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**Getting the Teacher's Attention:  
Parent-Teacher Contact and Teachers' Behavior in the Classroom**

Natalie A.E. Young, University of Pennsylvania

Direct correspondence to:

Natalie Young, The Population Studies Center, University of Pennsylvania, 239 McNeil Bldg,  
3718 Locust Walk, Philadelphia, PA 19104

email: [natyoung@sas.upenn.edu](mailto:natyoung@sas.upenn.edu)

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## **Getting the Teacher's Attention: Parent-Teacher Contact and Teachers' Behavior in the Classroom**

**Abstract:** Studies suggest that both parental involvement and support from teachers matter for students' academic success. Although cross-national research has revealed numerous ways in which parents shape the schooling process, less clear is whether parental involvement at school can influence teachers' daily behavior toward students in class. In this study, I draw on data from the China Education Panel Survey – a nationally representative survey of Chinese middle-school students with unusually detailed information on parental involvement and teachers' daily behaviors – to test a conceptual model that proposes a link between parent-teacher contact in China and attention students receive from teachers during daily lessons. In support of the conceptual model, I find that students whose parents cultivate relationships with teachers through frequent contact are more likely to be cold-called on and praised by teachers in class, even after controlling for family background, student academic performance, and student behavior. Moreover, I observe social class differences in parent-teacher contact, as well as some evidence that parent-teacher contact is linked to improved student performance through its impact on teachers' attention. Overall, the findings point to a potential new pathway through which social class influences schooling by way of school-based parental involvement, and in a broader set of contexts than previously imagined. I conclude with a discussion of implications for social reproduction theory, as well as challenges this situation presents for combatting educational inequality.

### **1. Introduction**

Scholars in the sociology of education field have identified several mechanisms through which the parental involvement practices of high socioeconomic status families influence student experiences and trajectories at school, thereby contributing to educational inequality. Studies indicate that middle-class and affluent families in numerous countries support learning at home and outside of the classroom by offering homework guidance (Baker and Stevenson 1986;

Hoover-Dempsey et al. 2001; Lau, Li, and Rao 2011), providing a rich literacy environment (Okagaki and Frensch 1998; Aikens and Barbarin 2008), communicating with children about school (Park 2008; Hampden-Thompson, Guzman, and Lippman 2013), and investing in after-school activities that promote cognitive and non-cognitive skill development (Bray 1999; Lareau 2011; Friedman 2013; Park et al. 2016). In addition to supporting education at home, research conducted in the United States has revealed that middle-class and affluent families engage in efforts to “manage” and “customize” (Baker and Stevenson 1986; Kerckhoff 1995) their children’s program of learning at school. In particular, there has been attention to how middle-class and affluent parents communicate with school administrators and teachers to gather information valuable for educational decisions (Baker and Stevenson 1986; Olmsted 1991; Lareau 2000), as well as how they intervene in schools’ decisions about admission to special programs and/or academic tracks (Useem 1992; Oakes 1994; Lareau 2000, 2011; Lewis and Diamond 2015).

Largely overlooked by sociological theories about how middle-class and affluent families intervene at school to help their child succeed, however, is the role parents may play in shaping daily, micro-level interactions between teachers and students in the classroom, such as teachers calling on students during lessons, teachers praising students, and teachers providing other forms of classroom attention and support. Some studies have found a link between parental involvement and teachers’ perceptions of students, particularly assessments of academic competence (Hill and Craft 2003; Hughes, Gleason, and Zhang 2005; Dumais 2006; Bakker, Denessen, and Brus-Laeven 2007), but it is not clear whether this leads teachers to modify their daily behavior toward students in the classroom. While teachers’ perceptions of academic competence can shape student success by influencing grades, if parents can shape micro-level

interactions in the classroom as well, this may impact actual student learning. Research suggests that support from teachers in class matters for student motivation, engagement, persistence, and performance (Osterman 2000; Furrer and Skinner 2003; Klem and Connell 2004). By influencing attention from teachers in the classroom, parents may obtain a higher quality education for their child relative to other students in the same classroom.

Whether parents can intervene to shape micro-level interactions in the classroom is particularly relevant when considering educational systems with few formal opportunities to “customize” children’s program of learning at school, and where teacher evaluations of student performance play little role in progress within the system. These features are common in East Asia, where schools generally teach standardized curricula, and entrance examination scores – not classroom grades or recommendation letters – determine access to post-compulsory level education. Scholars have argued that school-based parental involvement is relatively rare and inconsequential in East Asia, in part because these structural features reduce opportunities and incentives for parental intervention at school (Stevenson et al. 1990; Park 2008; Park, Byun, and Kim 2011). Some even view curriculum standardization and reliance on high-stakes admissions exams as a way to minimize family influence on student outcomes, thereby reducing educational inequality (Lehman 1999; Park, Byun, and Kim 2011; Moses and Nanna 2007). But if middle-class and affluent parents can intervene to shape daily interactions between students and teachers in class, and not just decisions about grades and track placement, this would suggest a new, overlooked way in which families can intervene at school to shape student success, and within a broader set of contexts than previously imagined.

In this paper, I present the case of middle school education in China, where the growing significance of parent-teacher interactions provides evidence that school-based parental

involvement can matter even in highly standardized, entrance exam-oriented systems. In the context of extremely large class sizes, attention from teachers in class has become a scarce resource. Moreover, China has witnessed the emergence of a new affluent class deeply concerned with transmitting newly acquired advantages to their children, as well as the rising significance of the cultural practice of *guanxi*, a type of interpersonal relationship cultivated to access resources. Drawing on data from a nationally representative, longitudinal survey of 10,279 Chinese middle-school students and their families, I show that socioeconomically advantaged parents of middle-school students are cultivating relationships with teachers, and that this behavior is associated with extra classroom attention and support for their children in the form of cold-calling and praise from teachers. Moreover, I find some support for the idea that parent-teacher contact is linked to improved student performance through its impact on teachers' attention. These findings point to a potential new pathway through which parents shape academic success and modify our understanding of parental involvement within highly standardized, exam-oriented educational systems. In particular, the findings highlight the power of privileged families to shape their children's progress within the educational system, even if the system is set up to minimize family influence. Finally, the study challenges current conceptualizations of East Asian parenting and points to the important implications of rising wealth and inequality for parenting practices and educational structures.

## **2. Background**

### Parental Involvement and Schooling

Scholars have documented various ways middle-class and affluent parents get involved in their children's education and how this translates into better outcomes at school.<sup>1</sup> While much of

this work focuses on support parents provide at home and after school, a body of research has also emerged on school-based parental involvement: namely, the ways parents engage with schools to promote academic success. In particular, in the U.S. there has been attention to how middle-class and affluent parents “manage” and “customize” (Baker and Stevenson 1986; Kerckhoff 1995) their children’s program of learning at school through parent-school communication. By contacting teachers and school administrators, parents can gather information about school programs, monitor academic performance, and resolve problems, all of which shape the child’s educational trajectory (Baker and Stevenson 1986; Olmsted 1991; Lareau 2000). Moreover, parents can intervene to shape school’s organizational practices, such as assignment to gifted and talented programs and track placement (Useem 1992; Oakes 1994; Lareau 2000, 2011; Lewis and Diamond 2015).

Notably, however, scholars have argued that parental intervention at school, while a key contributor to educational inequality in the U.S., is absent and/or irrelevant in other societies, particularly in East Asia (Yao 1985; Sy, Rowley, and Schulenberg 2007; Park 2008; Byun, Park, and Kim 2011). Parents in East Asia are thought to primarily involve themselves in children’s education at home, such as by monitoring homework (Park, Byun, and Kim 2011; Huntsinger et al. 1997), relieving the child from household duties to provide time for schoolwork (Kong 2016), providing study materials and resources (Chao et al. 2009), communicating about school (Park, Byun, and Kim 2011) and investing in academic tutoring (Bray 1999; Baker et al. 2001; Park, Byun, and Kim 2011; Zhou and Wang 2015; Park et al. 2016). Some scholars have argued that East Asian families rarely intervene at school due to traditional attitudes that emphasize separate roles for schools and families in education, as well as a cultural norm of deference to teachers (Stevenson and Stigler 1994; Tobin, Hsueh, and Karasawa 2009; Kong 2016). But perhaps a

larger contributor to this phenomenon are structural features of East Asian educational systems that arguably reduce incentives and opportunities for school-based parental involvement. In particular, highly standardized curricula are thought to restrict opportunities for parents to “customize” students’ program of learning (Park 2008), while entrance examinations for high school and/or university limit family influence on progress within the educational system, since performance on entrance exams is less vulnerable to family influence than other assessments of student performance and/or ability (e.g. classroom grades; teacher recommendations; admission interviews).

Curriculum standardization and entrance examinations in East Asia are linked to local efforts to promote equality of educational opportunity and have been proposed as potential ameliorators of educational inequality within other societies (Lehman 1999; Park, Byun, and Kim 2011; Moses and Nanna 2007). Yet, recent research in China leads me to hypothesize that there may be one pathway through which parents within even highly standardized, exam-oriented educational systems can intervene at school to influence their children’s experience and trajectory: namely, by intervening to shape micro-level interactions between teachers and students, particularly how much attention students receive during daily lessons. If found to be at play, this previously unexplored pathway would not only challenge current conceptualizations of East Asian parenting; it would also suggest that parents are able to shape children’s experience at school even in the face of structural barriers to doing so. That is, parents may have more power within the education field than previously imagined, particularly if they have socioeconomic resources at their disposal.

#### Parental Involvement and Teachers’ Behavior

Before examining the evidence for the aforementioned parental involvement pathway, it is important to consider what we already know about parental involvement and teachers' attitudes and behaviors at school. There is some evidence that parents can shape teachers' perceptions and evaluations of students, particularly perceptions of academic potential (Alexander, Entwisle, and Thompson 1987; Hughes, Gleason, and Zhang 2005; Dumais 2006; Bakker, Denessen, and Brus-Laeven 2007) and assessments of student performance (i.e. grades) (Alexander, Entwisle, and Thompson 1987; Hill and Craft 2003; Hughes, Gleason, and Zhang 2005). It is not always clear, however, whether parents play a direct, let alone intentional, role in shaping teachers' perceptions. Dumais (2006), for example, found a positive association between parents' educational expectations for their child and teachers' perceptions of students' academic ability. One interpretation of this finding is that parental involvement directly influences teachers' perceptions of academic ability, perhaps because the values and behaviors of middle-class and affluent parents align with teachers' expectations for good parenting and are interpreted as indicative of a strong commitment to education (Alexander, Entwisle, and Thompson 1987; Dumais 2006; Hill and Craft 2003). An alternative explanation of Dumais' finding, however, is that parents' educational expectations affect student motivation or other behaviors, which influence teachers' evaluations of students' academic competence (Farkas et al. 1990; Kozlowski 2015). In other words, parents may influence teachers' perceptions indirectly, by shaping student behavior. An indirect pathway for shaping teachers' perceptions and behaviors at school is also suggested by Calarco's (2011) work on help-seeking behavior in U.S. elementary schools. Calarco's study suggests that middle-class parents teach their children to take an interventionist approach to interacting with authority figures (Lareau 2011), which influences teachers' decisions regarding whom to pay attention to during class.



Research in the U.S. on parental intervention at school points to a more direct pathway for shaping teachers' behaviors. In their ethnographic study of a suburban high school, Lewis and Diamond (2015) observed that middle-class white parents sometimes pressured teachers to recommend their child for advanced courses. Similarly, some teachers reported giving middle-class white students higher grades than deserved, either directly in response to parental pressure or in anticipation of confrontation. Might parents also directly intervene to shape teachers' daily behavior, including the attention teachers direct at students during lessons? In support of this idea, a few qualitative studies have shown that parents sometimes request personalized attention or assistance for their child (Useem 1992; Lareau 2000; Lareau and Weininger 2003; Xie 2016), and some qualitative work provides evidence that teachers comply with such requests (Calarco 2018; Xie 2016). We do not know, however, whether parent-teacher contact is consistently and systematically linked to teachers' attention, nor have scholars tested whether this mechanism leads to improved student learning.

In summary, previous studies have shown that parents can passively and/or indirectly influence teachers' perceptions of students and sometimes actively intervene at school to influence decisions about grades and track placement. In this paper, I will take this work a significant step further to investigate whether parents can intervene at school to influence micro-level interactions in the classroom, particularly the amount of attention students receive from teachers in the form of praise and cold-calling, and whether this attention and support has implications for student learning. This question is particularly important when considering societies with highly standardized, entrance exam-oriented educational systems, where teachers' perceptions of students and decisions about grades are of limited consequence. After all, in these educational systems, performance on entrance exams – and not recommendation letters from

teachers and classroom grades – determine access to high school and university. I now turn to a discussion of recent research that leads me to hypothesize that this new parental involvement pathway is at play within at least one country with a highly-standardized, exam-oriented educational system: China.

### The Chinese Context

China shares many features of other East Asian societies believed to limit parental intervention at school. Yet, there is reason to expect parent-teacher communication to be emerging as an important parental involvement pathway. As discussed below, emerging affluence in China, when coupled with large class sizes and the rising importance of the cultural practice of *guanxi*, may be leading socioeconomically advantaged Chinese parents to intervene at school through contact with teachers. This form of parental involvement may have implications for student learning and may be a contributor to rising educational inequality.

Following the establishment of the People's Republic of China, disparities in income and educational opportunity narrowed relative to pre-1949 levels. By the 1960s-1970s, inequality levels in China were some of the lowest observed in the world (Deng and Treiman 1997). The re-introduction of economic market forces in 1978 created opportunities for Chinese households to accumulate economic capital through entrepreneurship, financial investment, and high-pay employment. China has since witnessed rising inequality and the emergence of a new affluent class (Xie and Zhou 2014; Young 2018). Members of the new affluent class are faced with a unique situation: they seek to transmit newly acquired advantages to their children, yet do so in the face of relatively few established structures for reproducing social class. As in other countries, the education field has become an important site of conflict and competition for those hoping to secure a place at the top of the new social hierarchy. Scholars are just beginning to document the

strategies China's emerging affluent class is developing to help their children succeed academically (Wu 2014; Xie 2016; Young 2018). Within this small but growing body of literature, there has been some attention to parents' adaptation of the cultural practice of *guanxi* to family-school relationships and implications for educational inequality.

*Guanxi* refers to a type of dyadic, interpersonal relationship in China that is cultivated for instrumental purposes and maintained through mutual exchange of favors. Scholars have argued that the cultural practice of *guanxi* emerged in the context of competition for scarce resources in China. To obtain scarce resources, social actors cultivate ties with individuals who have access to these resources, with the understanding that resource provider will receive a favor in return (Riley 1994). Individuals who fail to reciprocate a favor risk "losing face" (*diu lian*), a dishonor with implications not only for social status and perceived moral character, but also for future access to resources through *guanxi* (Bian 1997).

Studies have documented the increasing importance of *guanxi* in obtaining access to resources in post-reform China, including high-quality housing (Logan, Bian, and Bian 1999) and top-paying or prestigious jobs (Bian 1997). There has also been growing attention to *guanxi*'s role in the education field (Wu 2014; Xie 2016). In addition to *guanxi* assisting in school admissions, there is evidence that some Chinese parents are cultivating *guanxi* with teachers. A recent qualitative study conducted in a rural, southern Chinese county revealed that many socioeconomically advantaged families gave gifts to teachers or invited them to banquets with government officials before speaking with them about their child's studies (Xie 2016). By first providing a favor, parents felt entitled to later ask teachers to help their child. In contrast, many of the lower income families interviewed expressed hesitancy to contact teachers because they feared they were unable to provide suitable favors.

In Xie's (2016) study, many of the parents cultivating *guanxi* with teachers identified "teacher's care" (*guanzhao*) – or additional classroom attention for children – as an expected benefit of close connections with teachers. Left unanswered by Xie's study, however, is whether these requests translate into more attention for students and whether additional attention matters for student learning. Moreover, while Xie's ethnography looked at various types of requests for attention, including that one's child be nominated for school leadership positions, I am solely concerned with requests for more attention during daily lessons. In particular, I will investigate whether parent-teacher contact influences the two most common types of student-teacher interaction in Chinese classrooms – teachers praising students and teachers cold-calling on students – and whether this has implications for student learning.

In the context of China's extremely large class sizes, whether or not a child is praised and/or cold-called on by teachers in class likely matters. According to OECD estimates, in 2014 there were an average of 48.8 students per class in Chinese middle schools, compared to 26.7 students in the U.S. ("Student-Teacher Ratio and Average Class Size" 2017). While U.S. teachers may be able to praise and call on most students at least a few times during a lesson, doing so becomes difficult in classrooms with almost fifty students. In such a context, teachers' attention is a scarce resource (Parcel and Dufur 2001). Given U.S. research that suggests teachers' attention and support can boost academic performance (Osterman 2000; Furrer and Skinner 2003; Klem and Connell 2004), this scarce resource is likely critical in the high-stakes competition for education credentials in China (Zhao, Haste, and Selman 2014; Dong 2015).

This situation helps explain why many of the socioeconomically advantaged parents Xie interviewed requested extra in-class attention for their children (*guanzhao*). The cultural practice of *guanxi* likely puts pressure on teachers to comply with these requests, particularly if parents

have already provided a favor in the form of a gift or banquet invitation. Even in cases where parents request extra attention for their child without first providing a favor, the teacher may feel pressure to fulfill the request if the teacher believes he/she would benefit from a social relationship with the family or if he/she believes this course of action will fend off conflict with a well-resourced family (Lewis and Diamond 2015; Calarco 2018). Moreover, children may “stand out” in the classroom if their parents have been in contact with the teacher, thereby leading them to receive more attention. Research also suggests that teachers are more likely to invest in students whose academic performance they believe is under their control (Babad 1993), and teachers may feel more in control of a student’s performance if their family has expressed a commitment to helping the child succeed (Hill and Craft 2003). In fact, many teachers Xie interviewed in rural China said they felt motivated to provide extra attention to children whose parents expressed a strong commitment to education by contacting them (Xie 2016).

Overall, features of the Chinese context, as well as qualitative research in China, lead me to develop the conceptual model presented in Figure 1. According to this model, parent-teacher contact, which is stratified by social class, influences student learning through its impact on micro-level interactions in the classroom. The key relationships proposed by the model are as follows: 1) socioeconomically advantaged families are more likely to contact teachers, and at higher rates, than working class families (Path A in Figure 1); 2) contact with teachers is associated with increased in-class praise and cold-calling directed at the student, since teachers may be more likely to “look after” children of parents with whom they are in frequent contact (Path B in Figure 1); and 3) students who frequently experience cold-calling and praise have better later academic performance, relative to other students with similar prior academic performance (Path C in Figure 1). In the remainder of the paper, I draw on two waves of data

from a nationally representative survey of Chinese middle-school students and families to assess the empirical evidence for each of the relationships proposed by the conceptual model.

[Figure 1]

### **3. Methods**

#### Data

I draw on two waves of the China Education Panel Survey (CEPS), the first nationally representative, longitudinal survey of middle-school students in Mainland China. CEPS used multi-stage sampling with probabilities proportionate to size to select the baseline sample of students in 2013-2014. Thirty-one provinces, autonomous regions, and/or municipalities were included in the sampling frame (Taiwan, Hong Kong, and Macao were excluded). The CEPS dataset employed in analysis consists of 10,279 seventh grade students nested within 438 classrooms in 112 schools located across 28 counties/districts in Mainland China. Students, parents, teachers, and school administrators each completed separate questionnaires. The following academic year (2014-2015), the research team followed up with 9,449 of the sampled students (92%).

Several features of CEPS make it unusually well suited for this study. First, the data are nationally representative, so we can be more confident of the generalizability of findings than if data were drawn from a single city or region. Second, while surveys often fail to distinguish between different forms and directions of parent-school communication, and implications of these forms of communication differ (Kohl, Lengua, and McMahon 2000), CEPS asks parents about contact with teachers, specifically, and distinguishes between parent-initiated and teacher-initiated contact. Third, most surveys that collect data on teachers' behavior ask students about

behavior toward the entire class. In contrast, CEPS asks students to report behavior toward themselves, making it possible to investigate the relationship between parent-teacher contact and teachers' attention. Finally, CEPS' longitudinal design allows for several attractive features: one can establish temporal precedence when assessing potentially bi-directional relationships; one can control for prior levels of variables; and one can examine both within- and between-student differences in variables.

## Measures

### *A. Social Class*

There is little consensus among sociologists regarding the best measure of social class. Some advocate for occupational prestige scales (Goldthorpe and Hope 1974; Treiman 1977); some focus on socioeconomic resources, such as education and income (Ganzeboom, De Graaf, and Treiman 1992); and others draw on "big class" schema (Erikson and Goldthorpe 1992), sorting individuals into occupational categories with similar lifestyles, attitudes, and life chances (Jonsson et al. 2011). In this paper, I draw on both the "big class" and "socioeconomic resource" approaches to measure social class. First, I use information about parents' occupations to sort families into occupational groups. I combine occupations that scholars generally conceptualize as China's working class (Li 2005; Wu 2014),<sup>2</sup> which I then compare to four high status and/or highly compensated occupations expected to differ from each other in lifestyles, attitudes, and resources: professionals; government workers; corporate managers; and small business owners (Bian et al. 2004; Goodman 2008; Xie 2016).

I use a socioeconomic resource, parental education, as a second measure of social class. Parental education is measured by mother's education, defined as 1=no more than elementary

school; 2=some secondary education; 3= completed academic high school; 4=some tertiary education. I use mother's education rather than a composite measure because mothers are generally more involved in children's schooling than fathers, particularly in East Asia (Stevenson et al. 1990; Grolnick and Slowiaczek 1994). Moreover, Marks (2008) found mother's education to be either as strong or a stronger predictor of children's outcomes than father's education across multiple countries.

### *B. Parent-Teacher Contact*

Parental involvement at school is often measured by attendance at parent-teacher conferences. In this study, however, I am concerned with parental intervention at school, not simply participation in school activities. As such, I employ a measure of school-based parental involvement that requires more agency and intentionality on the part of parents: parent-initiated contact with teachers. I employ parents' responses to the question: "this semester, did you initiate contact with your child's teachers? 1) Never; 2) Once; 3) 2-4 times; 4) 5 or more times." For simplicity, I sometimes call this variable "parent-teacher contact." I am particularly interested in who falls into the highest category of parent-teacher contact, as this type of behavior may indicate an intention to cultivate *guanxi* with teachers. Consequently, in addition to the four-category variable, I construct another variable coded 1 if the parent reports contacting teachers 5+ times per semester and 0 otherwise. I use this binary outcome variable when testing for social class differences in cultivating parent-teacher relationships. In all other models, I use the original four-category dummy variable.



### *C. Micro-level Interactions in Class*

I aim to investigate whether Chinese parents are intervening to shape daily, micro-level interactions in class, specifically the amount of attention students receive from teachers during daily lessons. In the Chinese context, the main way teachers engage with students during lessons is by cold-calling on them to answer questions and by praising work (Cortazzi and Jin 1996).<sup>3</sup> Consequently, I use student reports of cold-calling (*tiwen wo*)<sup>4</sup> and praise by math, English, language arts, and homeroom teachers to construct a composite variable that I call “teachers’ attention.” The scale ranges from 7 to 28, with higher values indicating higher levels of attention, and has a Cronbach’s alpha of 0.89, suggesting a high level of internal consistency.

### *D. Academic Performance*

The measure of academic performance used in analysis is based on school reports of midterm examination performance. Schools were asked to report student scores on math, English, and language arts midterm exams in the current semester. Scores on the three midterms were used to calculate each student’s average, and average exam scores were standardized to improve comparability over time and across schools.

### *E. Control Variables*

I include the following control variables in all models: gender, migrant status, ethnic minority status, household registration type (*hukou*), family structure (1=both parents live at home; 0=at least one parent is absent), and whether the child has siblings. When testing for a relationship between parent-teacher contact and social class, I also control for academic performance, as well as for school-level variables. School-level control variables include school type (1=private; 0=public), school rank, the county in which the school is located, whether the school is in an urban area, and whether students board at the school.<sup>5</sup>

When testing for a relationship between parent-teacher contact and teachers' attention, I also include controls for student behavior. Student behavior may influence the amount of attention students receive from teachers. If there is also an association between student behavior and frequency of parent-initiated contact with teachers, this could produce a spurious relationship between parent-teacher contact and teachers' attention. I include the following control variables associated with student behavior: academic performance, psycho-social problems, self-assessment of one's academic performance relative to classmates, and motivation and engagement at school (measured via four scales identified through factor analysis).

### Analytic Strategy

To examine the first pathway proposed by the conceptual model (Path A, Figure 1), I test whether socioeconomically advantaged families are more likely to cultivate relationships with teachers than other families. Due to the clustered nature of the CEPS dataset, I estimate a multilevel mixed effects logistic model, regressing contacting teachers 5+ times per semester on social class and a set of controls.<sup>6</sup> Next, I examine the second pathway proposed by the conceptual model (Path B in Figure 1): namely, that parent-teacher contact is associated with teachers' attention during daily lessons. I estimate a series of multilevel mixed effects linear regression models in which students' scores on the teachers' attention scale are regressed on frequency of parent-initiated contact with teachers and a set of controls. I then estimate a fixed effects linear regression model of teachers' attention on parent-teacher contact.<sup>7</sup> By investigating whether within-student change in parent-initiated contact with teachers is associated with within-student change in attention from teachers in class, I effectively control for all unobserved time-invariant characteristics of individuals (Allison 2009).

Finally, I employ structural equation modeling to analyze the mediation mechanism proposed in the conceptual model: namely, that parent-teacher contact influences later academic performance indirectly, through its effect on teachers' attention. I simultaneously estimate two equations: one for the effect of parent-teacher contact on teachers' attention (Path B) and one for the effect of teachers' attention on academic performance (Path C). To establish temporal precedence in the second equation, I regress current academic performance on teachers' attention reported in the previous year. Moreover, I control for prior academic performance.<sup>8</sup> By including the first equation in the structural equation model (Path B), I can assess the evidence for an indirect effect of parent-teacher contact on later academic performance through its effect on teachers' attention.<sup>9</sup>

#### **4. Results**

##### Social Class and Parent-Teacher Contact

Do the data provide evidence for the first relationship proposed in the conceptual model, between social class and parent-teacher contact (Path A)? I am particularly interested in whether socioeconomically advantaged families are more likely to cultivate relationships with teachers, which I operationalize as falling into the highest category of parent-initiated contact with teachers.<sup>10</sup> Table 2 reports results from the full set of multilevel mixed effects logistic regression models of contacting teachers 5+ times per semester. In the baseline model, parent-teacher contact is regressed on a set of controls. In Model 2, I add dummy variables for one measure of social class to the model. In line with the conceptual model, certain socioeconomically advantaged occupational groups appear more likely to cultivate relationships with teachers than working-class parents. Relative to working-class parents, the odds of contacting teachers 5+

times are 1.57 times higher for government workers ( $p < 0.05$ ) and 1.86 times higher for professionals ( $p < 0.001$ ). Corporate managers and small business owners, on the other hand, do not significantly differ from working-class families in parent-teacher contact.<sup>11</sup> In Model 3, I remove parental occupation from Model 2 and instead investigate the relationship between parent-teacher contact and the second measure of social class: parental education. Again, I find evidence of a relationship between social class and parent-teacher contact: the odds of contacting teachers 5+ times per semester are 1.58 times higher for mothers with an academic high school diploma ( $p < 0.001$ ) and 2.43 times higher for mothers with tertiary education ( $p < 0.001$ ), relative to mothers with no more than middle school or vocational high school education. Finally, in Model 4, I include both measures of social class. The results are largely consistent with what was observed in previous models, although the difference between government workers and working-class families in parent-teacher contact is no longer statistically significant after controlling for education.

[Table 2]

### Parent-Teacher Contact and Micro-Level Interactions

Do the data provide evidence of a path linking parent-teacher contact to daily, micro-level interactions in class (Path B)? To test this, I estimate a series of multilevel mixed effects linear regression models in which student scores on the teachers' attention scale are regressed on parent-teacher contact (Table 3). In the baseline model, I find evidence that attention from teachers is associated with certain individual-level and school-level variables. For example, private school students report more attention from teachers, on average, than public school students ( $p < 0.001$ ). Moreover, teachers' attention is positively associated with current academic

performance ( $p < 0.001$ ). Finally, there is some evidence of a positive relationship between social class and teachers' attention.

[Table 3]

In Model 2, I add the key independent variable – frequency of parent-initiated contact with teachers – to the baseline model. Overall, in line with the conceptual model, higher frequencies of contacting teachers are associated with higher scores on the teachers' attention scale ( $p < 0.01$ ). In other words, students whose parents contact teachers more frequently receive, on average, more attention during daily lessons. It is possible, however, that aspects of student behavior produce a spurious relationship between parent-teacher contact and teachers' attention. In Model 3, I add controls for variables related to student behavior. Although the coefficients on parent-teacher contact decline in magnitude after adding these controls, they remain statistically significant. Next, to ensure that parents are not merely reacting to teachers' behavior, which could lead to a spurious relationship between teachers' attention and parent-teacher contact, I add a control for teacher-initiated contact with parents in Model 4. Even after adding this control, which arguably produces conservative estimates,<sup>12</sup> I observe that students whose parents contacted teachers 0-1 times receive less attention from teachers, on average, than students whose parents contacted teachers 2-4 times.<sup>13</sup>

Finally, I estimate a fixed effects linear regression model of teachers' attention on parent-teacher contact. This approach allows me to control for all unobserved time-invariant variables. Essentially, I am restricting analysis to within-student change in parent-teacher contact and testing whether this is associated with within-student change in teachers' attention. As shown in Table 4, even with this conservative approach (since I am ignoring between-student variation), I find a significant relationship between parent-teacher contact and teachers' attention ( $p < 0.01$ ).

That is, there is evidence that students whose parents increase contact with teachers between survey years experience an increase in their score on the teachers' attention scale between survey years. A post-estimation test leads me to reject the null hypothesis that there is no relationship between within-student change in parent-teacher contact and within-student change in teachers' attention. Overall, this provides strong evidence in support of an association between parent-teacher contact and the amount of classroom attention students receive.

[Table 4]

### Parent-Teacher Contact and Academic Performance

I have found strong evidence for an association between social class and parent-teacher contact and between parent-teacher contact and teachers' attention. In this last section, I test the mediation mechanism proposed in the conceptual model: namely, that parent-teacher contact shapes later academic performance through its impact on teachers' attention. To engage in mediation analysis, I employ structural equation modeling, simultaneously estimating two equations: one for the effect<sup>14</sup> of the key explanatory variable (parent-teacher contact) on the mediating variable (teachers' attention); and one for the effect of the mediating variable (teachers' attention) on the key outcome variable (later academic performance).

For the first equation, teachers' attention in grade seven is regressed on parent-teacher contact in grade seven, with controls for academic performance in grade seven and a set of time-invariant individual and school-level variables. In fact, this model is similar to the model estimated earlier to test for a relationship between parent-teacher contact and teachers' attention (Table 3). In this version of the model, however, analysis is restricted the first wave of survey data. Consequently, only between-student differences in teachers' attention and parent-teacher contact are used to estimate the coefficient on parent-teacher contact.<sup>15</sup>

In the second equation, which is simultaneously estimated alongside the first, academic performance in grade eight is regressed on teachers' attention in grade seven, with controls for the same individual and school-level variables in the first equation, including seventh grade academic performance. In other words, I am testing whether students who received more attention from teachers in grade seven had better academic performance in grade eight, compared to others with the same academic performance in grade seven. Including teachers' attention in grade seven in the model rather than teachers' attention in grade eight helps establish temporal precedence. The coefficient on teachers' attention can be interpreted as the change in academic performance in grade eight associated with a one-unit increase in a student's score on the teachers' attention scale in grade seven, controlling for prior academic performance and other individual- and school-level variables.

In line with the results presented in Table 3, I find evidence of a direct effect of parent-teacher contact on teachers' attention ( $p < 0.01$ ) (Figure 2). In addition, I find strong evidence that teachers' attention has a positive, direct effect on later academic performance. A one standard deviation increase in a student's score on the teachers' attention scale in seventh grade is associated with a 0.04 standard deviation boost on eighth grade midterm exams, relative to other students with the same performance on seventh grade midterm exams ( $p < 0.001$ ). Although this estimated "effect" is small in magnitude, it may accumulate over years of school, eventually producing a boost for students on high-stakes entrance examinations for high school and university, in which small distinctions in performance matter. Finally, post-estimation analysis provides evidence for an indirect effect of parent-teacher contact on later academic performance through its impact on teachers' attention ( $p < 0.01$ ). Overall, I find support for the idea that higher levels of parent-initiated contact with teachers lead to a boost in students' later academic

performance because teachers direct more attention to the children of parents with whom they are in more frequent contact.

[Figure 2]

A limitation of these results is that they are based on a number of assumptions. Specifically, to estimate a structural equation model, one must make assumptions about causality that are built into the model. The model presented is based on the assumption that parent-initiated contact with teachers affects teachers' attention and teachers' attention affects academic performance. A model that reverses the direction of causality, such that academic performance affects teachers' attention (equation 1), which in turn affects parent-initiated contact with teachers (equation 2), fits the data equally well.<sup>16</sup> I argue, however, that previous literature provides more support for the direction of causality I proposed than the direction of causality proposed by this alternative model. Although a sizeable body of research has shown that parents may modify contact with teachers in response to children's academic performance (Crosnoe 2001; McNeal 1999; Ho and Willms 1996; Downey 2002), most of these studies find a *direct* link between student academic performance and parent-teacher contact, not an indirect link mediated by teachers' attention. Moreover, previous research suggests that parents increase contact with teachers when their children struggle academically, while the alternative model proposes that parents *decrease* contact with teachers when their children struggle. Finally, interviews with Chinese parents and teachers provide support for the conceptual model's proposed direction of causality: that is, that teachers modify their behavior in response to parents contacting them (Xie 2016).



## 5. Discussion

Results from the current study suggest that parents may be able to intervene at school to shape micro-level interactions in class. In particular, my findings provide some support for the idea that socioeconomically advantaged parents in China are influencing the amount of classroom attention their children receive through contact with teachers, which may impact student learning. I documented a positive, statistically significant association between social class and contacting teachers 5+ times per semester, as well as a positive relationship between parent-teacher contact and attention from teachers during daily lessons. Finally, mediation analysis suggests that parent-teacher contact may shape later academic performance through its association with teachers' attention. Altogether, these findings point to an overlooked mechanism through which social class may influence schooling: high SES parents are more likely to contact teachers than other parents, leading their children to potentially benefit from additional attention from teachers during daily lessons, which is linked to improved learning.

As noted earlier, due to the CEPS data being observational, one cannot conclude definitively that parents contacting teachers *causes* students to receive more classroom attention. Nevertheless, I assessed two competing explanations for the observed association: 1) *Reverse causality*: teachers contact the parents of students in which they are particularly invested in the classroom, which leads parents to contact that teacher more frequently; 2) *Spurious relationship*: unobserved individual-level characteristics influence both teachers' attention and levels of parent-initiated contact with teachers. To assess the first competing explanation, I added a control for teacher-initiated contact with parents. In response to the second competing explanation, I first added controls for student behavior. Later, I estimated a fixed effects model in which analysis was restricted to within-student variation, thereby controlling for all unobserved time-invariant individual-level characteristics. In all cases, the results were largely the same,

supporting the idea that parent-teacher contact influences teachers' attention. Xie's (2016) qualitative study in rural China and recent Chinese media reports (Zhou 2015) provide further support for this interpretation, and, as discussed earlier, there are other reasons to expect parent-teacher contact to affect teachers' attention.

The non-experimental nature of the data also poses limitations to assessing causality in the observed relationship between teachers' attention and student outcomes. However, by taking advantage of the study's longitudinal design to establish temporal precedence and control for prior academic performance, I was able to provide stronger evidence for a causal effect of teachers' attention on academic performance than would be possible with cross-sectional data. Finally, as previously discussed, the mediation model tested (i.e. that parent-teacher contact shapes later academic performance through its impact on teachers' attention) is based on assumptions about causality. Although another model that makes different assumptions about the direction of causality fits the data equally well, previous studies and existing theory provide stronger support for the causal assumptions of this model over those of an alternative model.

## **6. Conclusion**

Current sociological theories recognize that parents can intervene at school to influence organizational practices, including decisions about admission to gifted and talented programs or advanced academic tracks. Scholars have also argued that parents can shape teachers' evaluations of students' academic potential and competence, which can have implications for academic success. However, not all educational systems offer formal opportunities for parents to "customize" programs of learning at school, nor do teacher evaluations always play a role in progress to the next level of schooling. Consequently, while school-based parental involvement is generally conceptualized as an important component of social stratification processes within

the U.S., it is thought to matter little within highly standardized, examination-oriented systems that prevail elsewhere.

Findings from this study are thus significant because they point to one way in which parents within highly standardized, exam-oriented systems may be able to intervene at school to influence student success: namely, by shaping daily, micro-level interactions in the classroom that matter for student learning. Notably, this phenomenon could raise issues with education reforms that propose combatting inequality by reducing formal opportunities for parents to intervene in school practices and procedures. While these efforts may help, we may need to think more broadly about how to tackle power dynamics at school, as pressure from parents appears to find a way to influence daily practices at school and student outcomes even when there are few formal channels for school-based parental involvement. The current study also uncovers weaknesses in existing literature on East Asian parenting, which may in part be linked to a failure to consider all of the factors that shape local parenting practices. While earlier literature has emphasized the importance of cultural norms and structural features of East Asian educational systems for limiting parents' school-based involvement, the current study suggests that changes in structures of power and inequality within society may modify parenting practices. As the stakes within the education field increase, middle-class and affluent parents may develop new, inventive ways to help their children get ahead at school, not all of which align with previous cultural norms and institutional expectations.

Finally, this study has implications for social reproduction theory. While previous research highlights how middle-class and affluent families take advantage of the unstandardized and relatively flexible nature of the U.S. educational system to get ahead at school, findings from the current study suggest that even within a system that in many ways is designed to limit family

influence, parents can still find ways to intervene at school. Specifically, socioeconomically advantaged families may identify cracks in the system and new levers to help their children get ahead of the competition. This is reminiscent of what Calarco (2018) has called “negotiated advantage”, or the process by which middle-class children and parents secure advantages at school through negotiations with teachers and school administrators. Here, however, “negotiated advantage” is observed on a larger, macro-level scale as new forms of wealth and privilege emerge within Chinese society and come up against an educational system not entirely set up in their favor. This situation has the potential to reshape the larger educational system and make it more disequalizing. It could also help explain the persistence of educational inequality over time and across different contexts, even in the face of structures aimed at leveling the playing field. While governments may engage in efforts to equalize educational opportunities, the impact of these policies and procedures may be diluted by creative strategizing on the part of socioeconomically advantaged families to create and preserve advantage.

**About the Author:** Natalie Young conducted this work as a doctoral student at the University of Pennsylvania. Dr. Young is currently at the U.S. Census Bureau, where she is investigating childhood disability and education. She continues to research social inequality in comparative perspective as a Research Affiliate at the Population Studies Center at the University of Pennsylvania. She recently published “Childhood Inequality in China: Evidence from Recent Survey Data” with Emily Hannum in *The China Quarterly* (2018).

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## 7. Endnotes

- <sup>1</sup> In examining the relationship between parental involvement and student outcomes, some quantitative studies have produced conflicting results. For a discussion of this issue, see McNeal 1999.
- <sup>2</sup> Five occupations were combined to create the “working class” category: 1) skilled blue-collar workers; 2) production and manufacturing staff; 3) commercial and service industry staff; 4) farmers; 5) non-employed/unemployed.
- <sup>3</sup> While criticism is another common form of student-teacher interaction during daily lessons in China, I only examine “positive” forms of attention.
- <sup>4</sup> Although student reports of being called on by teachers may be influenced by student classroom participation, CEPS asks students about “cold calling”. A teacher engages in cold calling when he asks a student to answer a question that the student has *not* volunteered to answer. As such, cold calling is less influenced by student participation than other measures of being called on.
- <sup>5</sup> Models were also run with a control for a composite variable based on school reports of structural opportunities for parent-school communication (e.g. frequency of parent meetings; school activities open to parents). Although there was a strong bivariate relationship between this measure and parent-initiated contact with teachers, the relationship disappeared after controlling for other individual-level and school-level variables and is not included in the final models.
- <sup>6</sup> Multi-level modeling allows for correction for dependence among repeated observations on the same individual or among students nested within schools. Without these adjustments, estimated standard errors would be biased downward, and parameter estimates may be statistically inefficient (Raudenbush and Bryk 2002).
- <sup>7</sup> Since fixed effects models will not produce reliable estimates when there is very little variation within individuals (Allison 2009), I first examined within-student variation in teachers’ attention and parent-teacher contact. Overall, within-student variation was sufficient to conduct fixed effects regression analysis.
- <sup>8</sup> Including lagged dependent variables in multi-level mixed effects models can produce severe bias (Rabe-Hesketh and Skrondal 2012). Consequently, the models I estimate at this stage are single-level models. I account for dependence among observations by using robust standard errors that adjust for within-cluster correlation.
- <sup>9</sup> The proportion of missing data did not exceed 5.14% for any individual variable included in the models and results were robust to choice of method for handling missing data. For example, estimating models using the multiple imputation procedure did not substantially change any conclusions.
- <sup>10</sup> As a robustness check, I estimated a set of ordered logit models. As in the logit models presented in the paper, I found strong evidence of a relationship between social class and parent-teacher contact.

- <sup>11</sup> In addition to analysis of the longitudinal, cohort data presented in this paper, I performed supplementary analysis of the 2013-2014 cross-sectional sample of seventh and ninth graders. In this analysis, the odds of contacting teachers 5+ times per semester were significantly higher for corporate managers than for members of the working class ( $p < 0.001$ ).
- <sup>12</sup> Notably, contacting teachers may also influence whether teachers later contact parents – that is, parents’ behavior toward teachers can shape teachers’ behavior toward parents, just as the reverse is true. Consequently, the estimates produced after controlling for teacher-initiated contact with parents are conservative.
- <sup>13</sup> A post-estimation test of the null hypothesis of no relationship between parent-teacher contact and teachers’ attention is statistically significant ( $p < 0.001$ ).
- <sup>14</sup> Unlike in the case of standard regression analysis, one must make causal assumptions when engaging in structural equation modeling. Consequently, in this section I talk about testing “effects” rather than “associations/relationships.”
- <sup>15</sup> The earlier model took both between- and within-student differences into account when estimating coefficients.
- <sup>16</sup> Note that adding a control for teacher-initiated contact with parents to this alternative model does not wipe out the relationship between teachers’ attention and parent-initiated contact with teachers, which remains statistically significant. Thus, there is little support for the idea that teachers are contacting parents of students to whom they devote considerable classroom attention and that this is leading parents to feel more comfortable contacting teachers.

## 8. Figure Legend

### Figure 1: Conceptual Model

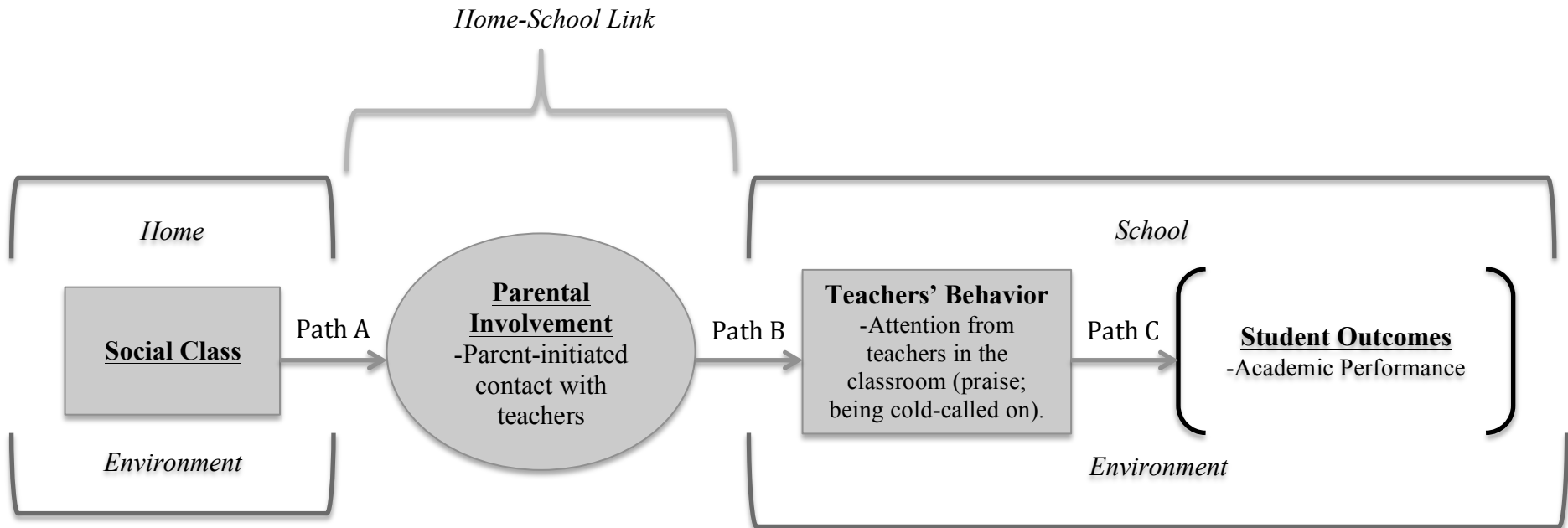
Note: Although previous research has established other pathways through which social class shapes student outcomes, for simplicity of graphical presentation, only the pathway proposed in the current study is displayed in the figure.

### Figure 2: Structural Equation Model: Indirect Effect of Parent-Teacher Contact on Later Academic Performance

Note: Standardized coefficients reported on each of the dummy variables for parent-teacher contact are based on a comparison to the reference category of contacting teachers 2-4 times. The following covariates are included in analysis but not displayed in the visual representation above: parental occupation, parental education, gender, household registration (*hukou*) type, migrant status, minority status, family structure, whether the child has siblings, school location (urban vs. non-urban), school type (public vs. private), school rank, whether the school is a boarding school, and county.

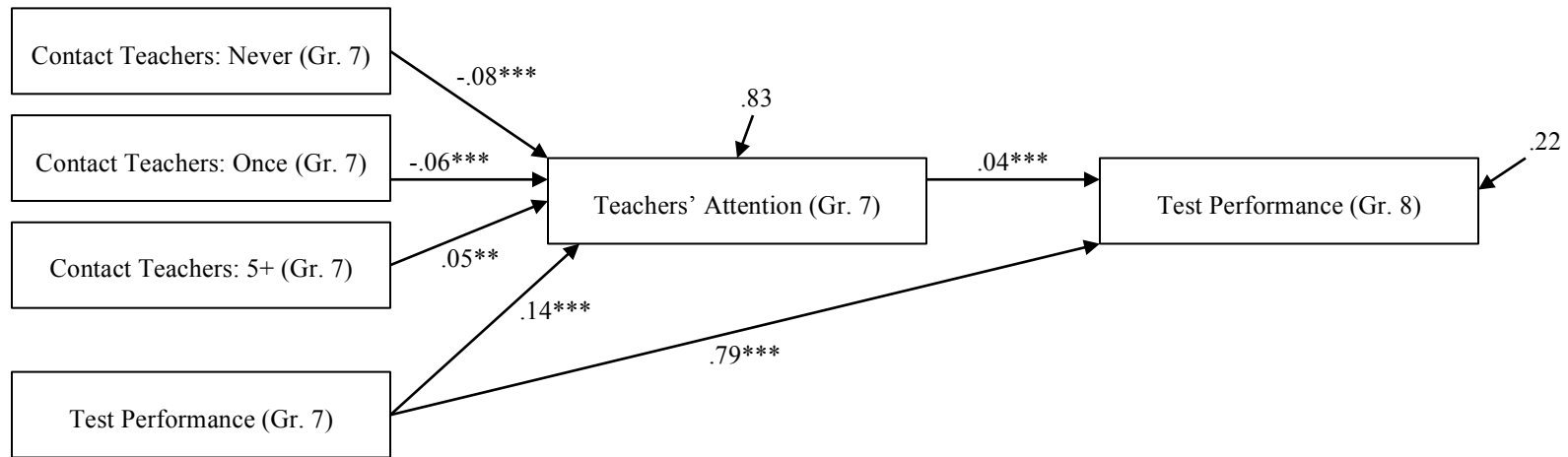
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Figure 1: Conceptual Model



Note: Although previous research has established other pathways through which social class shapes student outcomes, for simplicity of graphical presentation, only the pathway proposed in the current study is displayed in the figure.

Figure 2: Structural Equation Model: Indirect Effect of Parent-Teacher Contact on Later Academic Performance



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\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .



## 9. Tables

Table 1: Weighted Descriptive Statistics for Variables in Models

Variable	Mean or %	SD	Min	Max	Missing (%)
Parent-initiated contact with teachers					
Never	29.88		0	1	5.14
Once	19.75		0	1	5.14
2-4 times	35.65		0	1	5.14
5+ times	14.72		0	1	5.14
Score on “teachers’ attention” scale (7 <sup>th</sup> grade)	18.23	5.08	7	28	2.90
Score on “teachers’ attention” scale (8 <sup>th</sup> grade)	17.02	5.39	7	28	1.62
Parental occupation					
<i>Professional (%)</i>	8.41		0	1	2.22
<i>Government worker (%)</i>	5.30		0	1	2.22
<i>Corporate manager (%)</i>	4.74		0	1	2.22
<i>Small business owner (%)</i>	14.99		0	1	2.22
<i>Working class (%)</i>	66.57		0	1	2.22
Parental education					
<i>Elementary or less</i>	30.61		0	1	0.21
<i>Middle School</i>	49.01		0	1	0.21
<i>Academic High School</i>	12.32		0	1	0.21
<i>Tertiary</i>	8.06		0	1	0.21
Average grade on midterm exams (7 <sup>th</sup> grade)	-0.08	1.05	-4.08	1.93	2.86
Average grade on midterm exams (8 <sup>th</sup> grade)	-0.18	1.07	-3.26	1.69	1.71
Male (%)	52.70		0	1	1.81
Urban (%)	46.74		0	1	2.05
Agricultural household registration (%)	62.40		0	1	0.93
Migrant (%)	10.59		0	1	0.67
Ethnic minority (%)	14.38		0	1	0.31
Family structure					
<i>Both parents live with child (%)</i>	74.04		0	1	2.43
One or more siblings (%)	57.39		0	1	2.47
School Type					
<i>Public (%)</i>	91.26		0	1	0.00
<i>Private (%)</i>	8.74		0	1	0.00
School Rank					
<i>Lowest Rank (%)</i>	1.36		0	1	0.00
<i>Second Lowest Rank (%)</i>	4.87		0	1	0.00
<i>Middle Rank (%)</i>	10.58		0	1	0.00
<i>Second Highest Rank (%)</i>	63.01		0	1	0.00
<i>Highest Rank (%)</i>	20.18		0	1	0.00
Boarding School					

<i>All students live at school (%)</i>	27.09		0	1	0.00
<i>Some students live at school (%)</i>	48.44		0	1	0.00
<i>No students live at school (%)</i>	24.47		0	1	0.00
Score on psycho-social problems scale	2.12	0.84	1	5	2.51
Self-perception of grades, relative to classmates					
<i>Bad</i>	10.20		0	1	0.74
<i>Below average</i>	20.43		0	1	0.74
<i>Average</i>	32.01		0	1	0.74
<i>Above average</i>	29.49		0	1	0.74
<i>Very good</i>	7.86		0	1	0.74
Measures of Motivation and Engagement at School					
<i>Score on scale for "sense of belonging at school"</i>	2.98	0.71	1	4	0.93
<i>Score on scale for "academic confidence"</i>	3.12	0.57	1	4	3.59
<i>Score on scale for "academic motivation"</i>	3.26	0.71	1	4	3.39
<i>Score on scale for "perceived value of school"</i>	3.41	0.65	1	4	0.70
Sample Size	9449				

Table 2: Mixed Effects Logistic Regression of Cultivating Relationships with Teachers on Social Class

	Model 1	Model 2	Model 3	Model 4
Parental occupation (Ref: Working class)				
<i>Professional</i>		0.623** (0.144)		0.441** (0.161)
<i>Government worker</i>		0.453* (0.193)		0.260 (0.190)
<i>Corporate manager</i>		0.272 (0.106)		0.072 (0.171)
<i>Small business owner</i>		0.129 (0.146)		0.130 (0.145)
Parental education (Ref: Middle school)				
<i>Elementary</i>			0.045 (0.141)	0.063 (0.141)
<i>Academic HS</i>			0.456*** (0.119)	0.421*** (0.120)
<i>Tertiary</i>			0.886*** (0.146)	0.760*** (0.150)
Academic performance	0.077 (0.048)	0.060 (0.047)	0.053 (0.046)	0.0453 (0.046)
Male	0.825*** (0.100)	0.831*** (0.099)	0.820*** (0.100)	0.826*** (0.099)
Agricultural household registration	-0.328*** (0.087)	-0.237* (0.096)	-0.217 (0.091)	-0.177 (0.097)
Migrant	-0.106 (0.188)	-0.104 (0.184)	0.070 (0.185)	-0.079 (0.182)
Ethnic minority	0.455 (0.323)	-0.472 (0.322)	-0.479 (0.326)	-0.484 (0.324)
Family structure (Both parents=1)	0.021 (0.091)	-0.002 (0.091)	-0.005 (0.088)	-0.016 (0.088)
Sibling(s)	0.047 (0.095)	-0.007 (0.095)	-0.019 (0.094)	-0.040 (0.094)
Urban area	0.106 (0.140)	0.064 (0.138)	0.061 (0.139)	0.040 (0.138)
School type (Private=1)	1.672*** (0.211)	1.704*** (0.216)	1.727*** (0.217)	1.733*** (0.220)
School rank (Ref: Middle)				
<i>Lowest</i>	0.155 (0.439)	0.159 (0.446)	0.067 (0.436)	0.085 (0.439)
<i>2<sup>nd</sup> lowest</i>	0.640 (0.367)	0.613 (0.362)	0.635 (0.368)	0.623 (0.365)

<i>2<sup>nd</sup> highest</i>	0.409 (0.219)	0.392 (0.216)	0.365 (0.220)	0.362 (0.217)
<i>Highest</i>	0.380 (0.246)	0.323 (0.249)	0.256 (0.252)	0.242 (0.253)
Boarding school (Ref: None board)				
<i>All board</i>	0.666 (0.357)	0.693* (0.348)	0.692* (0.346)	0.707* (0.337)
<i>Some board</i>	0.258 (0.287)	0.258 (0.281)	0.275 (0.281)	0.272 (0.274)
Wave	-0.038 (0.094)	-0.049 (0.094)	-0.052 (0.093)	-0.057 (0.093)
Control for county?	Yes	Yes	Yes	Yes

N=16,592 (8,296 students observed at two time points)

Note: Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Table 3: Mixed Effects Linear Regression of Teachers' Attention on Parent-Teacher Contact

	Model 1	Model 2	Model 3	Model 4
Frequency of parent-initiated contact with teachers (Ref: 2-4 times/semester)				
<i>Never</i>		-0.869*** (0.127)	-0.622*** (0.114)	-0.509*** (0.106)
<i>Once</i>		-0.478*** (0.125)	-0.309** (0.112)	-0.253* (0.114)
<i>5+ times</i>		0.572** (0.192)	0.319* (0.148)	0.291 (0.160)
Parental occupation (Ref: Working class)				
<i>Professional</i>	0.483* (0.227)	0.376 (0.227)	0.169 (0.198)	0.162 (0.199)
<i>Government worker</i>	0.799** (0.268)	0.724** (0.260)	0.452 (0.276)	0.448 (0.275)
<i>Corporate manager</i>	0.584** (0.215)	0.512* (0.212)	0.189 (0.171)	0.186 (0.172)
<i>Small business owner</i>	0.016 (0.169)	-0.012 (0.170)	-0.120 (0.160)	-0.128 (0.160)
Parental education (Ref: Middle school)				
<i>Elementary</i>	-0.240 (0.136)	-0.234 (0.132)	-0.155 (0.124)	-0.158 (0.124)
<i>Academic HS</i>	-0.090 (0.155)	-0.134 (0.152)	-0.186 (0.130)	-0.189 (0.131)
<i>Tertiary</i>	0.722*** (0.186)	0.606** (0.188)	0.484** (0.157)	0.479** (0.159)
Academic performance	0.710*** (0.106)	0.713*** (0.106)	-0.112 (0.104)	-0.103 (0.106)
Male	0.016 (0.136)	-0.097 (0.134)	0.059 (0.108)	0.041 (0.108)
Agricultural household registration	-0.132 (0.121)	0.164 (0.120)	0.178 (0.111)	0.178 (0.112)
Migrant	-0.069 (0.186)	0.057 (0.195)	0.037 (0.174)	0.045 (0.173)
Ethnic minority	-0.448 (0.380)	-0.419 (0.379)	-0.191 (0.298)	-0.192 (0.295)
Family structure (Both parents=1)	0.404** (0.149)	0.403** (0.145)	0.218 (0.119)	0.213 (0.119)
Sibling(s)	0.020 (0.117)	0.029 (0.117)	0.076 (0.107)	0.076 (0.108)

Urban area	-0.077 (0.291)	-0.119 (0.294)	-0.066 (0.189)	-0.069 (0.188)
School type (Private=1)	1.344*** (0.312)	1.065*** (0.316)	0.834*** (0.229)	0.822*** (0.228)
School rank (Ref: Middle)				
<i>Lowest</i>	-0.374 (0.814)	-0.352 (0.732)	-0.483 (0.449)	-0.464 (0.494)
<i>2<sup>nd</sup> lowest</i>	-0.748 (0.862)	0.725 (0.843)	0.287 (0.515)	0.288 (0.514)
<i>2<sup>nd</sup> highest</i>	0.649 (0.615)	0.612 (0.603)	0.339 (0.334)	0.336 (0.333)
<i>Highest</i>	0.311 (0.605)	0.250 (0.591)	0.103 (0.351)	0.079 (0.350)
Boarding school (Ref: None board)				
<i>All board</i>	-0.238 (0.705)	-0.360 (0.680)	0.046 (0.569)	0.037 (0.570)
<i>Some board</i>	-0.686 (0.697)	-0.734 (0.679)	-0.267 (0.575)	-0.278 (0.576)
Psycho-social problems			-0.086 (0.062)	-0.087 (0.062)
Self-perception of grades, relative to classmates (Ref: Average)				
<i>Bad</i>			-0.827*** (0.191)	-0.837*** (0.190)
<i>Below average</i>			-0.436*** (0.134)	-0.442*** (0.133)
<i>Above average</i>			0.330* (0.136)	0.334* (0.137)
<i>Very good</i>			0.872*** (0.217)	0.875*** (0.217)
Scales for motivation and engagement at school				
<i>Sense of belonging at     school</i>			2.369*** (0.130)	2.366*** (0.129)
<i>Confidence in academic     skills</i>			0.570*** (0.110)	0.569*** (0.110)
<i>Perceived value of     school to one's future</i>			0.814*** (0.103)	0.813*** (0.103)
Frequency of teacher- initiated contact with parents (Ref: 2-4 times)				

<i>Never</i>				-0.278** (0.106)
<i>Once</i>				-0.096 (0.135)
<i>5+ times</i>				-0.025 (0.160)
Wave	-1.201*** (0.225)	-1.199*** (0.225)	-1.018*** (0.165)	-1.022*** (0.164)
Control for county?	Yes	Yes	Yes	Yes

N=15,446 (8,452 students observed at 1-2 time points)

Notes: Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Table 4: Fixed Effects Linear Regression of Teachers' Attention on Parent-Teacher Contact

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Frequency of parent-initiated contact with teachers (Ref: 2-4 times/semester)	
<i>Never</i>	-0.420* (0.185)
<i>Once</i>	-0.472** (0.169)
<i>5+ times</i>	0.023 (0.230)
Academic performance	0.209 (0.193)

N=17,621 (9,348 students observed at 1-2 time points)

Note: Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .