>
<td>617</td>
</tr>
</tbody>
</table>

NOTE. — This table presents the regression results using Chinese teachers’ preference for teaching a class with a majority of migrant students or local students as the independent variable and migrant students’ 8th grade Chinese scores as the dependent variable. Student controls include gender, cognitive score, mother education level, family wealth; Teacher and school controls include teacher education level, teaching experience, whether the teacher graduated from a pedagogical university or has a pedagogical major, and school location. Test Fixed Effects control for the tests with different full scores (100, 120, 130, 150) that the students took. Cluster (class)-robust standard errors in the parentheses.

* p < .1.
** p < .05.
*** p < .01.
<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized 7th grade math scores</td>
<td>0.660***</td>
<td>0.583***</td>
<td>0.555***</td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
<td>(0.059)</td>
<td>(0.067)</td>
</tr>
<tr>
<td>Negative preference</td>
<td>0.204</td>
<td>0.226*</td>
<td>0.198</td>
</tr>
<tr>
<td></td>
<td>(0.135)</td>
<td>(0.135)</td>
<td>(0.151)</td>
</tr>
<tr>
<td>Student controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Teacher and school controls</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Test fixed-effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.157</td>
<td>-0.376</td>
<td>-1.082</td>
</tr>
<tr>
<td></td>
<td>(0.114)</td>
<td>(0.258)</td>
<td>(0.679)</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.486</td>
<td>0.510</td>
<td>0.471</td>
</tr>
<tr>
<td>N</td>
<td>656</td>
<td>652</td>
<td>639</td>
</tr>
</tbody>
</table>

**Note.** This table presents the regression results using math teachers’ preference for teaching a class with a majority of migrant students or local students as the independent variable and migrant students’ 8th grade math scores as the dependent variable. Student controls include gender, cognitive score, mother education level, family wealth; Teacher and school controls include teacher education level, teaching experience, whether the teacher graduated from a pedagogical university or has a pedagogical major, and school location. Test Fixed Effects control for the tests with different full scores (100, 120, 130, 150) that the students took. Cluster (class)-robust standard errors in the parentheses.

* p < .1.
** p < .05.
*** p < .01.