"I'll See You in School": A Multiple Proxy Analysis of the Role of Parental Involvement in K-12 Education and Improved Student Outcomes

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Abstract: We analyze the role of parental involvement on a child's academic performance by employing multiple proxies for direct and indirect parental involvement in his/her child's schooling using a large dataset of 11,913 observations from the 2016 National Household Education Survey (NHES (2016)). Our estimations of ordered logit grade models show that children of parents who volunteer in the school or classroom, serve on a school committee, or attend PTO meetings are significantly more likely to receive higher grades; these children are 2.4% to 11% more likely to be making grades of *mostly As* compared to children of parents who do not engage in these activities. Elementary aged children who are told by their parents to read are also significantly more likely to receive higher grades in school. However, we find that homework help is a noisy proxy for parental involvement. Finally, our analysis uncovers some stark racial and gender disparities in K-12 student performance as well as racial differences in the parental involvement measures.

I20: Education and Research Institutions: General
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1. Introduction

The increase in both the college earnings premium and the demand for jobs requiring a college degree in recent decades (Osterman (2008)) has reinforced the importance of gaining a strong K-12 educational foundation in order to set up a student for success towards attaining a college degree. According to data published by the Bureau of Labor Statistics, unemployment rates and wages are closely related to educational attainment. In 2019, the unemployment rate and weekly earnings for those with a bachelor's degree were 2.2% and $1,248 respectively, compared to that of those with only a high school diploma of 3.7% and $746. These differences are magnified for those with even higher levels of education; for example, those with a doctoral degree earn on average $1,883 weekly and face an unemployment rate of only 1.1%[4].

As evidenced, employment and wage inequalities are largely driven by educational inequalities. These differences are magnified in economic downturns. During the Great Recession from December 2007 to June 2009, the educational requirements for jobs increased sharply (Modestino, Shoag and Balance, 2019). This increase in educational requirements would have made it more difficult for those without a strong educational background to compete in the labor market, thus increasing wage inequality. More recently, initial analysis of the current 2020 COVID-19 downturn shows that job losses have been concentrated disproportionately among lower wage workers (Cajner et. al, 2020). Since wage inequalities are related to educational inequalities, narrowing the educational gap within our population is essential in reducing overall societal inequality.

The access to higher education is largely determined by the performance of a child during kindergarten to 12th grade (K-12). Learning during these early years contributes towards students doing well on college performance exams and future success in college. Past studies have demonstrated that parental influence plays a pivotal role in the cognitive growth and development of children (Ogg, and Anthony (2019), Dumont et. al (2011), Houtenville and Conway (2008)). While an educational attainment of a child is largely influenced by the level of parental education, parental involvement in a child's education could also play an important role in determining the academic success of a student. If parents with lower levels of education are able to have a positive influence on the educational outcomes of their children through getting more involved in a child's education, these better outcomes for the children of less educated parents could decrease educational inequalities.

[4] https://www.bls.gov/emp/chart-unemployment-earnings-education.htm

Our research aims to bring more awareness on the impact of the various types of parental involvement on their K-12 child's educational outcomes, measured through the grades that the child normally receives. Using multiple proxies for parental involvement, we employ an ordered logit model to analyze how a child's academic performance is influenced by the actions of his/her parents. Our main results show that four out of the five parental involvement proxies positively influence the grades a child receives. Parental involvement in school activities through attending a Parent Teacher Conference (PTO), serving on a school committee, or volunteering at the school or classroom significantly increases the likelihood of the child making an A compared to children whose parents do not engage in these activities. Elementary aged children who are told to read by their parents are 5.3% significantly more likely to receive an A than those who are not told to read. The fifth parental involvement proxy, homework help, has a surprising negative impact on a child's grades. In order to uncover this homework help puzzle, we conduct a more thorough analysis of this variable. We also uncover statistically significant racial inequalities in grades in all our regression specifications. Finally, our results show that girls significantly outperform boys in K-12 education and that these gender differences vary by race and by the level of schooling.

2. Background

Parental involvement in education has become a popular topic of discussion among policy makers, educators, and parents in recent years. This increased attention to the role that parents play in their child's academic success has largely been a result of parental involvement being singled out as one of the pillars of the 2001 No Child Left Behind Act. The effect of parental engagement on a child's academic outcome is now developing as an important research topic among psychologists and educational psychologists. However, there are currently few, if any, empirical economic research studies using large datasets. Furthermore, existing studies provide mixed results with no consensus in findings.

This lack of concrete empirical evidence on the effectiveness of parental involvement on a child's academic success, coupled with the high emphasis by policymakers and educators on this topic, warrants further vigorous exploration. K-12 educational outcomes form the basis for human capital formation, which in turn contributes towards the economic growth and social development of a country. In addition, if the simple act of parental involvement could increase academic outcomes, parental engagement in their K-12 child's education could be a low-cost method of reducing racial and educational inequality within a society.

a. Parental Involvement

The conflicting results in existing literature on the effect of parental involvement on a child's academic success is largely due to the multidimensional nature of parental involvement. Parental

involvement needs to be conceptualized differently to account for how different forms of engagement effect students in different ways (Harris and Robinson (2016)). The method through which parents get involved in their children's academic lives is crucial in determining the benefits of that involvement. Each kind of parental involvement is anticipated to have a different form of effect on students, whether that be educationally, emotionally, or in some other facets (Pomerantz et. Al (2007)).

Some researchers categorize parental involvement as direct ways in which parents choose to get involved in their child's academics, such as through picking courses for them or tracking their progress in those courses. Others define it as *parental effort*, a term used to denote how engaged a parent is in his/her child's overall life (Houtenville and Conway (2008)). There are also studies that use narrow definitions of parental involvement by focusing only on one aspect of parental involvement, such as engagement in the school's PTO (Walsh (2009)). These inconsistent definitions of parental involvement can help explain the variation among the results produced from existing research.

Due to the multi-dimensional nature of parental involvement, it is important to categorize the different types of involvement that parents engage in as well as the context in which it is provided. Parental involvement can typically fall into three main categories: home-based involvement, school-based involvement, and home-school communication (Ogg and Anthony (2018)). Home-based involvement includes assistance with homework, discussion surrounding school, and other activities that parents use to interact with their student. School-based involvement refers to how the parent chooses to interact with the school, such as through PTO or other involvement in school-based organizations. Home-school communication is the channel of communication between the two, such as through teachers reaching out to parents over a student's behavior or grades.

Our research attempts to capture the multi-dimensional nature of parental involvement by using multiple proxies to investigate the different effects of direct and indirect in-school versus out-of-school engagement of parents on a student's academic success.

b. Setting

The learning environment that the parent cultivates for a child at home is important towards a child succeeding academically. Harris and Robinson (2016) refer to this type of intangible parenting as *stage-setting*. Taking their research from the Coleman Report[5], they discuss how parents can indirectly relay the importance of education to their children through actions such as by being involved in their child's school,

[5] The Coleman report is a study that was conducted by the government in 1966 titled "Equality of Educational Opportunity". It was integral in policy research regarding educational opportunity and assisted in the desegregation of schools

asking children about their studies, or by setting up an environment for their child to work on their academics at home.

Even for children of parents who *stage-set*, there are external pressures which can still have adverse effects on the child's academic success. For example, a parent worrying about finances in a low-income household could pass these worries on to the child. This pressure can take away from the emphasis on education as well as the validity of the education process. It is also important to acknowledge that children of minority racial groups often face adversity in life which can impact the *stage-setting* environment parents try to cultivate for their academic achievement and future aspirations (Harris and Robinson (2016)).

We use several methods in our empirical analysis to account for the issues raised above. Firstly, the parental involvement proxies that we use capture some of the *stage-setting* criteria. Each proxy captures a different way through which parents relay the importance of education to their children, whether directly or indirectly, in-school or at home. While we do not have access to parental income data, we use the level of each parent's education since parents with higher levels of education are likely to set an environment at home that emphasizes learning. Parent's education levels are also good proxies for income, particularly because income is largely determined by education levels. Finally, the racial background of the child is employed as a control variable to account for the different environments, within as well as out-of-school, that children of different racial backgrounds encounter.

c. Does Homework Help, Help?

There is no consensus in existing parental involvement literature as to whether a child's academic performance is improved or hurt when the child's parent helps with homework. Analyzing responses from a survey of students, teachers, and parents about homework assignments, Cooper et. al (2000) find that how parents assist or become involved in homework is more important than their actual help. They report that parent support for autonomy shows a positive relationship with student achievement, while direct involvement with homework results in negative outcomes. Another study conducted to assess how homework assistance impacts high school student achievement concludes that direct involvement in homework produces negligible results whereas parental monitoring (i.e. checking for homework completion) results in more positive outcomes (Fehrmann, Keith, and Reimers (1987)).

Given that past research has produced mixed results, we will analyze the effect of homework help extensively starting by investigating the overall effect of homework help on a student's grade. Then, we will proceed to learn about the differential impact that homework help has on grades by separating our dataset by gender, race, level of schooling, and the number of times per week that a parent reports helping his/her child on homework.

d. Multiple Proxies

We use multiple proxies in our analysis, similar to the method used by Black and Smith (2006), to provide a more complete analysis of the impact of direct and indirect effect of parental involvement, within as well as outside of the school setting, on a student's grade. While the focus of Black and Smith's (2006) research was to estimate the returns of college quality, their usage of multiple proxies for quality allowed for an estimation of the reliability of each measure. Furthermore, the use of multiple proxies allows for a more holistic perspective of parental involvement. Finally, previous papers on the topic of parental involvement have either chosen a specific aspect of involvement, such as homework assistance, to focus on or have computed an overall parental involvement score using multiple types of involvement. While both are valid modes of analysis, our unique method of utilizing multiple parental involvement proxies will allow us to investigate the impact of each type of involvement separately, and to determine what role each mode of parental engagement plays in a child's academic achievement.

Method

Sample Analysis

The Parent and Family Involvement in Education Survey, part of the National Household Education Survey of 2016 (NHES), is a cross-sectional survey administered every three years to a sample of families from different areas across the United States through the National Center for Educational Statistics[6]. The 2016 survey was conducted both online and through mail, with parents self-reporting the information. Children from Hispanic and African Americans families were specifically oversampled to allow for more observations of the outcomes of minority races.

The main focus of our research is to observe the effect of parental involvement on grades. Thus, the dependent variable of interest in our main regression specification is the *Grade* variable, which is measured by the grades most commonly received by the student as reported by his/her parent. More specifically, parents were asked the following question about the child's grades from the latest school year: "Overall, across all subjects, what grades does this child get?" The responses allowed were *mostly As*, *mostly Bs*, *mostly Cs*, *mostly Ds or lower*, and *the school does not give grades*. Respondents who answered that their child's *school does not give grades* are dropped from our dataset. After the missing observations are dropped, the sample used for our main regressions includes 11,913 observations out of the 14,075

[6] https://nces.ed.gov/nhes/

responses to the survey. In our analysis, we record the grade values that correspond to each letter grade as follows: 4 for *mostly As*, 3 for *mostly Bs*, 2 for *mostly Cs*, and 1 for *mostly Ds and lower*.

Table 1 shows the frequencies of the dependent variable in our main regression specification, $Grades$. As can be seen, slightly more than half of the parents who participated in the survey report that their child received *mostly As*, with a diminishing percentage of parents reporting lower grades.

<insert Table 1 here>

Table 2, which shows the summary statistics of all variables, reports that the mean grade in the dataset is 3.34; this translates to the average grade reported by a parent for his/her child being slightly higher than a B. Whether or not this is due to some parents scaling up their child's grades, a lack of accurate knowledge of these grades, the schools giving out many high grades, or the high grades in elementary school skewing this distribution is unknown. Breaking up the average grades by each year of schooling, the latter reason turns out to be a plausible explanation. We find that the highest average grade is reported as a 3.64 during kindergarten with a 3.48 average grade for elementary school students, 3.35 for middle school and 3.24 for high school students. To account for the possibility of grade differentials by school year, we will include a *YearInSchool* variable as a control variable in our regressions.

<insert Table 2 here>

Proxy Instruments for Parental Involvement

To investigate the effect of parental involvement on grades, we use the following five proxies as measures of direct and indirect participation of a parent in his/her child's education: if at least one parent volunteered in the child's classroom or in the child's school during the latest academic year ($Volunteer$), if a parent has ever helped his/her child with homework ($HwHelp$), whether the parent attended parent-teacher conferences ($AttendPTO$), whether the parent served on a parent committee at the child's school ($Committee$) and lastly, if in the past week an adult in the house has told the child to read ($Story$). These multiple proxies capture different aspects of parental involvement. Direct participation in the child's educational process through activity participation in the child's school is measured through the $Volunteer$, $AttendPTO$ and *Committee* proxies. Parental direct participation in a child's education outside of school in a private home setting, rather than through school activities, can be captured through the $HWHelp$ proxy. The final proxy, $Story$, represents the parent's attempt to indirectly influence the child's education and

stage-set by asking them to read. Although it is a simple task, this proxy measures the importance of indirect involvement of the parent in the child's education and is also an indicator of whether the parent values reading. All the parental involvement proxies are recorded as dummy variables in our main regressions, with 1 indicating parental involvement and 0 indicating none[7].

In order to get an estimate of how involved the parents in the sample are, we present tabulations of the percentage of parents who engage in the activities listed in the previous paragraph in Table 3 below. On average, we see approximately 47% of parental engagement in these activities, with the majority of parents responding to this survey being most likely to help their children with homework and least likely to have served on a committee. In fact, 81% of the parents surveyed report having engaged in the former and only 13% report engaging in the latter activity. Surprisingly, fewer than half of the parents attended a parent-teacher conference or volunteered with the school/classroom. Meanwhile, more than half of parents claim to have told their child to read.

<insert Table 3 here>

Control Variables

Additional variables used as controls in our regressions are the year in school that the student is enrolled in ($YearInSchool$), the race of the student (Caucasian, African American, Asian, Hispanic and Other Race), a dummy variable of 1 if a student is male and 0 if the student is female ($Gender$), and the highest level of parental education ($P1Educ$ and $P2Educ$)[8]. Appendix 1 presents more information on the data.

Table 2 presented previously shows that the majority of students in the sample are Caucasian, with approximately half of the sample female and the other half male. The average parent who responded to the survey appears to have *some college but no degree*. These summary statistics also show that the average year in school for a child in the dataset is slightly below grade 7 or middle school[9].

[7] We re-coded the *HwHelp* variable as a binary variable for consistency with the other parental involvement measures. The original variable was reported as following: a parent never helped with homework (0); a parent helped less than once a week (1); a parent helped 1-2 times a week (2); a parent helped 3-4 times a week (3); and a parent helped 5 or more days a week (4). This will be examined in detail later in the paper.

[8] Students who identified as American Indian/Alaskan Native, Native Hawaiian/Pacific Islander and Other are included in the OtherRace category. Those who identified themselves as Caucasian represent the omitted dummy variable in our regressions.

[9] The *YearinSchool* variable is coded as 1 for kindergarten, 2 for first grade, 3 for second grade and so on.

The correlation matrix presented in Table 4 below does not indicate any strong correlations between all the variables used in this research. The highest correlation between variables appear to be between the first parent's level of education and that of his/her partner at 0.6. We notice weak negative correlation between the year in school of a student and the following of parental involvement proxies: homework help as well as telling a child to read. This is as expected since parents of older children are less likely to be engaged in these activities. It is worth paying attention to the weak positive correlations between the volunteer, PTO, and committee proxies, possibly an indication that the same parents are engaging in these activities. There is also a weak positive correlation between parental education levels and a child's grade, as well as parental education levels and the volunteer proxy. This could indicate that parents with higher levels of education are more likely to serve as volunteers at schools. Finally, the correlation matrix also reveals that all the parental proxies, except for the homework help proxy, are positively correlated to the child's grade; surprisingly, the homework help proxy has a negative correlation with the child's grade.

<insert Table 4 here>

Econometric Modeling

The regression of focus is as follows:

$$Grades_i = \beta_1 ParentalInvolvement_i + \beta_2 Gender_i + \beta_3 Asian_i + \beta_4 AfricanAm_i + \beta_5 Hispanic_i + \beta_6 OtherRace_i + \beta_7 P1Educ_i + \beta_8 P2Educ_i + \beta_9 YearInSchool_i + \varepsilon_i$$

$$Equation(1)$$

where the reported grades of student *i* is a function of the parental involvement proxy, the student's gender, the student's race, the student's parents' levels of education, as well as the year in school that the student is enrolled in. Our regression specification excludes the intercept term since ordered logit models do not use intercepts; rather they have cuts to determine the threshold between responses.

Given that our dependent variable has an ordered ranking system from 1-4, we employ ordered logit models to analyze the effects of the proxies for parental involvement on academic performance[10]. By

[10] We chose an ordered logit over an ordered probit model because the predicted probabilities of the logistic distribution model were closer to the actual frequencies compared to those of the ordered probit model. However, both models reach similar conclusions.

investigating the estimated signs of the coefficients from the ordered logit model as well as the magnitude of the coefficient from estimations of the marginal effect, we estimate the increased (+) or decreased (-) probability the proxy has by x% of achieving the specific outcome measured. Specifically, estimations of $equation(1)$ will show us if parental involvement has a positive (or negative) effect on the child receiving a higher grade, and the marginal effects will measure by how much parental involvement can affect the probability of their child making specific letter grades.

Results

4.1 Logit Regressions and Marginal Effects of the Impact of Parental Involvement on a Child's Grade

Results of the ordered logit regressions using different proxies for parental involvement from estimating $Equation(1)$ are reported in this section. We present the results of the regression in separate columns after adding on one additional independent variable in each column in order to examine if the correlation between these variables has any effect on the estimations. As can be seen, the signs on the coefficient estimates on all the parental involvement proxies presented in the tables below remain consistent across all columns. While the magnitude of the coefficients from the ordered logit model cannot be interpreted, the signs of each one of the estimated coefficients indicate if the *Grade* variable increases or decreases in probability with each independent variable[11]. After presenting the ordered logit regression results, we proceed by estimating the marginal effects of each parental involvement proxy on the probability of a student receiving specific grades.

Table 5 presents the results of the impact of parental involvement on student grades using *Volunteer* as a proxy for parental involvement. The positive sign on the estimated coefficient infers that a child whose parent reports having served as a volunteer at the child's school or classroom is more likely to receive higher grades than a child with a parent who did not volunteer at his/her child's school. These results are statistically significant across all specifications presented in Table 5. The sign on the *YearInSchool* variable indicates that the probability of receiving high grades significantly decrease as the year in school of a student increases. We also find that both parents' education levels are important determinants of a child's grade with children of more educated parents having a higher likelihood of making statistically significantly higher grades. Other interesting results are that Asian students are likely to academically outperform

[11] The cuts in this model determine the threshold for grade averages. Cut 1 determines the difference between a student having mainly Ds or below and mainly Cs, cut 2 determines the difference between mainly Cs and mainly Bs, and cut 3 determines the difference between mainly Bs and mainly As.

Caucasians, but students of all other minority races have a lower probability of making higher grades compared to their Caucasian peers. These differences are statistically significant for Asians, Hispanics, and African American students. The results also indicate a gender grade gap whereby boys are more likely to make significantly lower grades than girls in school.

<insert Table 5 here>

Table 6 below estimates the predicted probabilities of a student receiving certain grades estimated using the ordered logit model from column (5) of Table 5. Comparing these predicted probabilities with the actual distribution from Table 1, it is clear that this model provides reliable estimates of the probabilities, with the difference between the actual and predicted probabilities only varying within a range of -5.5% to 0.76%. Thus, we proceed by choosing the regression model presented in column (5) as our preferred specification.

<insert Table 6>

Using our preferred specification, the model presented in column (5) of Table 5, we estimate the marginal effects for each grade possibility and present these results in Table 7 below. The marginal effects presented below show the effect of a parent volunteering at a child's school or classroom on the probability that their child receives specific grades. In observing these results, it can be seen that the marginal effect of the *Volunteer* proxy is statistically significant for students within all the different grade distributions.

<insert Table 7>

Specifically, columns (1) to (4) of Table 7 indicate that if a parent volunteers in the child's classroom or school, the child is 0.7% less likely to receive mostly Ds or lower grades, 3% less likely to receive mostly Cs, 7.2% less likely to receive mostly Bs, and 11.27% more likely to receive mostly As. This indicates that the child of a parent who volunteers is more likely to make mostly As than lower grades. Boys are almost 18% less likely to make mostly As compared to girls. Meanwhile, a stark racial grade difference emerges from our estimations: while Asians are 11% more likely to make mostly As compared to Caucasians, African American students are 17% less likely, and Hispanic students are almost 7% less likely, to make mostly As compared to Caucasian students.

We continue our analysis with the same methodology explained in the previous paragraphs using the next proxy for parental involvement: whether a parent is part of a committee at the child's school. From the results of the ordered logit models in Table 8, it can be inferred that children of parents who are involved in school committees are more likely to make significantly higher grades in school than those with parents who do not engage in this activity. We find that the signs and statistical significance on all the control variables are the same as before, with Hispanic and African American children more likely to make significantly lower grades and Asian children more likely to make significantly higher grades than their Caucasian counterparts.

<insert Table 8>

Table 9 estimates the predicted frequencies of each grade outcome using the regression model presented in column (5) of the previous table. As can be seen, these predicted frequencies of each grade do not vary by much from the actual frequencies; for example, 2.79 percent of students in the sample make mostly Ds or lower whereas the model of choice predicts that 2.04 percent of students will make mostly Ds or lower. 51.52% of students in the sample make mostly As while the model predicts that 57.06% of students would make mostly As. These predicted probabilities are not too far off from the actual probabilities and vary only within the range of -5.54% to 0.75%.

<insert Table 9>

Choosing the model presented in the fifth column of Table 8, we predict the marginal effects of a child receiving specific grades and present these results in Table 10. These results predict that a child whose parent participates in a committee at the child's school is 9.1% more likely to make mostly As, 5.8% less likely to make mostly Bs, 2.7% less likely to make mostly Cs and 0.6% less likely to make mostly Ds or lower compared to a child whose parent does not participate in a committee. The results continue to show stark racial grade differences in reported academic achievement with Asian children being 11.8% more likely to receive mostly As, African American children 16.8% less likely to receive mostly As and Hispanic children 6.6% less likely to receive mostly As compared to Caucasian children; these differences are all statistically significant. We also see that girls are mostly likely to receive mostly As whereas boys are more likely to receive mostly Bs or lower grades. Finally, the level of parental education continues to be a statistically significant determinant of grades with children of more educated parents more likely to be making mostly As. Year in school is also statistically significant with students enrolled in higher years of schooling less likely to receive mostly As compared to other letter grades.

<insert Table 10>

Next, we investigate the grades of children whose parents are active in their education through attending PTO meetings. The positive sign on the *PTO* proxy in Table 11 below shows that children of parents who attend a PTO meeting are more likely to receive higher grades than children of parents who do not attend PTO meetings. While still highly significant at the 95% level, the PTO proxy is slightly less significant than the Committee and Volunteer proxies which are both significant at the 99% level.

<insert Table 11>

Since the PTO proxy is a significant determinant of a student's grades, we continue our analysis using the same steps by presenting the predicted probabilities in Table 12 and the predicted outcomes of each grade in Table 13 below. As can be seen, these estimations are quite close with the predictions provided by the previous models that use the two other indirect in-school parental involvement proxies, *Volunteer* and *Committee*. The estimations in Table 13 show that children of parents who attend PTO meetings are 2.4% more likely to make mostly As, 1.5% less likely to make mostly Bs, 0.7% less likely to make mostly Cs and 0.2% less likely to make mostly Ds or lower grades. The predictions on the rest of the variables also remain consistent with the previous estimations using the different proxies whereby: 1) African American students and Hispanic students are less likely to make mostly As compared to Caucasian students. 2) Asian students are more likely to be making mostly As compared to Caucasians 3) the children of parents who report a higher level of education are also more likely to be making mostly As compared to the children of less educated parents. 4) students in higher years of school are less likely to be making mostly As compared to those enrolled in lower years of school. 5) girls are more likely to be make mostly As compared to boys.

<insert Table 12>

<insert Table 13>

In Tables 14,15 and 16 below, we use the same strategy to present the ordered logit regression results using the *Story* proxy, predicted frequencies and the marginal effects of a parent telling his/her child to read. Since the *Story* proxy goes from being statistically significant to insignificant once the *YearinSchool* variable is added, we also present the ordered logit regression results for a sub-sample that includes only elementary school children. These results, presented in column 6 of Table 14, show that telling an elementary aged child to read does indeed significantly increase the likelihood of this child receiving higher grades. Thus, while this proxy is not statistically significant for the dataset when analyzed in its entirety, it is indeed an important parental involvement activity for elementary school children.

<insert Table 14>

<insert Table 15>

Table 16 below shows the estimates of the marginal effects of telling a child to read on a likelihood of a child receiving either mostly As, mostly Bs, mostly Cs or mostly Ds and lower; these estimates are derived from the model presented in column (5) of Table 14. While these estimates do show that telling a K-12 child to read does increase his/her likelihood of receiving higher grades and decreases his/her likelihood of receiving lower grades, these marginal effects are not statistically significant when the dataset is analyzed in its entirety. To proceed with the analysis of estimating the marginal effects, we present Table 16 (a) which reports the marginal effects for elementary aged children only. From this table, we can conclude that a parent telling his/her an elementary aged child to read significantly increases the likelihood of the child making grades of all As by 5.3% and decreases the likelihood of the child making all Ds or lower by 0.3% compared to a child who was not told to read by his/her parent. Therefore, our results show that the simple act of telling a child to read does result in the likelihood of an elementary aged child getting better grades.

<insert Table 16>

<insert Table 16(a)>

Finally, we investigate the impact of a parent helping a child on his/her homework on the child's grade, our last proxy for parental involvement. In this main analysis, we compare parents who report never having helped their children on homework with those who report having helped their children less than once a week or more. These results are presented in Table 17 below. The results are surprisingly different from the ones obtained through the four other parental involvement proxies, with the sign on the homework help variable statistically significant but negative! In our model, this would imply that a child who receives homework help from his/her parent is more likely to make lower grades than a child who never receives homework help. However, the predicted frequencies in Table 18 are not very different from the actual frequencies in Table 1. From Table 19, we can infer that our preferred specification from Column (5) of Table 17 predicts that children with parents who help them with homework are almost 12% less likely to be making mostly As than children who don't receive any homework help from parents.

<insert Table 17 here>

<insert Table 18 here>

<insert Table 19 here>

4.2 The Homework Help Puzzle

There are three possible reasons why parents helping their children on homework could result in lower grades: 1) Parents who help their students on homework are taking away from the independent learning of their child. This could result in the child learning less about the course material at home and as a result end up performing worse on in school assessments. 2) Reverse causation—it is possible that children who are receiving help from their parents on homework are those who are already having a hard time learning the material. Thus, it is the lower grades of the children that are motivating parents to help their children on homework. i.e. a child's grade determines whether the parent helps the child on homework and not the other way around. 3) The quality of homework help—it is possible that parents who are helping their children on homework are not well-versed in the subject and thus, might actually be instructing the students using the wrong methods or teaching the wrong material. While the parent's level of education partially controls for this, it might not fully capture the effect. A good example would be a parent with a high level of education, perhaps a parent with an undergraduate degree in English, attempting to help his/her child in chemistry or math. While this effect might be smaller for the earlier years of schooling, it would increase as students learn more specialized material and progress through school. If a parent is teaching his/her child the wrong material, then this would result in lower grades for the child who is receiving this ineffective homework help.

For all three possible explanations provided above, homework help by parents could become less and less effective as the child progresses through school. In general, since the material taught is high school tends to be more challenging, students enrolled in higher grades of schooling would have a harder time performing well on graded exams compared to students in lower grades who could rely on common sense and basic skills to easily answer graded questions on assignments in school. If this were true, we would expect to see a larger negative marginal effect on the homework help variable for high school students compared to students in middle or elementary school in our regression models.

We present a more thorough investigation of the homework help proxy in this section starting by investigating the differential impact that helping a student on homework might have during different levels of schooling- elementary, middle and high school. Then, we examine how varying amounts of homework help provided during the week by the parents could lead to different outcomes. Finally, we investigate racial differences in this variable

4.2.1 Homework Help: The Impact at Different Levels of Schooling

We proceed to gain a deeper understanding of the homework help proxy by investigating if the number of days a parent reports helping his/her child with homework has differential effects on the child's grades. As shown in Table 20, the average parent reports helping their child with homework around one to two days per week with parents of older children reporting helping them less on homework

than those of younger children. For example, parents of elementary children report helping their children with homework, on average, around three to four days per week whereas the average parent of a high school student only helps his/her child with homework less than once per week. Knowing this statistic, we could assume that older children rely less on their parents for help on homework.

<insert table 20 here>

Table 21 below shows the differences in the amount of help provided by parents to his/her child on homework. As illustrated, a larger percentage of parents report helping their child on homework during the earlier years of schooling and fewer of those with children in their later years of schooling provide homework help. Looking at the two extremes, only 1.41% of parents report never having helped their elementary aged child on homework whereas 20.49% report the same for their high school aged child. In contrast, 24.7 % of parents report helping their elementary aged child five or more times per week on homework, whereas only 2.26% of parents report doing the same for their high school aged child. While it is surprising to see that 41.58% of high school parents do report helping their child less than once a week, we see this number dropping dramatically for parents of high school students who help more often than once a week. Therefore, it can be implied that most high school students are not receiving much homework help from their parents.

<insert table 21 here>

Table 22 below, which estimates an ordered logit grade model by level of schooling, shows that the homework help proxy is negative for all levels of schooling but only statistically significant at the middle and high school levels. Tables 22 (a), (b) and (c) estimate the marginal effects for the homework help proxy at each level of schooling. The first table in this series, Table 22(a), shows that while the homework help proxy is negative, it does not significantly affect the likelihood of a student making any particular grade in elementary school. However, Table 22(b) shows that a middle school aged student who receives homework help from his/her parent is almost 10.8% significantly less likely to make mostly As, 7.5% significantly more likely to make mostly Bs, 2.6% significantly more likely to be making mostly Cs and 0.7% significantly more likely to be making Ds or lower grades compared to their peers who do not receive homework help. Table 22(c) below shows that high school students who receive homework help from their parents are 11.1% significantly less likely to be making mostly As, 6.5% significantly more likely to be making mostly Bs, 4.1% significantly more likely to be making mostly Cs and 0.6% significantly more likely to be making grades of mostly Ds or lower. These results show that students in higher levels of schooling who receive homework help from their parents have an increasingly lower

likelihood of making all As in school compared to students who do not receive homework help from their parents.

<insert Table 22 here>
<insert Table 22(a) here>
<insert Table 22(b) here>
<insert Table 22(c) here>

4.2.2 Homework Help: The Frequency at which is Provided

The results of the ordered logit regressions in Table 23 and the estimated marginal effects in Tables 23(a), 23(b) and 23(c) show how the number of days a parent provides his/her child with homework help can have a slightly varied effect on the student's grade. Table 23 shows the likelihood of the student receiving a higher grade decreases for those receiving more parental help on homework compared to no homework help at all being provided by the parent to the child. Table 23 (a) shows how a child receiving any homework help from a parent (compared to none) has a 11.7% lower likelihood of receiving mostly As and a 0.61% higher likelihood of receiving mostly Ds or lower. In Table 23 (b), we investigate how more parental help on homework of one or more times a week (compared to children who never never receive homework help or receive it one or less than once per week) effects a student's grades; we find that receiving homework help from parents at least once a week decreases the likelihood of the child making mostly As by 15.2% and increases the likelihood of the child making mostly Ds or lower by 0.77%. Finally, from Table 23(c), we find that a child who receives homework help three or more times a week is 16.3% less likely to make mostly As and 0.83% more likely to make mostly Ds or lower compared to children who receive less help on their homework.

<insert Table 23>
<insert Table 23(a)>
<insert Table 23(b)>
<insert Table 23(c)>

4.2.3 Homework Help: The Racial Divide

In this subsection, we provide a closer investigation on the homework help variable by racial composition. A brief examination of our data reveals a racial divide in grades with the average reported grades for Asian students in our dataset at 3.60, Caucasian at 3.38, other races 3.23, Hispanics 3.19, and African Americans 3.09. However, we find that the students in the racial groups with the lowest grades are the ones whose parents report helping most on homework – the average rate at which African American

parents report having helped their children is 2.21, Hispanic parents at 2.12, parents of children of other races at 1.97, and Asian as well as Caucasian parents are at 1.94[12] The fact that the parents of children from the racial groups who are averaging the lowest grades report helping them more on homework continues to indicate that homework help is not a good proxy to be used for parental involvement in cross sectional studies.

In Table 24, we provide a deeper investigation by reporting the percentage of parents who report helping their children on homework based on how often the help is rendered. Surprisingly, 14.2% of parents of Asian children report never helping their children on homework and only 13.6% of these parents report helping their children five or more times per week. This is in contrast to only 8.3% of parents of African American children never having helped their child on homework and 16% of parents reporting having helped their children five or more times per week. Considering that the average grades for Asian students are the highest of all races, and the average grades of African American children are the lowest, it is surprising to see the most help being rendered by the parents of the racial group making the lowest grades. While seemingly counter intuitive, this continues to tie in with the reasons outlined earlier about why the homework help proxy is negative in our ordered logit regression estimations.

<insert Table 24>

Tables 25 to 29 below show the marginal effects of students making specific grades estimated through our ordered logit models for the separate race categories in our dataset. As can be seen from Table 25, Caucasians in our dataset are 11.4% less likely to make mostly As when they receive homework help but 0.6% more likely to make mostly Ds or lower than those who do not receive homework help. Table 26 shows that Asians, who are the racial group with the highest average grades, are 7.7% less likely to receive mostly As but 0.2% more likely to receive mostly Ds or lower when they receive homework help. African Americans who receive homework help are 22% less likely to be making mostly As and 1.8% more likely to be receiving mostly Ds or lower compared to their counterparts who did not receive homework help. Finally, in Table 28, we see that Hispanics who receive homework help are 14.7% less likely to be making mostly As and 1.6% more likely to be making mostly Ds or lower compared to those in the same racial group who do not receive homework help. The homework estimate in Table 29 for other racial groups is not statistically significant even though the gender differential is. In fact, the data reveals that females of other races are 20.8% more likely to receive mostly As compared to males.

<insert Table 25>

[12] Note that this is unique to the homework help parental proxy; the other parental proxy variables do not exhibit similar patterns when the data is investigated by racial groups and compared with the grade averages of each group.

<insert Table 26>
<insert Table 27>
<insert Table 28>
<insert Table 29>

4.3 Gender and Racial Differences

We calculate the differences in the weighted average grades between females and males by race in Table 30. As can be observed, the female-male grade gap is the largest for Other Races, second largest for African Americans, third largest for Caucasian students, fourth for Hispanics and the smallest for Asian students. T-tests on the gender differences show that these grade differences are all statistically significant.

<insert Table 30>

In Table 31 below, we investigate the gender differences in grades by race and level of schooling and conduct t-tests on these differences. The table of results reveal some interesting patterns: 1) The overall gender average grade differences at the elementary level is smaller than at other levels of schooling and appears to increase for older students. 2) The biggest increase in the overall average gender grade difference occurs between elementary and middle school. 3) In elementary school, the gender difference for students of other races is the smallest among all races and not statistically significant. This difference becomes larger and statistically significant in middle school. By middle school, the gender grade gap for students of other races is the largest among all races and this ranking continues in high school. 4) The average gender grade difference for African American elementary aged children is the second smallest among all races at only 0.12 and of lower statistical significance compared to this difference at middle school which increases to 0.35. By middle school, African American children have the second largest gender grade difference and this continues on to high school. 5) For Asian children on the other hand, the gender grade difference slightly falls between elementary and middle school and continues to stay small as they progress to high school. 6) Between elementary school and middle school is also where we start seeing larger overall racial grade differences between Caucasian students, our comparison group, and African American students.

Given the observations above, it can be seen that most of the decline of performance of the boys of Other Races and African American racial backgrounds seems to occur between elementary school and high school. Some simple calculations from the numbers reported in Table 31 show that the difference between the average grades of Caucasian and African American students in elementary school is only 0.20; this difference increases to 0.40 in middle school and 0.32 in high school. Thus, it appears that the racial differences in grades as well as the gender differences are not that stark in elementary school but these gaps become more magnified in middle school.

<insert Table 31>

Finally, in Table 32, we examine if any significant racial differences exist in each parental indirect involvement proxy by conducting t-tests on the differences. Using Caucasians at the comparison group, we find that parents of Asian children are more likely to report being engaged in the indirect parental involvement activities examined in this paper than Caucasian parents; these differences are statistically significant for all the proxies except the Committee proxy. Table 32 also finds that parents of Caucasian children are statistically significantly more likely to be involved in all the indirect parental involvement proxies compared to parents of African American and Hispanic children. These results, together with the results presented previously, could be used to explain the racial grade differences. Previous results from the ordered logit regressions have shown that indirect parental involvement is an important determinant of a student's grade. Given that Table 32 shows that parents of children who come from the races with higher average grades are more engaged in these effective parental involvement proxies, we could attribute some of the racial differences in grades to differences in parental involvement.

<insert Table 32>

4 Discussion

4.1 Interpreting Results

The main focus of this research is to investigate the impact of parental involvement on a student's academic achievement using multiple proxies to capture the multidimensional impact of parental engagement. Parent's attendance at PTO meetings, involvement in school committees, and engagement in volunteer work within the classroom or school are used as indirect measures of in-school parental involvement. Parents who engage in these activities are *stage setting* by indirectly demonstrating to their children the importance that they place on the child's educational process. All three of these parental involvement proxies are statistically significant determinants of a child's overall grades. A child whose parent engages in these three indirect in-school parental involvement activities is 2.4% to 11.2% more likely to be making mostly As and 0.15% to 0.70% less likely to be making mostly Ds or lower compared to a child whose parent does not engage in these activities. Of these three activities, a parent volunteering in the child's classroom or school has the largest positive impact on a child's grades. Considering that parental education in these models have the effects listed above, parental involvement could offset some of the effects of parental education, particularly since a child with a parent with one higher level of education (as coded in Appendix 1) is only 2.4% to 3.4% more likely to be making mostly As compared to a child who

has a parent with one less level of education. These estimates indicate that if parents with lower levels of education engage in indirect within school parental involvement activities, it could reduce educational inequality during the formative years of K-12 education.

The other two parental involvement proxies we employ, asking a child to read and homework help, capture parental influence on the in-home *stage-setting* environment for their children. Homework help is a direct method of helping a child learn whereas asking a child to read represents indirect involvement that shows interest in the child's academic development. We find that the simple act of telling a child to read has a positive but statistically insignificant effect on grades when our dataset is analyzed in entirety. When we investigate the dataset for only elementary aged children, we find that children who are told to read by their parents are 5.3% significantly more likely to be making mostly As and 0.3% significantly less likely to be making mostly Ds or lower compared to children who are not told to read by their parents.

All our various specifications show that a K-12 student who receives homework help from his/her parent is less likely to perform as well academically compared to students who do not receive homework help. This difference in the probability of making lower grades increases as a student enrolled in a higher year of school receives homework help. For example, an elementary aged child who receives any homework help is 4.7% less likely to be making As, a middle school child is 10.8% less likely, and a high school child will be 11.1% less likely to be making mostly As compared to a child of the same school year who does not receive any homework help from a parent; these differences are only statistically significant for middle and high school children. This could indicate that students enrolled in higher levels of schooling who are receiving homework help from their parents are either receiving ineffective help at home which ends up harming their learning, are performing worse in school because of the lack of independent studying at home, or are being helped because they are already making low grades (reverse causation).

It is important to note that typically, younger students will be assigned homework that involve direct parental assistance. As a student gets older, it is common for these students to be able to work more independently on their homework. Because academics is cumulative, the skills that are built during the first few years of education are essential towards future academic success. The early years of schooling set the stage for further learning, while equipping students with the tools to build on their education independently. Thus, if a student who is older is receiving direct homework assistance, it is possible that they are currently struggling in academics and this parental help is requested by the teacher or the student to improve the student's standing.

We also find that children who receive more days of homework help have a higher likelihood of making lower grades compared to those who receive fewer days of help. For example, children who receive any help at all on homework are 11.7% less likely to receive mostly As compared those who do not receive

any help at all, whereas children who receive homework help three or more times a week are 16.3% less likely to be making mostly As compared to those who receive help less than three or times a week.

During our analysis, we uncover stark racial and gender inequalities in grades which start to become more significant during the middle school years. We find that African American children, Hispanic children and children of other races make significantly lower grades than Caucasian children. Asian children, on the other hand, outperform all other racial groups. We also find that these grade inequalities start out pretty small during the elementary school years and increase significantly during middle school years and beyond. While it does give some hope to see that the racial grade inequality is quite small in elementary school, we could infer that racial educational inequality within our society today starts magnifying during the middle school years of a child's life and seems to continue throughout.

Girls significantly outperform boys in all levels of education. Similar to the racial inequalities, these gender inequalities seem to become magnified during middle school and beyond. This is particularly true for African American children who have the largest gender grade inequalities of all races analyzed; there is a large increase in the gender grade gap for this group of children between elementary and middle school. It is indeed worrisome to observe these racial and gender grade inequalities starting so early, particularly among the African American children who not only have the lowest average grades in our dataset but also have the largest gender gap despite African American parents reporting to be providing their children with more days of homework help than other races. Hispanic children make the second lowest average grades but their parents report helping them on homework on more days of the week than the parents of all other races except African Americans. However, we find that parents of African American and Hispanic children are less involved in school committees, volunteering within the classroom and school, attending PTO meetings or telling their child to read.

4.2 Recommendations

Given these findings and other studies in recent literature surrounding the effect of parental involvement on a child's academic achievement, schools, school districts and parents across the country need to understand the importance of parental influence in *stage setting* the environment for student success. Parents can help create an environment in which they demonstrate to their children that they value the educational process through getting involved in non-academic activities within their child's school or by nudging their elementary aged child at read at home. With social media on the rise, schools could promote opportunities for parents on these platforms, or increase awareness of these opportunities, of getting involved indirectly with the educational process within the school setting. Schools could also develop more

programs that give parents the opportunity to volunteer, attend school meetings and serve on school committees, while understanding that there will be an inequality in representation.

The parents of many of the students of lower socio-economic backgrounds might not have flexible work schedules that would allow them to take time off work to attend such in-school meetings. Furthermore, the opportunity cost of the income forgone from taking an hour or two off work might be too high for these parents. Finally, parents of African American and Hispanic children might not understand the importance of engaging in these activities, leading to racial disparities in parental involvement. Some options to be more inclusive are scheduling these meetings after regular work hours, educating parents on the importance of getting involved in in these activities, and considering a monetary hourly payment to parents below a certain level of income to compensate them for their opportunity cost when they spend time on these school activities. Providing free childcare during these times could also be helpful, particularly for the parents who have children with younger siblings who would otherwise not be able to get involved because of their childcare duties.

This study has also found that *stage setting* by parents, rather than direct parental involvement in helping children with homework, is more likely to increase the likelihood of their children attaining academic success in K-12 education. A soft nudge to elementary aged children by asking them to read is more likely to help increase their grade than if the parent does not remind their child to read. Activities such as indirect engagement in a student's academics through participation in school committees, attending PTOs and volunteering within the classroom or the school also help parents *stage set* and demonstrate to their children that they value the educational process highly enough to spend time on these activities in the child's school. However, parents seem to be spending their efforts on engaging their child through the ineffective method of helping their child on homework. In fact, 81% of parents report having helped their child on homework while, on average, only 32% of parents report engaging in the three indirect in-school parental involvement activities that our estimations show produce the biggest results.

In all our results, a child receiving homework help has a lower probability of making higher grades compared to a child not receiving any assistance on his/her homework from a parent. If it is because of the ineffective help provided by the parents, then providing some additional resources to educate parents on material that parents can access before they help their children on the homework would be useful. It is also possible that students prefer to work autonomously and do not react well when their work is dictated to them; this could particularly hold true for older children. Furthermore, learning the material independently and trying to find their own answers to homework problems would foster the growth in the curiosity of the students. If so, instead of direct involvement, soft interventions and nudges might work better to foster learning. In fact, several studies based on college academic success has shown the effectiveness of soft

interventions that do not crowd our intrinsic motivation (Gordanier, Hauk and Sankaran (2019) and Damgaard and Nielsen (2018)).

While the main goal of our research is to investigate the different parental involvement proxies, we uncovered many stark racial and gender grade differences during our analysis that start to magnify during middle school and beyond. These gender grade differences could be due to teacher biases whereby teachers might mark works submitted by male and female students differently, with some teachers giving boys significantly lower marks when evaluating the same skills (Terrier (year) and Falch and Naper (year)). If this is indeed the cause, then it is important to train teachers in being unbiased when marking assignments or to encourage students to submit their work through a platform that allows them to remain anonymous until the marking is completed.

Our research brings up some important concerns that warrant further investigation. Why do children who receive homework help have a lower likelihood of making higher grades? Why is the homework help rendered by the parents of underrepresented minorities the least effective even after controlling for parental education? Future studies exploring the topic of the effectiveness of homework help in K-12 education should conduct a difference-in-difference analysis to track changes in grades between a control group of students who do not receive any homework help and a treatment group that receives homework help, while controlling for the race and gender of the student. Another important concern deals with the gender wage gap which is normally blamed on the fields that women pursue[13]. According to the National Center for Educational Statistics, "females received higher percentages of bachelor's degrees overall but lower percentages of bachelor's degrees in STEM fields—was observed across all racial/ethnic groups" (https://nces.ed.gov/programs/raceindicators/indicator_reg.asp). However, students in K-12 education tend to follow a pretty standardized program of study. Thus, if females are outperforming male students in K-12 education, what is pushing them into the lower-paying careers? Future studies examining the gender inequalities should focus on the process that occurs during the transition from a K-12 educational setting to the job market, whether that focus be on choice made by males and females in college, role models for males and females within these careers or discrimination in the job market.

[13] "In 2018, women who were full-time wage and salary workers had median usual weekly earnings that were 81 percent of the earnings of male fulltime wage and salary workers": https://www.bls.gov/cps/earnings.htm

REFERENCES

APPENDIX 1

Information on the Variables Used

Variable Codebook: https://nces.ed.gov/nhes/data/2016/pfi/cbook_pfi_pu.pdf

Questions Respondents were asked: https://nces.ed.gov/nhes/pdf/pfi/2016_pfie.pdf

Volunteer: "Since the beginning of this school year, has any adult in this child's household done any of the following things at this child's school? Served as a volunteer in this child's classroom or elsewhere in the school"
1- yes
0 - no

Committee: "Since the beginning of this school year, has any adult in this child's household done any of the following things at this child's school? Served on a school committee"
1 - yes
0 - no

AttendPTO: "Since the beginning of this school year, has any adult in this child's household done any of the following things at this child's school? Attended a meeting of the parent-teacher organization or association"
1 - yes
0 - no

Story: "In the past week, has anyone in your family done the following things with this child? Told him/her a story (Do not include reading to this child.)"
1 - yes
0 - no

HwHelp: "During this school year, about how many days in an average week does anyone in your household help this child with his/her homework?"
4: 5 or more days a week
3: 3 to 4 days a week
2: 1 to 2 days a week
1: Less than once a week
0: Never
Missing: Valid Skip
(Note: the authors changed the coding of this variable from the original codebook for easier interpretation)

Parental Education

1 - 8th grade or less
2 - High school, but no diploma
3 - High school diploma or equivalent (GED)
4 - Vocational diploma after high school
5 - Some college, but no degree
6 - Associate's degree (AA, AS)
7 - Bachelor's degree (BA, BS)
8 - Some graduate or professional education
9 - Master's degree (MA, MS)
10 - Doctorate degree (PhD, EdD)
11 - Professional degree beyond Bachelor’s

APPENDIX II

Tables

Table 1: Distribution of the Grade Variable

Grade	Frequency	Percent	Cumulative
Mostly Ds or lower	332	2.79	2.79
Mostly Cs	1,393	11.69	14.48
Mostly Bs	4,050	34.00	48.48
Mostly As	6,138	51.52	100.00
Total	*11,913*	*100.00*	

Table 2: Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Grade	11,913	3.342567	.7914176	1	4
Volunteer	13,523	.4228352	.494028	0	1
HwHelp	12,795	.8913638	.3111944	0	1
Story	14,075	.5677442	.4954071	0	1
AttendPTO	13,523	.4466465	.4971636	0	1
Committee	13,523	.1302226	.3365606	0	1
Gender	14,075	.5128242	.4998533	0	1
Caucasian	14,075	.7637655	.424783	0	1
AfricanAm	14,075	.134778	.3414984	0	1
Asian	14,075	.0880995	.2834496	0	1
Hispanic	14,075	.2100178	.4073354	0	1
OtherRace	14,075	.0387211	.1929364	0	1
P1Educ	14,075	5.947353	2.405703	1	11

P2Educ	10,432	5.659413	2.543701	1	11
YearInSchool	13,523	7.711381	3.738954	1	13

Table 3: Parental Involvement (Percentage)

	Yes (%)	No (%)	N/A (%)
Volunteer	40.63	55.45	3.92
Story	56.77	43.23	-
AttendPTO	42.91	53.17	3.92
Committee	12.51	83.57	3.92
HwHelp	81.03	9.88	9.09

Table 4: Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
(1) Grade	1.000													
(2) Volunteer	0.191	1.000												
(3) HwHelp	-0.012	0.103	1.000											
(4) Story	0.069	0.148	0.113	1.000										
(5) AttendPTO	0.040	0.269	0.080	0.119	1.000									
(6) Committee	0.097	0.368	0.026	0.069	0.263	1.000								
(7) Asian	0.098	-0.018	-0.052	-0.001	0.012	-0.036	1.000							
(8) AfricanAm	-0.106	-0.053	0.022	-0.013	0.064	-0.029	-0.071	1.000						
(9) Hispanic	-0.123	-0.087	-0.019	-0.028	0.066	-0.045	-0.130	-0.086	1.000					
(10) Other	-0.013	0.004	-0.008	0.014	0.009	-0.007	-0.004	0.015	0.049	1.000				
(11) Gender	-0.160	-0.034	-0.014	-0.016	-0.016	-0.028	0.011	0.001	-0.002	-0.020	1.000			
(12) P1EDUC	0.247	0.237	0.062	0.085	0.020	0.142	0.116	-0.017	-0.276	-0.040	-0.018	1.000		
(13) P2EDUC	0.240	0.232	0.045	0.089	0.031	0.144	0.117	-0.041	-0.287	-0.037	-0.013	0.591	1.000	
(14) YearInSc.	-0.116	-0.189	-0.289	-0.244	-0.164	-0.019	-0.021	-0.016	-0.055	0.000	-0.002	0.008	0.009	1.000

Table 5: Ordered Logit Model Results using *Volunteer* to Proxy for Parental Involvement

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Grade	Grade	Grade	Grade	Grade
Volunteer	0.837***	0.838***	0.791***	0.557***	0.457***
	(0.0371)	(0.0374)	(0.0379)	(0.0460)	(0.0469)
Gender		-0.626***	-0.659***	-0.699***	-0.712***
		(0.0360)	(0.0364)	(0.0440)	(0.0442)
Asian			0.661***	0.534***	0.505***
			(0.0700)	(0.0813)	(0.0819)
AfricanAm			-0.704***	-0.627***	-0.662***
			(0.0509)	(0.0709)	(0.0711)
Hispanic			-0.471***	-0.211***	-0.254***
			(0.0438)	(0.0555)	(0.0558)

Other			-0.241***	-0.0538	-0.0539
			(0.0929)	(0.114)	(0.115)
P1Educ				0.120***	0.124***
				(0.0115)	(0.0115)
P2Educ				0.0923***	0.0957***
				(0.0109)	(0.0110)
YearInSchool					-0.0754***
					(0.00657)
/cut1	-3.289***	-3.659***	-3.916***	-3.031***	-3.866***
	(0.0567)	(0.0609)	(0.0644)	(0.101)	(0.125)
/cut2	-1.494***	-1.851***	-2.088***	-1.117***	-1.942***
	(0.0285)	(0.0357)	(0.0408)	(0.0764)	(0.105)
/cut3	0.274***	-0.0491	-0.236***	0.825***	0.0243
	(0.0235)	(0.0301)	(0.0349)	(0.0750)	(0.102)
Observations	11,913	11,913	11,913	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Volunteer Proxy - Predicted Probabilities using Column 5 from Table 5

Predicted Grade	Observations	Mean	Std. Dev.	Min	Max
Mostly Ds or lower	10,003	.020337	.0183171	.0008961	.1577876
Mostly Cs	10,003	.0958953	.0687398	.0052083	.4041692
Mostly Bs	10,003	.3132378	.1076066	.0359238	.4554342
Mostly As	10,003	.5705299	.1862562	.0983895	.9579718

Table 7: The Marginal Effects of Volunteering on a Child's Grade

	(1)	(2)	(3)	(4)

VARIABLES	Mostly Ds or lower	Mostly Cs	Mostly Bs	Mostly As
Volunteer	-0.00701***	-0.0333***	-0.0720***	0.112***
	(0.0009)	(0.0035)	(0.0076)	(0.0115)
Gender	0.0109***	0.0519***	0.112***	-0.175***
	(0.0010)	(0.0034)	(0.0074)	(0.0109)
Asian	-0.00775***	-0.0368***	-0.0797***	0.124***
	(0.0014)	(0.0060)	(0.0130)	(0.0201)
AfricanAm	0.0102***	0.0483***	0.104***	-0.163***
	(0.0013)	(0.0053)	(0.0115)	(0.0175)
Hispanic	0.00389***	0.0185***	0.0400***	-0.0624***
	(0.0009)	(0.0041)	(0.0088)	(0.0137)
Other	0.000827	0.00393	0.00850	-0.0133
	(0.0018)	(0.0084)	(0.0181)	(0.0282)
P1Educ	-0.00190***	-0.00903***	-0.0195***	0.0305***
	(0.0002)	(0.0009)	(0.0019)	(0.0028)
P2Educ	-0.00147***	-0.00697***	-0.0151***	0.0235***
	(0.0002)	(0.0008)	(0.0018)	(0.0027)
YearInSchool	0.00116***	0.00550***	0.0119***	-0.0186***
	(0.0001)	(0.0005)	(0.0011)	(0.0016)
Observations	8,737	8,737	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Ordered Logit Model Results using *Committee* to Proxy for Parental Involvement

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Grade	Grade	Grade	Grade	Grade

Committee	0.662***	0.653***	0.624***	0.377***	0.368***
	(0.0561)	(0.0565)	(0.0572)	(0.0665)	(0.0670)
Gender		-0.622***	-0.658***	-0.704***	-0.717***
		(0.0357)	(0.0361)	(0.0438)	(0.0441)
Asian			0.641***	0.500***	0.479***
			(0.0694)	(0.0808)	(0.0816)
AfricanAm			-0.752***	-0.652***	-0.684***
			(0.0506)	(0.0707)	(0.0710)
Hispanic			-0.526***	-0.220***	-0.266***
			(0.0435)	(0.0553)	(0.0557)
Other			-0.242***	-0.0399	-0.0429
			(0.0920)	(0.113)	(0.114)
P1Educ				0.133***	0.134***
				(0.0114)	(0.0114)
P2Educ				0.101***	0.102***
				(0.0109)	(0.0109)
YearInSchool					-0.0867***
					(0.00645)
/cut1	-3.487***	-3.853***	-4.123***	-3.069***	-4.019***
	(0.0559)	(0.0601)	(0.0635)	(0.100)	(0.124)
/cut2	-1.707***	-2.061***	-2.309***	-1.163***	-2.100***
	(0.0266)	(0.0341)	(0.0391)	(0.0762)	(0.104)
/cut3	0.0216	-0.300***	-0.494***	0.758***	-0.146
	(0.0195)	(0.0272)	(0.0318)	(0.0745)	(0.100)
Observations	11,913	11,913	11,913	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Committee Proxy - Predicted Probabilities using Column 5 from Table 8

Predicted Grade	Observations	Mean	Std. Dev.	Min	Max
Mostly Ds or lower	10,003	.0203607	.0179406	.0008072	.160222
Mostly Cs	10,003	.0958181	.0670182	.0046644	.4048722
Mostly Bs	10,003	.3132084	.1051	.0319159	.453103
Mostly As	10,003	.5706128	.1818828	.0983002	.9626126

Table 10: The Marginal Effects of *Committee* on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or lower	Mostly Cs	Mostly Bs	Mostly As
Committee	-.00575***	-0.0271***	-0.0578***	0.0906***
	(0.0011)	(0.0050)	(0.0106)	(0.0165)
Gender	0.0112***	0.0527***	0.112***	-0.176***
	(0.0010)	(0.0035)	(0.0073)	(0.0108)
Asian	-0.00747***	-0.0352***	-0.0751***	0.118***
	(0.0014)	(0.0060)	(0.0129)	(0.0200)
AfricanAm	0.0107***	0.0503***	0.107***	-0.168***
	(0.0013)	(0.0054)	(0.0114)	(0.0175)
Hispanic	0.00415***	0.0196***	0.0418***	-0.0655***
	(0.0009)	(0.0041)	(0.0088)	(0.0137)

Other	0.00067	0.00316	0.00674	-0.0106
	(0.0018)	(0.0084)	(0.0179)	(0.0281)
P1Educ	-0.00209***	-0.00986***	-0.0210***	0.0330***
	(0.0002)	(0.0009)	(0.0019)	(0.0028)
P2Educ	-0.00160***	-0.00753***	-0.0161***	0.0252***
	(0.0002)	(0.0008)	(0.0018)	(0.0027)
YearInSchool	0.00135***	0.00637***	0.0136***	-0.0213***
	(0.0001)	(0.0005)	(0.0011)	(0.0016)
Observations	8,737	8,737	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Ordered Logit Model Results using *AttendPTO* to Proxy for Parental Involvement

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Grade	Grade	Grade	Grade	Grade
AttendPTO	0.130***	0.127***	0.201***	0.189***	0.0967**
	(0.0353)	(0.0355)	(0.0362)	(0.0438)	(0.0446)
Gender		-0.625***	-0.662***	-0.705***	-0.719***
		(0.0356)	(0.0360)	(0.0438)	(0.0441)
Asian			0.609***	0.473***	0.455***
			(0.0693)	(0.0809)	(0.0815)
AfricanAm			-0.801***	-0.688***	-0.706***
			(0.0508)	(0.0709)	(0.0712)

Hispanic			-0.562***	-0.241***	-0.275***
			(0.0435)	(0.0555)	(0.0558)
Other			-0.250***	-0.0395	-0.0407
			(0.0918)	(0.113)	(0.114)
P1Educ				0.137***	0.138***
				(0.0114)	(0.0114)
P2Educ				0.104***	0.106***
				(0.0109)	(0.0109)
YearInSchool					-0.0848***
					(0.00652)
/cut1	-3.496***	-3.863***	-4.119***	-3.006***	-3.966***
	(0.0576)	(0.0617)	(0.0645)	(0.101)	(0.126)
/cut2	-1.720***	-2.076***	-2.309***	-1.100***	-2.048***
	(0.0301)	(0.0369)	(0.0408)	(0.0776)	(0.107)
/cut3	-0.00324	-0.327***	-0.502***	0.820***	-0.0975
	(0.0241)	(0.0307)	(0.0340)	(0.0761)	(0.104)
Observations	11,913	11,913	11,913	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: *AttendPTO* Proxy - Predicted Probabilities using Column 5 from Table 11

Predicted Grade	Obs	Mean	Std. Dev.	Min	Max
Mostly Ds or lower	10,003	.0203718	.0178914	.0009593	.1596
Mostly Cs	10,003	.0958643	.0666359	.0055337	.4041978
Mostly Bs	10,003	.3133564	.103505	.0374615	.4524013

Mostly As	10,003	.5704075	.1798996	.0990834	.9560454

Table 13: The Marginal Effects of Attending *PTO* Conferences on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or lower	Mostly Cs	Mostly Bs	Mostly As
AttendPTO	-.00152**	-0.00714**	-0.0151**	0.0238**
	(0.0007)	(0.0033)	(0.0070)	(0.0110)
Gender	0.0113***	0.0531***	0.113***	-0.177***
	(0.0010)	(0.0035)	(0.0073)	(0.0108)
Asian	-0.00714***	-0.0336***	-0.0712***	0.112***
	(0.0014)	(0.0061)	(0.0129)	(0.0200)
AfricanAm	0.0111***	0.0521***	0.111***	-0.174***
	(0.0013)	(0.0054)	(0.0114)	(0.0175)
Hispanic	0.00432***	0.0203***	0.0431***	-0.0677***
	(0.0009)	(0.0041)	(0.0088)	(0.0137)
Other	0.000638	0.00300	0.00636	-0.0100
	(0.0018)	(0.0084)	(0.0179)	(0.0281)
P1Educ	-0.00217***	-0.0102***	-0.0216***	0.0340***
	(0.0002)	(0.0009)	(0.0018)	(0.0028)
P2Educ	-0.00166***	-0.00782***	-0.0166***	0.0261***
	(0.0002)	(0.0008)	(0.0017)	(0.0027)
YearInSchool	0.00133***	0.00623***	0.0133***	-0.0209***
	(0.0001)	(0.0005)	(0.0011)	(0.0016)

Observations	8,737	8,737	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: Ordered Logit Model Results using *Story* to Proxy for Parental Involvement

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Grade	Grade	Grade	Grade	Grade	Grade (Elementary School)
Story	0.354***	0.357***	0.338***	0.204***	0.0624	0.228***
	(0.0352)	(0.0354)	(0.0358)	(0.0435)	(0.0450)	(0.0869)
Gender		-0.628***	-0.663***	-0.706***	-0.720***	-0.472***
		(0.0356)	(0.0361)	(0.0438)	(0.0441)	(0.0803)
Asian			0.624***	0.481***	0.459***	0.173
			(0.0693)	(0.0807)	(0.0815)	(0.140)
AfricanAm			-0.764***	-0.660***	-0.692***	-0.626***
			(0.0505)	(0.0707)	(0.0709)	(0.125)
Hispanic			-0.527***	-0.219***	-0.264***	-0.322***
			(0.0434)	(0.0553)	(0.0557)	(0.0974)
Other			-0.261***	-0.0486	-0.0432	-0.259
			(0.0918)	(0.113)	(0.114)	(0.201)
P1Educ				0.135***	0.138***	0.112***
				(0.0114)	(0.0114)	(0.0211)
P2Educ				0.103***	0.106***	0.101***
				(0.0109)	(0.0109)	(0.0205)

YearInSchool					-0.0848***	
					(0.00663)	
/cut1	-3.374***	-3.741***	-4.022***	-2.985***	-3.973***	-3.454***
	(0.0582)	(0.0622)	(0.0656)	(0.102)	(0.128)	(0.214)
/cut2	-1.594***	-1.949***	-2.208***	-1.080***	-2.055***	-1.511***
	(0.0314)	(0.0379)	(0.0426)	(0.0782)	(0.110)	(0.153)
/cut3	0.131***	-0.191***	-0.394***	0.841***	-0.105	0.501***
	(0.0264)	(0.0324)	(0.0365)	(0.0768)	(0.107)	(0.146)
Observations	11,913	11,913	11,913	8,737	8,737	2,752

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: *Story* Proxy – Predicted Probabilities using Column 5 from Table 14

Predicted Grade	Observations	Mean	Std. Dev.	Min	Max
Mostly Ds or lower	10,003	.0203706	.0179241	.0009864	.1585323
Mostly Cs	10,003	.0958014	.0666339	.005686	.4031981
Mostly Bs	10,003	.3132051	.103372	.0384334	.4523278
Mostly As	10,003	.5706229	.1797614	.0998691	.9548942

Table 16: The Marginal Effects of a Parent Telling a Child to Read on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or lower	Mostly Cs	Mostly Bs	Mostly As

Story	-.000980	-0.00460	-0.00976	0.0153
	(0.0007)	(0.0033)	(0.0070)	(0.0111)
Gender	0.0113***	0.0532***	0.113***	-0.177***
	(0.0010)	(0.0035)	(0.0073)	(0.0108)
Asian	-0.00721***	-0.0339***	-0.0718***	0.113***
	(0.0014)	(0.0061)	(0.0128)	(0.0200)
AfricanAm	0.0109***	0.0511***	0.108***	-0.170***
	(0.0013)	(0.0054)	(0.0114)	(0.0175)
Hispanic	0.00414***	0.0195***	0.0413***	-0.0649***
	(0.0009)	(0.0041)	(0.0088)	(0.0137)
Other	0.000679	0.00319	0.00676	-0.0106
	(0.0018)	(0.0084)	(0.0179)	(0.0281)
P1Educ	-0.00216***	-0.0102***	-0.0216***	0.0339***
	(0.0002)	(0.0009)	(0.0018)	(0.0028)
P2Educ	-0.00166***	-0.00782***	-0.0166***	0.0261***
	(0.0002)	(0.0008)	(0.0017)	(0.0027)
YearInSchool	0.00133***	0.00626***	0.0133***	-0.0209***
	(0.0001)	(0.0005)	(0.0011)	(0.0016)
Observations	8,737	8,737	8,737	8,737

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16 (a): The Marginal Effects of a Parent Telling an Elementary Aged Child to Read on a Child's Grade

	1	2	3	4
VARIABLES	Mostly Ds or lower	Mostly Cs	Mostly Bs	Mostly As

Story	-0.00248**	-0.0128***	-0.0377***	0.0529***
	(0.0010)	(0.0049)	(0.0144)	(0.0202)
Gender	0.00513***	0.0264***	0.0781***	-0.110***
	(0.0012)	(0.0047)	(0.0135)	(0.0186)
Asian	-0.00188	-0.00968	-0.0286	0.0402
	(0.0016)	(0.0079)	(0.0232)	(0.0325)
AfricanAm	0.00681***	0.0350***	0.104***	-0.145***
	(0.0017)	(0.0073)	(0.0211)	(0.0292)
Hispanic	0.00350***	0.0180***	0.0533***	-0.0749***
	(0.0012)	(0.0055)	(0.0162)	(0.0226)
Other	0.00282	0.0145	0.0430	-0.0603
	(0.0022)	(0.0113)	(0.0333)	(0.0466)
P1EDUC	-0.00122***	-0.00629***	-0.0186***	0.0261***
	(0.0003)	(0.0012)	(0.0035)	(0.0049)
P2EDUC	-0.00110***	-0.00567***	-0.0168***	0.0235***
	(0.0003)	(0.0012)	(0.0034)	(0.0048)
Observations	2,752	2,752	2,752	2,752

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17: Ordered Logit Model Results using *HwHelp* to Proxy for Parental Involvement

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Grade	Grade	Grade	Grade	Grade
HwHelp	-0.134**	-0.139**	-0.117**	-0.185***	-0.479***
	(0.0562)	(0.0566)	(0.0574)	(0.0702)	(0.0735)
Gender		-0.618***	-0.654***	-0.700***	-0.722***
		(0.0366)	(0.0370)	(0.0449)	(0.0453)

Asian			0.579***	0.436***	0.397***
			(0.0705)	(0.0819)	(0.0828)
AfricanAm			-0.789***	-0.682***	-0.710***
			(0.0521)	(0.0728)	(0.0731)
Hispanic			-0.558***	-0.218***	-0.271***
			(0.0448)	(0.0571)	(0.0575)
Other			-0.254***	-0.0440	-0.0486
			(0.0948)	(0.117)	(0.118)
P1Educ				0.132***	0.137***
				(0.0116)	(0.0117)
P2Educ				0.107***	0.109***
				(0.0111)	(0.0112)
YearInSchool					-0.0951***
					(0.00692)
/cut1	-3.867***	-4.230***	-4.494***	-3.451***	-4.540***
	(0.0801)	(0.0836)	(0.0868)	(0.124)	(0.148)
/cut2	-1.975***	-2.327***	-2.569***	-1.421***	-2.496***
	(0.0570)	(0.0615)	(0.0653)	(0.0983)	(0.126)
/cut3	-0.216***	-0.536***	-0.722***	0.540***	-0.498***
	(0.0530)	(0.0569)	(0.0602)	(0.0962)	(0.122)
Observations	11,344	11,344	11,344	8,363	8,363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 18: *HwHelp* Proxy - Predicted Probabilities using Column 5 from Table 17

Predicted Grade	Observations	Mean	Std. Dev.	Min	Max
Mostly Ds or lower	9,503	.0165503	.0146354	.0007512	.1366654
Mostly Cs	9,503	.0914861	.0647196	.0050181	.4132792
Mostly Bs	9,503	.3133716	.1059105	.0352535	.4616629
Mostly As	9,503	.578592	.1777948	.0999179	.9589773

Table 19: The Marginal Effects of a Parent Helping his/her Child on Homework on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00609***	0.0337***	0.0773***	-0.117***
	(0.00105)	(0.00524)	(0.0120)	(0.0180)
Gender	0.00918***	0.0509***	0.117***	-0.177***
	(0.000919)	(0.0034)	(0.00773)	(0.0111)
Asian	-0.00506***	-0.0280***	-0.0641***	0.0972***
	(0.00112)	(0.00587)	(0.0134)	(0.0202)
AfricanAm	0.00903***	0.0500***	0.115***	-0.174***
	(0.00116)	(0.00530)	(0.0121)	(0.0179)
Hispanic	0.00344***	0.0191***	0.0437***	-0.0662***
	(0.000780)	(0.00408)	(0.00934)	(0.0141)
Other	0.000618	0.00342	0.00784	-0.0119
	(0.00150)	(0.00831)	(0.0190)	(0.0288)
P1Educ	-0.00174***	-0.00964***	-0.0221***	0.0335***
	(0.000202)	(0.000860)	(0.00195)	(0.00287)
P2Educ	-0.00139***	-0.00770***	-0.0176***	0.0267***

	(0.000179)	(0.000812)	(0.00184)	(0.00274)
YearInSchool	0.00121***	0.00670***	0.0154***	-0.0233***
	(0.000129)	(0.0005)	(0.00116)	(0.00169)
Observations	8,363	8,363	8,363	8,363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 20: Average Number of Days a Parent Helps His / Her Child on Homework by The Different Levels of School that the Child is Enrolled in

	Code Average*	**Approximate Average Number of Days**
Elementary	2.78	3 to 4 days per week
Middle School	1.85	1 to 2 days per week
High School	1.23	Less than once per week
Overall	**1.98**	**1 to 2 days per week**

Coding for Averages*:
0: Never; 1: Less than once per week; 2:1 to 2 days per week;
3: 3 to 4 days per week; 4: 5 or more days a week

Table 21: Percentage of Parents Who Report Helping Their Child on Homework by the Different Levels of School that the Child is Enrolled in.

Grade Level	**Never**	**Less Than Once per Week**	**1 or 2 Times per Week**	**3 or 4 Times per Week**	**5 or More Times per Week**	**N/A**
Elementary	1.41%	9.36%	22.77%	37.38%	24.70%	4.37%
Middle	7.94%	30.98%	31.68%	16.71%	8.07%	4.63%
High School	20.49%	41.58%	22.70%	6.13%	2.26%	6.84%

Table 22: Ordered Logit Model Results using *HWHelp* to Proxy for Parental Involvement by Level of Schooling

VARIABLES	(1) Grade All Years of School	(2) Grade Elementary School	(3) Grade Middle School	(4) Grade High School
HwHelp	-0.185***	-0.202	-0.445***	-0.446***
	(0.0702)	(0.359)	(0.170)	(0.0840)
Gender	-0.700***	-0.477***	-0.680***	-0.906***
	(0.0449)	(0.0813)	(0.0897)	(0.0687)
Asian	0.436***	0.157	0.647***	0.489***
	(0.0819)	(0.142)	(0.177)	(0.125)
AfricanAm	-0.682***	-0.634***	-0.764***	-0.723***
	(0.0728)	(0.128)	(0.149)	(0.111)
Hispanic	-0.218***	-0.299***	-0.333***	-0.181**
	(0.0571)	(0.0987)	(0.113)	(0.0905)
Other	-0.0440	-0.146	-0.0935	0.0390
	(0.117)	(0.207)	(0.240)	(0.178)
P1Educ	0.132***	0.116***	0.158***	0.139***
	(0.0116)	(0.0214)	(0.0233)	(0.0176)
P2Educ	0.107***	0.103***	0.110***	0.115***
	(0.0111)	(0.0207)	(0.0215)	(0.0169)
/cut1	-3.451***	-3.861***	-3.311***	-3.662***
	(0.124)	(0.411)	(0.248)	(0.179)
/cut2	-1.421***	-1.851***	-1.663***	-1.361***
	(0.0983)	(0.379)	(0.215)	(0.134)
/cut3	0.540***	0.173	0.415**	0.578***

	(0.0962)	(0.376)	(0.210)	(0.131)
Observations	8,363	2,684	2,175	3,504

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 22(a): The Marginal Effects of a Parent Helping his/her Elementary School Aged Child with Homework on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00203	0.0113	0.0335	-0.0468
	(0.0036)	(0.0201)	(0.0597)	(0.0835)
Gender	0.00479***	0.0267***	0.0792***	-0.111***
	(0.0011)	(0.0048)	(0.0138)	(0.0188)
Asian	-0.00158	-0.00879	-0.0261	0.0364
	(0.0014)	(0.0079)	(0.0235)	(0.0329)
AfricanAm	0.00637**	0.0355***	0.105***	-0.147***
	(0.0017)	(0.0074)	(0.0215)	(0.0296)
Hispanic	0.00301***	0.0168***	0.0497***	-0.0695***
	(0.0011)	(0.0056)	(0.0165)	(0.0229)
Other	0.00147	0.00817	0.0243	-0.0339
	(0.0021)	(0.0116)	(0.0344)	(0.0481)
P1Educ	-0.00116***	-0.00648***	-0.0192***	0.0269***
	(0.0003)	(0.0012)	(0.0036)	(0.0050)
P2Educ	-0.00103***	-0.00575***	-0.0171***	0.0238***

	(0.0003)	(0.0012)	(0.0035)	(0.0048)
Observations	2,684	2,684	2,684	2,684

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 22(b): The Marginal Effects of a Parent Helping his/her Middle School Aged Child with Homework on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00739**	0.0261**	0.0746***	-0.108***
	(0.0030)	(0.0101)	(0.0287)	(0.0414)
Gender	0.0113***	0.0399***	0.114***	-0.165***
	(0.0021)	(0.0057)	(0.0157)	(0.0217)
Asian	-0.0108***	-0.0380***	-0.109***	0.157***
	(0.0033)	(0.0106)	(0.0299)	(0.0429)
AfricanAm	0.0127***	0.0448***	0.128***	-0.186***
	(0.0030)	(0.0092)	(0.0256)	(0.0363)
Hispanic	0.00553***	0.0195***	0.0558***	-0.0809***
	(0.0020)	(0.0067)	(0.0191)	(0.0275)
Other	0.00155	0.00549	0.0157	-0.0227
	(0.0040)	(0.0141)	(0.0402)	(0.0583)
P1Educ	-0.00262***	-0.00927***	-0.0265***	0.0384***
	(0.0005)	(0.0015)	(0.0040)	(0.0056)
P2Educ	-0.00183***	-0.00645***	-0.0184***	0.0267***
	(0.0004)	(0.0013)	(0.0037)	(0.0052)
Observations	2,175	2,175	2,175	2,175

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 22(c): The Marginal Effects of a Parent Helping his/her High School Aged Child with Homework on a Child's Grade

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00584**	0.0407***	0.0648***	-0.111***
	(0.0013)	(0.0078)	(0.0125)	(0.0210)
Gender	0.0119***	0.0827***	0.132***	-0.226***
	(0.0017)	(0.0068)	(0.0112)	(0.0171)
Asian	-0.00640***	-0.0446***	-0.0710***	0.122***
	(0.0018)	(0.0114)	(0.0183)	(0.0311)
AfricanAm	0.00947***	0.0660***	0.105***	-0.181***
	(0.0018)	(0.0103)	(0.0166)	(0.0277)
Hispanic	0.00237*	0.0165**	0.0262**	-0.0451**
	(0.0012)	(0.0083)	(0.0132)	(0.0226)
Other	-0.000510	-0.00356	-0.00566	0.00973
	(0.0023)	(0.0162)	(0.0259)	(0.0444)
P1Educ	-0.00182***	-0.0127***	-0.0201***	0.0346***
	(0.0003)	(0.0017)	(0.0027)	(0.0044)
P2Educ	-0.00150***	-0.0105***	-0.0167***	0.0287***
	(0.0003)	(0.0016)	(0.0025)	(0.0042)
Observations	3,504	3,504	3,504	3,504

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 23: HwHelp Regressions Based on the Number of Days a Parent Helps His / Her Child with Homework

	(1)	(2)	(3)
VARIABLES	Grade	Grade	Grade
	0: Never, 1: Anything more	0: Never through Less than once a week; 1: 1 or more times a week	0: Never through 1 or 2 times a week; 1: 3 or more times a week
HwHelp	-0.479***	-0.621***	-0.666***
	(0.0735)	(0.0526)	(0.0584)
Gender	-0.722***	-0.729***	-0.721***
	(0.0453)	(0.0455)	(0.0455)
Asian	0.397***	0.432***	0.439***
	(0.0828)	(0.0830)	(0.0829)
AfricanAm	-0.710***	-0.661***	-0.654***
	(0.0731)	(0.0733)	(0.0734)
Hispanic	-0.271***	-0.220***	-0.230***
	(0.0575)	(0.0578)	(0.0577)
Other	-0.0486	-0.0803	-0.0341
	(0.118)	(0.118)	(0.118)
P1EDUC	0.137***	0.136***	0.135***
	(0.0117)	(0.0117)	(0.0117)
P2EDUC	0.109***	0.107***	0.110***
	(0.0112)	(0.0112)	(0.0112)
YearInSchool	-0.0951***	-0.127***	-0.131***
	(0.00692)	(0.00768)	(0.00798)
/cut1	-4.540***	-4.761***	-4.630***
	(0.148)	(0.140)	(0.137)

/cut2	-2.496***	-2.710***	-2.580***
	(0.126)	(0.117)	(0.113)
/cut3	-0.498***	-0.694***	-0.568***
	(0.122)	(0.112)	(0.108)
Prob>Chi2	0.0000		
Pseudo R2	0.0742		
Observations	8,363	8,363	8,363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 23(a): The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade Based on the Number of Days a Week that a Parent Reports Having Helped His / Her Child
(0: Never; 1: Anything more)

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00609***	0.0337***	0.0773***	-0.117***
	(0.0010)	(0.0052)	(0.0120)	(0.018)
Gender	0.00918***	0.0509***	0.117***	-0.177***
	(0.0009)	(0.0034)	(0.0077)	(0.0111)
Asian	-0.00506***	-0.0280***	-0.0641***	0.0972***
	(0.0011)	(0.0059)	(0.0134)	(0.0202)
AfricanAm	0.00903***	0.0500***	0.115***	-0.174***
	(0.0012)	(0.0053)	(0.0121)	(0.0179)
Hispanic	0.00344***	0.0191***	0.0437***	-0.0662***

	(0.0008)	(0.0041)	(0.0093)	(0.0141)
Other	0.000618	0.00342	0.00784	-0.0119
	(0.0015)	(0.0083)	(0.019)	(0.0288)
P1Educ	-0.00174***	-0.00964***	-0.0221***	0.0335***
	(0.0002)	(0.0009)	(0.0020)	(0.0029)
P2Educ	-0.00139***	-0.00770***	-0.0176***	0.0267***
	(0.0002)	(0.0008)	(0.0018)	(0.0027)
YearInSchool	0.00121***	0.00670***	0.0154***	-0.0233***
	(0.0001)	(0.0005)	(0.0012)	(0.0017)
Observations	8,363	8,363	8,363	8,363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 23(b): The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade Based on the Number of Days a Week that a Parent Reports Having Helped His / Her Child

(0: Never through Less than once a week; 1:1 or more times a week)

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00769***	0.0431***	0.101***	-0.152***
	(0.0009)	(0.0038)	(0.0088)	(0.0129)
Gender	0.00902***	0.0506***	0.119***	-0.178***
	(0.0009)	(0.0034)	(0.0078)	(0.0111)
Asian	-0.00535***	-0.0230***	-0.0703***	0.106***
	(0.0011)	(0.0058)	(0.0136)	(0.0203)

AfricanAm	0.00819***	0.0459***	0.108***	-0.162***
	(0.0011)	(0.0052)	(0.0121)	(0.0179)
Hispanic	0.00273***	0.0153***	0.0359***	-0.0539***
	(0.0007)	(0.0040)	(0.0094)	(0.0141)
Other	0.000994	0.00557	0.0131	-0.0196
	(0.0015)	(0.0082)	(0.0192)	(0.0289)
P1EDUC	-0.00168***	-0.00942***	-0.0221***	0.0332***
	(0.0002)	(0.0008)	(0.0020)	(0.0029)
P2EDUC	-0.00133***	-0.00746***	-0.0175***	0.0263***
	(0.0002)	(0.0008)	(0.0019)	(0.0027)
YearInSchool	0.00157***	0.00881***	0.0207***	-0.0310***
	(0.0002)	(0.0006)	(0.0013)	(0.0019)
Observations	8,363	8,363	8,363	8,363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 23 (c): The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade Based on the Number of Days a Week that a Parent Reports Having Helped His / Her Child

(0: Never through 1 or 2 times a week;
1: 3 or more times a week)

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00828***	0.0463***	0.108***	-0.163***
	(0.0010)	(0.0042)	(0.0098)	(0.0143)

Gender	0.00896***	0.0502***	0.117***	-0.176***
	(0.0009)	(0.0034)	(0.0078)	(0.0111)
Asian	-0.00546***	-0.0305***	-0.0713***	0.107***
	(0.0011)	(0.0058)	(0.0136)	(0.0203)
AfricanAm	0.00813***	0.0455***	0.106***	-0.160***
	(0.0011)	(0.0052)	(0.0121)	(0.0179)
Hispanic	0.00286***	0.0160***	0.0374***	-0.0562***
	(0.0008)	(0.0040)	(0.0094)	(0.0141)
Other	0.000424	0.00237	0.00553	-0.0833
	(0.0015)	(0.0082)	(0.0192)	(0.0289)
P1Educ	-0.00167***	-0.00936***	-0.0218***	0.0329***
	(0.0002)	(0.0008)	(0.0020)	(0.0029)
P2Educ	-0.00136***	-0.00762***	-0.0178***	0.0268***
	(0.0002)	(0.0008)	(0.0019)	(0.0027)
YearInSchool	0.00163***	0.00910***	0.0212***	-0.0320***
	(0.0002)	(0.0006)	(0.0014)	(0.0019)
Observations	8,363	8,363	8,363	8,363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 24: Percentage of Parents Who Report Helping their Child on Homework by Race

Race	Never	Less than once per week	1 to 2	3 to 4	5 or more	NA
Caucasian	9.26%	27.53%	24.00%	19.40%	10.47%	9.35%
Asian	14.19%	24.60%	22.02%	20.00%	13.63%	5.56%

African American	8.28%	19.19%	24.35%	23.04%	16.03%	9.12%
Hispanic	11.33%	18.81%	24.05%	19.96%	16.00%	9.84%
Other	10.64%	25.87%	19.08%	22.02%	11.38%	11.01%

Table 25: The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade for Caucasian Students

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.00586***	0.0313***	0.0766***	-0.114***
	(0.0012)	(0.0058)	(0.0140)	(0.0207)
Gender	0.00958***	0.0511***	0.125***	-0.186***
	(0.0011)	(0.0037)	(0.0089)	(0.0124)
P1EDUC	-0.00187***	-0.0100***	-0.0245***	0.0364***
	(0.0002)	(0.0009)	(0.0022)	(0.0032)
P2EDUC	-0.00167***	-0.00894***	-0.0219***	0.0325***
	(0.0002)	(0.0009)	(0.0021)	(0.0031)
YearInSchool	0.00117***	0.00626***	0.0153***	-0.0228***
	(0.0001)	(0.0006)	(0.0013)	(0.0019)
Observations	6,583	6,583	6,583	6,583

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 26: The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade for Asian Students

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As

HwHelp	0.00153	0.0125*	0.0634*	-0.0774*
	(0.0012)	(0.0076)	(0.0371)	(0.0452)
Gender	0.00297*	0.0243***	0.123***	-0.150***
	(0.0016)	(0.0063)	(0.0269)	(0.0321)
P1EDUC	-0.000359	-0.00293**	-0.0148**	0.0181**
	(0.0002)	(0.0014)	(0.0067)	(0.0082)
P2EDUC	-0.000363	-0.00296**	-0.0150**	0.0183**
	(0.0002)	(0.0013)	(0.0061)	(0.0074)
YearInSchool	0.000223	0.00182**	0.00919**	-0.0112**
	(0.0001)	(0.0008)	(0.0039)	(0.0047)
Observations	834	834	834	834

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 27: The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade for African American Students

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.0181***	0.114***	0.0873***	-0.220***
	(0.0062)	(0.0314)	(0.0261)	(0.0595)
Gender	0.0161***	0.101***	0.0774***	-0.195***
	(0.0043)	(0.0180)	(0.0164)	(0.0333)
P1EDUC	-0.00236***	-0.0149***	-0.0114***	0.0286***
	(0.0009)	(0.0045)	(0.0037)	(0.0086)
P2EDUC	-0.000744	-0.00469	-0.00358	0.00902
	(0.0007)	(0.0042)	(0.0033)	(0.0081)
YearInSchool	0.00249***	0.0157***	0.0120***	-0.0302***

	(0.0007)	(0.0027)	(0.0025)	(0.0050)
Observations	794	794	794	794

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 28: The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade for Hispanic Students

	(1)	(2)	(3)	(4)
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As
HwHelp	0.0157***	0.0560***	0.0754***	-0.147***
	(0.0044)	(0.0143)	(0.0197)	(0.0370)
Gender	0.0123***	0.0439***	0.0592***	-0.115***
	(0.0029)	(0.0091)	(0.0126)	(0.0233)
P1EDUC	-0.00313***	-0.0111***	-0.0150***	0.0293***
	(0.0007)	(0.0023)	(0.0031)	(0.0058)
P2EDUC	-0.00242***	-0.00861***	-0.0116***	0.0226***
	(0.0007)	(0.0023)	(0.0031)	(0.0058)
YearInSchool	0.00249***	0.00888***	0.0120***	-0.0233***
	(0.0005)	(0.0014)	(0.0020)	(0.0035)
Observations	1,688	1,688	1,688	1,688

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 29: The Marginal Effects of a Parent Helping his/her Child with Homework on a Child's Grade for Students of Other Races

	-1	-2	-3	-4
VARIABLES	Mostly Ds or Lower	Mostly Cs	Mostly Bs	Mostly As

HwHelp	0.00155	0.00767	0.0146	-0.0238
	(0.0058)	(0.0283)	(0.0537)	(0.0878)
Gender	0.0136**	0.0672***	0.128***	-0.208***
	(0.0064)	(0.0206)	(0.0393)	(0.0587)
P1EDUC	-0.00235*	-0.0116**	-0.0221**	0.0360**
	(0.0013)	(0.0051)	(0.0097)	(0.0152)
P2EDUC	-0.00141	-0.00698	-0.0133	0.0216
	(0.0011)	(0.0048)	(0.0092)	(0.0148)
YearInSchool	0.000959	0.00474*	0.00900*	-0.0147*
	(0.0007)	(0.0028)	(0.0053)	(0.0085)
Observations	299	299	299	299

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 30: Weighted Average Gender Grade Differences by Race

Race	**Female**	**Male**	***Difference***
Caucasian	3.52	3.25	*0.26****
Asian	3.71	3.51	*0.19****
African American	3.23	2.95	*0.28****
Hispanic	3.30	3.08	*0.21****
Other	3.38	3.07	*0.30****

*** p<0.01, ** p<0.05, * p<0.1

Table 31: Weighted Average Gender Grade Differences by Race and Level of Schooling

Elementary School	**Middle School**	**High School**

Race	Male	Female	*Difference*	Male	Female	*Difference*	Male	Female	*Difference*
Caucasian	3.43	3.6	*0.17****	3.29	3.53	*0.24****	3.11	3.45	*0.34****
Asian	3.55	3.74	*0.19****	3.61	3.78	*0.17***	3.43	3.63	*0.2****
African Am	3.26	3.38	*0.12**	2.84	3.19	*0.35****	2.78	3.15	*0.38****
Hispanic	3.25	3.38	*0.13***	3.03	3.33	*0.3****	2.96	3.21	*0.25****
Other	3.28	3.36	*0.07*	3.09	3.47	*0.38***	2.91	3.34	*0.43****
Overall	3.40	3.56	*0.15****	3.23	3.48	*0.25****	3.08	3.40	*0.32****

*** p<0.01, ** p<0.05, * p<0.1

Table 32: Average Indirect Engagement of Parents of Children from Difference Races

Proxy	**Caucasian**	**Asian**	***Difference***	**Caucasian**	**AfAm**	***Difference***	**Caucasian**	**Hispanic**	***Difference***
Volunteer	3.57	3.69	*-0.13****	3.57	3.32	*0.25****	3.57	3.40	*0.16****
Committee	3.59	3.68	*-0.09*	3.59	3.26	*0.33****	3.59	3.42	*0.17****
PTO	3.41	3.65	*-0.23****	3.41	3.14	*0.27****	3.41	3.25	*0.16****
Story	3.44	3.64	*-0.20****	3.44	3.18	*0.26****	3.44	3.25	*0.19****

*** p<0.01, ** p<0.05, * p<0.1

References