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Gee, Kevin A

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What contributes to the variation in chronic absenteeism across the early elementary years? Understanding the role of children, classrooms and schools

Kevin A. Gee
Associate Professor
School of Education
University of California, Davis
kagee@ucdavis.edu

What contributes to the variation in chronic absenteeism across the early elementary years? Understanding the role of children, classrooms and schools

Abstract

Across the early elementary years, chronic absenteeism patterns can vary considerably between different schools as well as between children within the same schools. However, to date, we have limited knowledge of the extent to where variability in chronic absenteeism lies (e.g., how much variability is between children versus schools?) as well as how much of that variability can be explained by ecological factors associated with chronic absenteeism such as children's health status (Gottfried & Gee, 2017). This knowledge is critical as it can serve as a useful benchmark to gauge the relative importance and influence of particular factors. This chapter presents evidence that quantifies the extent to which variation in kindergarteners' chronic absenteeism can be attributable to schools, classrooms, and children and analyzes how certain ecological factors play a role in explaining the variation. It draws upon data from the Early Child Longitudinal Survey, Kindergarten Class of 2010-11 (ECLS-K: 2011).

What contributes to the variation in chronic absenteeism across the early elementary years? Understanding the role of children, classrooms and schools

Across the early elementary years, chronic absenteeism rates can vary considerably between schools as well as within schools. Take, for instance, a school district such as Alameda Unified School District (AUSD) in Alameda, California that has 10 elementary schools. Across those schools, chronic absenteeism rates (defined as missing 10% of the school year) for kindergarteners range from 2% to about 26%[1]. At the same time, within each school, certain children tend to be at higher or lower risk of being chronically absent versus their peers. Yet, where is most of the variation in chronic absenteeism? How much of that variability is between children versus between schools? Importantly, how much of that variation can be explained by factors we often associate with chronic absenteeism like children's health? Understanding where variability in chronic absenteeism lies as well as the share of variability that certain factors explain helps serve as a useful benchmark. This benchmark provides one way to gauge the relative importance of the kinds of factors—attributes of children, classrooms and their school—that help explain absenteeism. In general, factors explaining a larger share of the variability can be considered more relevant. By understanding which factors are more relevant than others, practitioners and policymakers can better prioritize which types of factors they should focus on when developing and investing in strategies to address absenteeism.

This chapter illustrates how variability in chronic absenteeism can be analyzed to yield important insights into the factors underlying absenteeism. The chapter has two main objectives. First, it assesses differences in children's chronic absenteeism behaviors, quantifying the extent to which variability in chronic absenteeism in kindergarten through second grade is due to systematic differences between children relative to systematic differences between schools and classrooms. This chapter focuses on children in their early elementary grades, a time when

missing too much school can be especially disruptive to their formative learning. Second, it describes and quantifies the extent to which a selected set of factors—attributes of children, their classrooms and their schools—can help explain variability in chronic absenteeism. It draws upon data from the Early Child Longitudinal Survey, Kindergarten Class of 2010-11 (ECLS-K: 2011), a large nationwide survey of children who started kindergarten in the fall of 2010.

What do we mean by "variability" in chronic absenteeism?

This chapter uses the term "variability" to describe the extent to which either children, their classrooms or their schools systematically differ from each other in their propensities of being chronically absent. Some children, classrooms and schools will have a higher propensity, while others will have a lower propensity. Differences in this propensity can be due to a range of circumstances that each child experiences in their lives as well as the types of schools and classrooms that they attend.

To illustrate the concept of variability, consider the children in School A depicted in the top panel of Figure 1. Each child in School A faces the same chance of being chronically absent. In this case, children within School A do not vary in their probability of being chronically absent. On the other hand, each child in School B as depicted in the bottom panel of Figure 1, faces a different chance of being chronically absent. Thus, children within School B vary widely in their chances of being chronically absent.

<<insert Figure 1 here>>

In addition to the variability in chronic absenteeism between children within a given school or classroom, variability also exists between different classrooms in schools as well as between different schools. This is because children who attend the same classes and schools can also share similar characteristics (e.g., socioeconomic level) as well as be exposed to similar

experiences that may influence their absenteeism behaviors. Thus, there could be some shared, common propensity of being chronically absent among students within the same classrooms and schools. This shared propensity might look different between different classrooms as well as different schools.

The total variability in chronic absenteeism consists of three parts: (1) the variability that exists between children within a given classroom plus; (2) the variability that exists between classrooms within the same schools; and finally, (3) the variability between different schools.

Why is it important to understand the individual-, classroom- and school-level factors that help explain variability in chronic absenteeism?

Analyzing variability can help us gauge how much a certain factor, or set of factors, matters for predicting variability in chronic absenteeism. Some factors will matter less, while others will matter more. In general, factors that explain a larger share of the variability can be consider more relevant versus factors that explain little to no variability.

Imagine, for instance, if we could explain all the variability in children's propensities of being chronically absent by just knowing one risk factor alone: their health. If this were true, then our knowledge other risk factors—such as their family background, achievement, and even their past absenteeism behaviors—would not help explain absenteeism. If we knew that health alone predicted chronic absenteeism, we could expect that if children's health risks changed, those changes would relate to all of the changes in their propensity of being chronically absent. So, what would be the implications for schools and educational policymakers in this case? From the perspective of schools and educational policymakers tasked with addressing absenteeism, this would highlight the importance of prioritizing and focusing on ways to address health-related drivers of absenteeism.

Of course, many factors simultaneously explain variability in chronic absenteeism. Some factors might explain a lot, while others, only a little. Also, we may not readily observe or measure some factors (e.g., motivation). Yet, by systematically identifying which observable factors explain a large share of the variability as well as the types of factors (i.e., individual, classroom or school), we can obtain a better understanding of which factors are more influential relative to others. Again, from a policy perspective, information about the relative influence of certain factors can help guide decisions about which factors to focus on and can help prioritize which factors to target when developing strategies to address chronic absenteeism.

Readers should keep in mind one caveat. Given the numerous factors that we cannot observe or accurately measure, the factors analyzed in this chapter that help explain variability in absenteeism are *correlated* with—but not causally linked to—chronic absenteeism. As a result, these findings are neither prescriptive nor do they suggest that changing a certain set of factors will necessarily cause absenteeism to change.

Method

Dataset and Sample

To analyze the variability in chronic absenteeism, this study uses data from the restricted use version Early Childhood Longitudinal Survey, Kindergarten Class of 2010-11 (ECLS-K: 2011)[2]. The ECLS-K: 2011 tracks a large, nationally representative sample of children who entered kindergarten in the fall of 2010. This study used subsamples of children from the first three waves of the ECLS-K: 2011: (1) spring of Kindergarten (n=6,810); (2) spring of 1st grade (n=6,840); and (3) spring of 2nd grade (n=6,110). These sample sizes[3] reflect children in each grade who have complete information across all measures included in each of the analyses (i.e., any child with missing or incomplete information was not included in the sample). As a result,

readers should note that the inferences drawn from these analyses are applicable only to these specific subsamples of children, and not generalizable more broadly to all children in the US.

Measures

Outcome

Chronic Absenteeism. In the spring of a child's kindergarten, first and second grades, teachers were asked to report the total number of absences a child had for the current school year in six categories: no absences; 1-4; 5-7; 8-10; 11-19; 20 or more. Consistent with prior investigations of absenteeism using the ECLS-K dataset[4] this study uses 11 or more as the threshold for chronic absenteeism. Thus, the original six categories were collapsed into a binary variable that equaled 1 if a child experienced 11 or more absences, 0 otherwise.

Though there is no one agreed upon definition of chronic absenteeism, most states define absenteeism as experiencing 10% or more absences in a year (irrespective of those absences were excused or unexcused), which is typically 18 or more days[5]. In contrast, at the federal level, children are chronically absent if they miss 15 days of school for any reason[6]. Accordingly, given that this study's measure of chronic absenteeism includes students who are potentially below these state or federal thresholds, this measure should be interpreted as *moderate* chronic absenteeism[7].

Predictors of the Variability in Chronic Absenteeism

Table 1 summarizes predictors of the variability in chronic absenteeism included in these analyses. They are organized into four groups: (1) Child Attributes and Demographics; (2) Parental Characteristics; (3) Classroom (i.e., Teacher) Characteristics and (3) School Characteristics.

<<insert Table 1 here>>

These predictors were selected for both their theoretical and practical importance and based largely on prior work on the socioecological determinants of absenteeism in the early elementary years[8]. While certainly not exhaustive, many of these factors have been shown to be strong drivers of chronic absenteeism[9]. From a practical standpoint, policymakers and practitioners have also often highlighted these factors to explain why absenteeism occurs and, subsequently, they have taken these factors into account as they have developed interventions and policies to combat absenteeism[10].

Sample Descriptive Statistics: Kindergarten Year

Table 2 shows descriptive statistics (means or proportions alongside their respective standard deviations) for characteristics of children, their parents, their classrooms and the schools they attended during their kindergarten year. Characteristics are disaggregated by whether they were chronically absent or not. Several notable and statistically significant differences existed between chronically versus non-chronically absentees.

<<insert Table 2 here>>

Child Attributes and Demographics. In comparing parent-reported health ratings between chronically versus non-chronically absentees, a lower percentage of chronically absent children had excellent health (49% versus 63%) while a higher percentage had fair or poor health (6% versus 2%).

By racial and ethnic background, a higher proportion of chronically absent children were students of color which reflects a broader nationwide trend in racial and ethnic disparities in absenteeism[11]. For instance, just over a half of chronically absentees (53%) were students of color (Asian, Black, Hispanic, Native American, Pacific Islander or Multi-racial) while 43% of children who were not chronically absent were students of color.

Parental Characteristics. Relative to their non-chronically absent peers, chronically absent kindergarteners had parents who were more likely to be out of the labor market (39% versus 29%) while a lower proportion had parents who attended either a parent-teacher conference (89% versus 92%) or PTA meeting (30% versus 37%).

Classroom Characteristics. Chronically absent kindergarteners had lower levels of closeness (4.31 versus 4.41) and higher levels of conflict (1.65 versus 1.59) with their teachers.

School Characteristics. Chronically absent children attended schools that were, on average, comparable to the schools that non-chronically absent peers attended in terms of their schools' levels of aggressive behaviors, bullying, teacher absenteeism and theft at school. They attended schools with a higher proportion of students eligible for free and reduced-price lunch (FRPL) (46% versus 40%).

Analytic Method: Logistic Multilevel Modeling. To quantify the variability in chronic absenteeism at different levels in the education system (e.g., between children versus between schools) and how much certain predictors explain of that variability, a statistical modeling procedure, known as multilevel logistic modeling was used. This modeling procedure quantifies the relationship between the predictors at different levels of the educational system (child, classroom and schools) and the probability that a child is chronically absent.

The model can be expressed in the form of an equation for child *i* in classroom *j* in school *k* as follows:

$$Y_{ijk}^{*} = \alpha + \gamma \mathbf{x} + v_k + u_{jk} + \varepsilon_{ijk} \qquad (1)$$

where **x** is a vector of predictors (e.g., prior absenteeism and health) whose effects are represented by γ. u_{jk} and v_k are random effects for school and classroom, respectively, whose associated variances are denoted as τ_2^2 and τ_3^2. ε_{ijk} is the individual error that follows a logistic

distribution with a constant variance $\frac{\pi^2}{3}$. Further, we assume that the observed outcome of whether a child is chronically absent or not, Y_{ijk}, takes on a value of either a 1 or 0 based on an underlying (unobserved) number of absences, Y_{ijk}^*, that reach or exceed a threshold *T*:

$$Y_{ijk} = \begin{cases} 1 & if \quad Y_{ijk}^* \geq T \\ 0 & if \quad Y_{ijk}^* < T \end{cases} \qquad (2)$$

For instance, when a child was absent 11 or more days in the school year (defined as the threshold for moderately chronic absent in this study), Y_{ijk} takes on the value of 1, 0 otherwise.

Model Estimation Procedure. To determine how much variability in chronic absenteeism was attributable to systematic differences between schools, classrooms and students within classrooms (i.e., the intraclass correlation coefficient [ICC]), a *null model,* one that contained no predictors was estimated.

After fitting the null model, a series of models were fit to data to determine the amount of variability that the predictors explained. To parse out the importance of individual factors relative to groups of factors, predictors were added to the model on the right-hand side of equation 1 (e.g., health status) individually and then in substantive groups (e.g., all child-level predictor together). The substantive groupings were as follows: (1) child attributes and behaviors (e.g., prior chronic absenteeism[12], health status); (2) child demographic characteristics (e.g., race/ethnicity); (3) parental attributes (e.g., employment status); (4) classroom attributes; and finally, (5) school-level characteristics. Finally, all predictors were included together in one final model. Except for prior chronic absenteeism, predictors specific to a particular year (e.g., 2nd grade) were incorporated only into the models for that year.

Variance Explained. To estimate how much of the total variability in chronic absenteeism that each predictor or set of predictors explained, McKelvey and Zavoina's[13] R^2 was calculated using a three-step approach[14]. First, for each model, linear predictions were made for the outcome for each child (based on the estimated model coefficients, **x** [i.e., the fixed effects]). Second, the variance of these linear predictions was calculated, denoted as $\hat{\sigma}_F^2$, which represents the estimated *variation explained* by a predictor or set of predictors. Finally, how much of the total variation in chronic absenteeism consisted of variation explained by the predictors was calculated by dividing the variation explained by the total variability as follows:

$$R_{MZ}^2 = \frac{\text{variation explained by the model}}{\text{total variation in chronic absenteeism}} = \frac{\hat{\sigma}_F^2}{\hat{\sigma}_F^2 + \hat{\tau}_2^2 + \hat{\tau}_3^2 + \frac{\pi^2}{3}} \quad (3)$$

In this equation, the numerator $\hat{\sigma}_F^2$ is the variation explained by a particular model's predictors (e.g., health) while the denominator is the *total variability* in chronic absenteeism which is the sum of four parts: (1) the explained variability $\hat{\sigma}_F^2$; (2) between-school variability ($\hat{\tau}_2^2$); (3) between-classroom variability ($\hat{\tau}_3^2$); and (4) between-child variability in chronic absenteeism, which is fixed ($\frac{\pi^2}{3} \approx 3.29$). Thus, hypothetically, if the variation explained by health was 5 and the total variability was 100, we would know that 5% (5 divided by 100) of the total variability in chronic absenteeism was attributed to the health of a child. Factors that explain a larger share of variability, and therefore more relevant in explaining variation in chronic absenteeism, would be expressed as larger percentages.

Results

How much variability is there in chronic absenteeism at the child-, classroom-, and school-levels?

<<insert Figure 2 here>>

As depicted in Figure 2, the majority of the total variability in chronic absenteeism in kindergarten, first and second grades exists between students: 69%, 80% and 73% for each grade respectively. The remaining variability is between classroom and schools.

Thus, while schools and classrooms account for a nontrivial share of the total variability in chronic absenteeism, the majority of the variability is attributed to systematic differences between children rather than systematic differences between either classrooms or schools. Importantly, this larger proportion of the variability which exists at the student-level indicates that explaining variability in chronic absenteeism will depend largely on child-level factors relative to either classroom- or school-level ones.

How much of the total variability in chronic absenteeism do child-, classroom- and school-level factors explain?

<<insert Figures 3, 4 and 5 here>>

Figures 3 through 5 display the percentage of variability in chronic absenteeism each predictor explains by each grade level.

Kindergarten. Among the child-level predictors, health status, explains the highest proportion of variability (2.74%) followed by approaches to learning (1.67%) and then a child's racial and ethnic background (1.25%). Parental socioeconomic status explains roughly the same amount of variability (approximately 5%) as does the child-level predictors as a whole.

Predictors at the classroom and school levels help explain relatively small shares of the total variability, ranging from almost no variability explained (e.g., if the child has a high-quality teacher) to school-level concentration of students of color and FRPL students (1.5%).

Finally, as shown at the bottom of Figure 3, based on a model that includes all predictors, we can collectively explain approximately 12% of the total variability. The remainder of the variability, 88%, remains unexplained. Note that the total percentage of variability explained with all predictors included is not cumulative since some of predictors are correlated, so they jointly explain variability in chronic absenteeism.

First Grade. Consistent with the results for kindergarten, a child's health status alongside their approaches to learning scores and racial/ethnic backgrounds help explain variability. Collectively, these child-level attributes, in addition to prior chronic absenteeism, explains around 15% of the total variability.

Parental socioeconomic status and their employment status continues to help explain variability in first graders' probability of being chronically absent. Collectively, these parent-level predictors explain a slightly higher amount of variability versus in kindergarten (5.8%).

Finally, each of the classroom- and school-level predictors explain less than 1 percent of the variability, and thus, they tend to not contribute much to our understanding of the total variability in chronic absenteeism.

In contrast to the kindergarten results, more of the total variability in first grade can be explained (about 20%) by all of the model predictors; this is, in part, because chronic absenteeism in kindergarten is included which helps explain a large share of the variability in first grade. In fact, chronic absenteeism when a child was in kindergarten alone helps explain 10.6% of the variability in chronic absenteeism in first grade.

Second Grade. Children's health, approaches to learning and their racial/ethnic backgrounds continue to help explain variability as children reach second grade. However, approaches to learning now explains a much larger share of variability (4.3%) relative to the share it explained in both kindergarten and first grades. In total, all child-level attributes explain roughly 13% of the total variability.

Consistent with kindergarten and first grade results, both parental socioeconomic status and employment status continue to explain variability in chronic absenteeism (1% and 2.6%, respectively). Finally, in contrast to the results for a children's kindergarten and first grade years, closeness with a teacher helps explain a larger, albeit relatively small, share of the variability (1%).

The final model that includes all relevant predictors, including school-level factors, explains about 16% of the variability. About 84% of the variability remains unexplained.

How much do school-level predictors explain between-school variability in chronic absenteeism?

Though school level predictors explained negligible amounts of total variability, they have the potential to explain larger proportions of between-school variability. Identifying which school-level predictors explain larger shares of between-school variability can be useful when thinking about factors that should be considered in the design of whole-school absenteeism interventions.

To gauge how much school predictors explained between-school variability in chronic absenteeism, proportion reduction in variance was calculated as follows[15]:

$$\text{Proportion of variance explained} = \frac{\hat{\tau}_2^2(\text{null model}) - \hat{\tau}_2^2(\text{subsequent model with predictor})}{\hat{\tau}_2^2(\text{null model})}$$

Figure 6 displays these results[16]. One noteworthy finding is the role of measures associated with a negative school climate—school level theft, aggressive behaviors and bullying altogether explain the highest proportion of between-school variability (5.5% to 9.5%). School level racial/ethnic concentration alongside poverty level also help explain variability (12%) particularly in kindergarten. Finally, school-level predictors as a whole help explain around 20%, 9% and 10% of the between-school variability, in kindergarten, first and second grades respectively.

Discussion and Implications

There are several important take-aways from these analyses. First, variability in chronic absenteeism is largely attributable to individual differences relative to differences between classrooms or schools. Second, there is no one predictor or set of predictors that accounted for a large share of the variability in children's probabilities of being chronically absent. Of the proportion that we can explain (ranging from 12% in kindergarten to 20% in first grade), we are more successful in explaining total variability with individual-level predictors relative to classroom- or school-level predictors. Further, of the predictors, prior chronic absenteeism accounted for nearly half of total variability that we can explain for first and second graders. Finally, while school level factors explained a negligible amount of total variability, factors reflecting a negative school climate helped to explain between-school variability in chronic absenteeism.

Just as children's academic achievement varies more widely within schools versus between[17], so does their propensities of being chronically absent. Thus, addressing chronic absenteeism will require multi-tiered strategies that emphasize the individualized needs and challenges of children who struggle to attend school regularly[18]. Some of those needs are related

to a child's health and learning strategies—both of which, as these results showed, explained relatively larger shares of the variability in chronic absenteeism. Both are also within the purview of the educational system (learning more so versus health) and both are significantly predictive in ways that we expect: poorer health is linked to higher absenteeism while higher approaches to learning is linked to lower absenteeism. We also should keep in mind the role of parental attributes in explaining variability in absenteeism. Both parental socioeconomic status and employment helped to explain some, albeit a small proportion, of the variability (e.g. parental employment status explained between 2% to 4%).

The relatively large proportion in individual variability in absenteeism within schools also suggests that district-wide efforts at reducing overall absenteeism at the school site level, will require schools to be attuned to individual differences within schools. For example, if a district wants schools to reduce their chronic absenteeism rate, this will require them to look within their schools to identify key differences between children. Finally, the strong predictive power of prior absenteeism and the substantial proportion that it explained relative to what could be explained overall suggests that efforts at reducing absenteeism in earliest grades will be critical to prevent chronic absenteeism in future grades.

Funding

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[1] Based on data from EdSource's Database on Chronic Absenteeism in California schools 2016-17 which is available at the time of this writing at https://edsource.org/2017/database-on-chronic-absenteeism-in-california-schools-2016-17

[2] National Center for Education Statistics, "Ecls-K:2011 Restricted-Use Kindergarten-Second Grade Data File and Electronic Codebook," (2015).

[3] Rounded to the nearest 10 per National Center for Education Statistics (NCES) requirements.

[4] Michael A. Gottfried, "Chronic Absenteeism and Its Effects on Students' Academic and Socioemotional Outcomes," *Journal of Education for Students Placed at Risk (JESPAR)* 19, no. 2 (2014); Michael A Gottfried and Kevin A Gee, "Identifying the Determinants of Chronic Absenteeism: A Bioecological Systems Approach," *Teachers College Record* 119, no. 7 (2017); Michael A Gottfried et al., "Showing Up: Disparities in Chronic Absenteeism between Students with and without Disabilities," in *IESP Working Paper #03-17* (New York, NY: New York University, 2017).

[5] Hedy N Chang and Mariajose Romero, "Present, Engaged, and Accounted For: The Critical Importance of Addressing Chronic Absence in the Early Grades," *National Center for Children in Poverty* (2008).

[6] U.S. Department of Education, "Chronic Absenteeism in the Nation's Schools," https://ed.gov/datastory/chronicabsenteeism.html.

[7] Gottfried.

[8] Gottfried and Gee.

[9] Ibid.

[10] Brandy R. Maynard et al., "Indicated Truancy Interventions for Chronic Truant Students:A Campbell Systematic Review," *Research on Social Work Practice* 23, no. 1 (2013).

[11] Kevin A Gee, "Minding the Gaps in Absenteeism: Disparities in Absenteeism by Race/Ethnicity, Poverty and Disability," *Journal of Education for Students Placed at Risk (JESPAR)* (2018).

[12] For models predicting chronic absenteeism in the spring of 1st and 2nd grade, chronic absenteeism in the prior year was included (i.e., for the model predicting 2nd grade absenteeism, 1st grade absenteeism was used while for the 1st grade model, kindergarten absenteeism was included). The kindergarten model contained no prior absenteeism information.

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[14] T. A. B. Snijders and R. J. Bosker, *Multilevel Analysis : An Introduction to Basic and Advanced Multilevel Modeling* (2012).

[15] Stephen W Raudenbush and Anthony S Bryk, *Hierarchical Linear Models: Applications and Data Analysis Methods*, vol. 1 (Sage, 2002). Judith D. Singer and John B. Willett, *Applied Longitudinal Data Analysis : Modeling Change and Event Occurrence* (Oxford; New York: Oxford University Press, 2003).

[16] In some cases variances can increase, leading to negative values so only those models with variance declines are reported.

[17] John Hattie, *What Doesn't Work in Education: The Politics of Distraction* (Londong: Pearson Education, Inc, 2015).

[18] R Balfanz and HN Chang, "Preventing Missed Opportunity: Taking Collective Action to Confront Chronic Absence," (Baltimore, MD: Attendance Works and Everyone Graduates Center, 2016).

Tables and Figures

Table 1. Predictors of chronic absenteeism

Child Attributes and Demographics	
Approaches to Learning	The average of seven items rated on a scale of 1 to 4 (never, sometimes, often or very often): keeps belongings organized; shows eagerness to learn new things; works independently; easily adapts to changes in routine; persists in completing tasks; pays attention well; and follows classroom rules.
Gender	Male or female
Health Status	Excellent; very good/good; fair/poor.
Home Language	Home language is English or non-English
Prior Chronic Absenteeism	Chronically absent or not during the prior academic year (11 or more days in the school year) (note: applies to first and second grade analyses only).
Race/Ethnicity	White, Black, Hispanic, Asian or Other racial/ethnic background
Parental Characteristics	
Employment	Employment status in four categories: ≥ 35 hours per week; < 35 hours per week; looking for work; and not in the labor force.
Parent-School Engagement	Attended a parent teacher association (PTA) meeting and/or a parent-teacher conference
Socioeconomic Status (SES)	A National Center for Educational Statistics (NCES)-constructed continuous index based on a composite of parents' education level, their occupational prestige and income.
Classroom Characteristics	
Teacher Experience & Quality	Years of experience; Whether the teacher qualifies as "Highly Qualified Teacher (HQT) based on state requirements.
Teacher-Student Relationship	Closeness and conflict scale based on the 15 item Student-Teacher Relationship scale (Pianta & Steinberg 2001).
School Characteristics	
Aggressive Behaviors	The extent to which student aggressive or disruptive behavior is a problem in the school: serious; moderate; minor/not a problem
Bullying	How frequent bullying is a problem in the school: daily/at least once a week; a least once a month; occasionally/never.
School Demographics	The percentage of non-White students and the percentage of students qualifying for free and reduced price lunch (FRPL).
Teacher Absenteeism	The extent to which teacher absenteeism is a problem in the

	school: serious; moderate; minor/not a problem
Theft at School	How frequent theft is a problem in the school: daily/at least once a week; a least once a month; occasionally/never.

Table 2. Sample descriptive statistics

	(1) Chronically Absent (n=840)		(2) Not Chronically Absent (n-5,970)		(3) Total (n=6,810)	
	Mean	SD	Mean	SD	Mean	SD
			Child Attributes and Demographics			
Chronically absent					0.12	(0.33)
Health status						
Excellent	0.49	(0.50)	0.63	(0.48)	0.61	(0.49)
Very good or good	0.45	(0.50)	0.35	(0.48)	0.37	(0.48)
Fair or poor	0.06	(0.24)	0.02	(0.12)	0.02	(0.14)
Home language is not English	0.16	(0.37)	0.14	(0.35)	0.15	(0.35)
Home language is English	0.84	(0.37)	0.86	(0.35)	0.85	(0.35)
Approaches to learning	2.99	(0.70)	3.16	(0.67)	3.14	(0.68)
Male	0.53	(0.50)	0.51	(0.50)	0.51	(0.50)
Race/ethnicity						
Asian	0.07	(0.25)	0.06	(0.24)	0.06	(0.24)
Black	0.13	(0.33)	0.10	(0.30)	0.11	(0.31)
Hispanic	0.24	(0.42)	0.20	(0.40)	0.21	(0.40)
Native American, Pacific Islander, or Multi-racial	0.09	(0.29)	0.06	(0.23)	0.06	(0.24)
White	0.48	(0.50)	0.58	(0.49)	0.56	(0.50)
			Parental Characteristics			
Socioeconomic status	-0.25	(0.79)	0.08	(0.81)	0.04	(0.81)
Parental employment status						
>= 35 hours/week	0.30	(0.46)	0.43	(0.50)	0.41	(0.49)
<35 hours/week	0.21	(0.40)	0.22	(0.42)	0.22	(0.41)
Looking for work	0.10	(0.30)	0.06	(0.24)	0.07	(0.25)
Not in the labor market	0.39	(0.49)	0.29	(0.45)	0.30	(0.46)
Attended a parent-teacher conference	0.89	(0.31)	0.92	(0.28)	0.91	(0.28)
Attended a PTA meeting	0.30	(0.46)	0.37	(0.48)	0.36	(0.48)
			Classroom (Teacher) Characteristics			
Years of experience	14.15	(10.05)	14.43	(9.68)	14.39	(9.72)

High Quality Teacher (HQT)	0.92	(0.27)	0.92	(0.26)	0.92	(0.26)
Closeness with teacher	4.31	(0.65)	4.41	(0.61)	4.40	(0.61)
Conflict with teacher	1.65	(0.82)	1.59	(0.76)	1.59	(0.77)
			School Characteristics			
Aggressive behaviors						
Serious	0.03	(0.16)	0.01	(0.11)	0.01	(0.12)
Moderate	0.11	(0.31)	0.08	(0.28)	0.09	(0.28)
Minor/Not a Problem	0.87	(0.34)	0.91	(0.29)	0.90	(0.30)
Bullying						
Daily/Once a Week	0.15	(0.35)	0.12	(0.33)	0.12	(0.33)
Once a Month	0.21	(0.41)	0.24	(0.43)	0.24	(0.43)
Occasionally/Never	0.64	(0.48)	0.64	(0.48)	0.64	(0.48)
Percent non-White	42.22	(32.64)	40.22	(32.47)	40.46	(32.50)
Percent free and reduced price lunch (FRPL)	46.39	(31.15)	39.92	(30.39)	40.72	(30.56)
Teacher absenteeism						
Serious	0.00	(0.03)	0.00	(0.02)	0.00	(0.02)
Moderate	0.04	(0.19)	0.05	(0.21)	0.05	(0.21)
Minor/Not a Problem	0.96	(0.20)	0.95	(0.21)	0.95	(0.21)
Theft						
Daily/Once a Week	0.00	(0.03)	0.00	(0.05)	0.00	(0.05)
Once a Month	0.04	(0.19)	0.03	(0.18)	0.03	(0.18)
Occasionally/Never	0.96	(0.19)	0.96	(0.19)	0.96	(0.19)

SD=standard deviation

Figure 1. Illustration of variability in the probability of chronic absenteeism. Upper panel (School A) represents no variability between children (all children have the same probability), while the lower panel (School B) represents a large amount of variability between children (each child has a different probability).

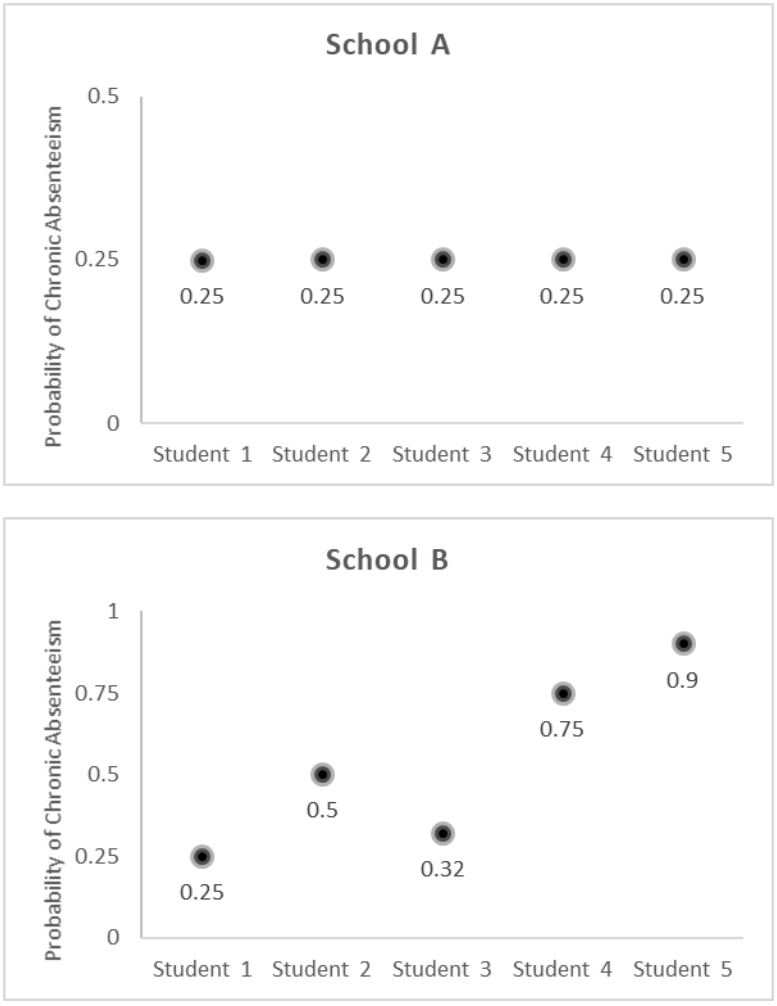


Figure 2.

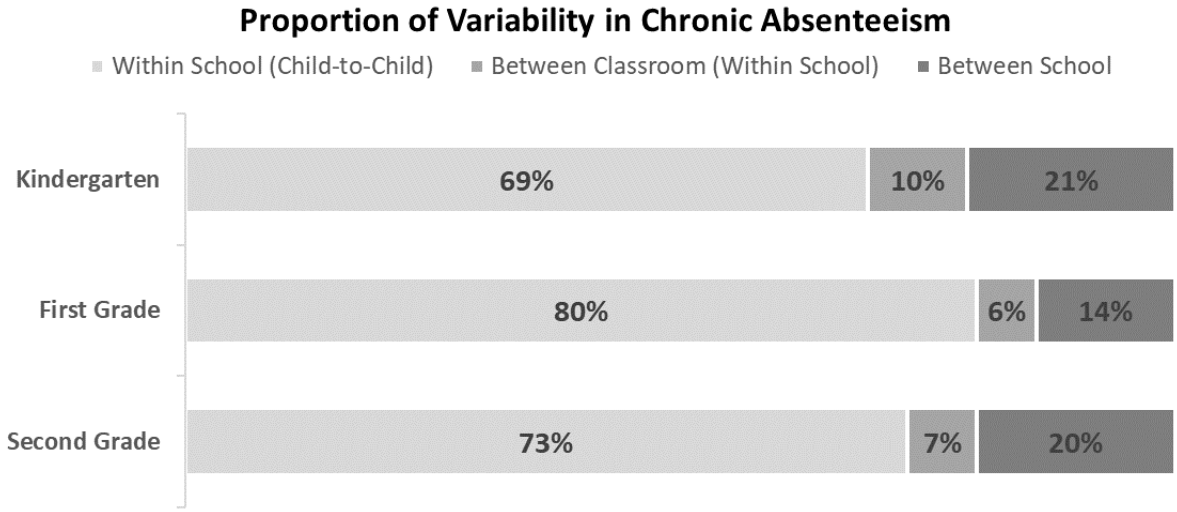

Proportion of Variability in Chronic Absenteeism
Within School (Child-to-Child)
Between Classroom (Within School)
Between School
Kindergarten
69%
10%
21%
First Grade
80%
6%
14%
Second Grade
73%
7%
20%

Figure 3.

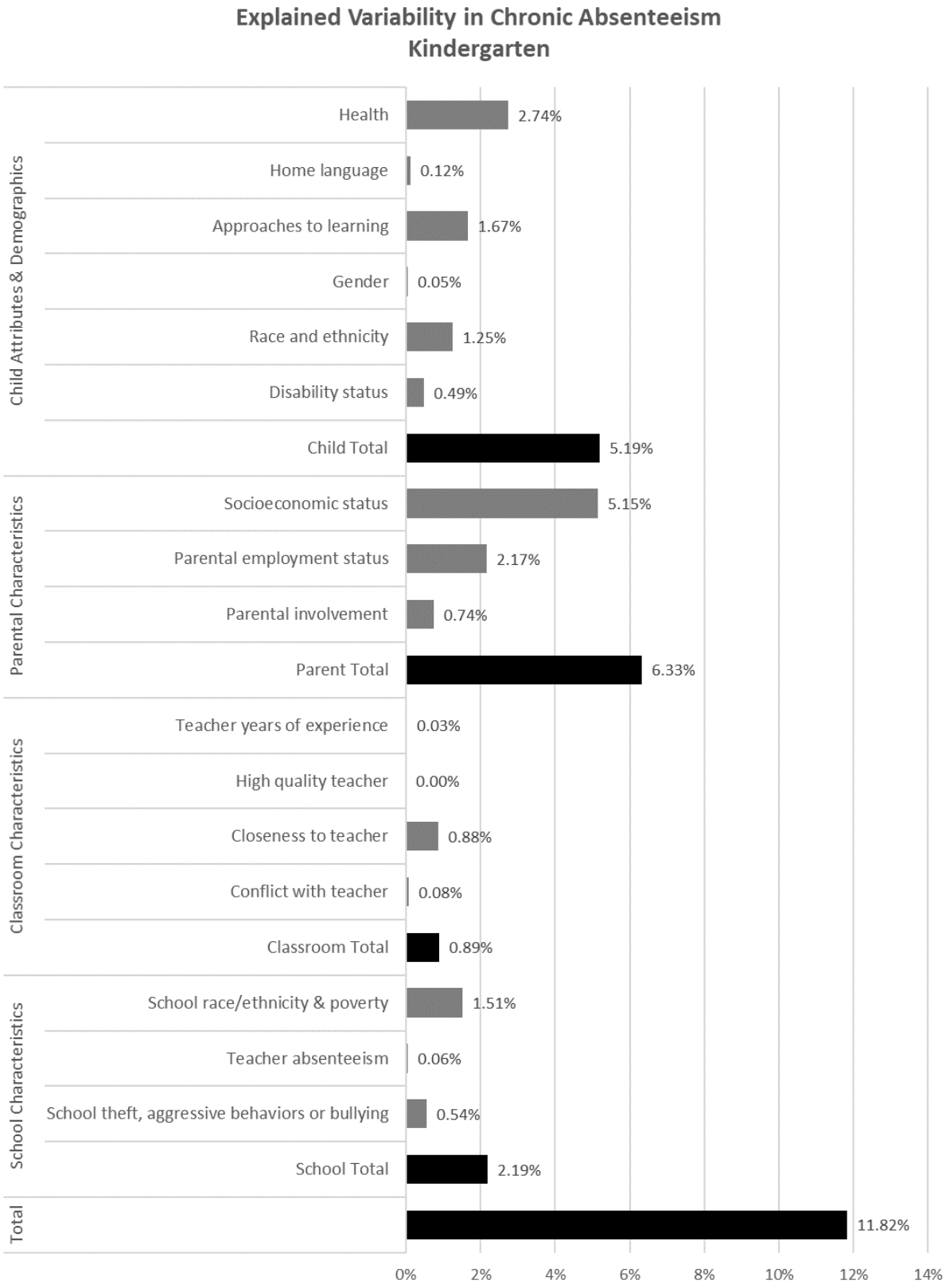

Explained Variability in Chronic Absenteeism
Kindergarten
Child Attributes & Demographics
Health
2.74%
Home language
0.12%
Approaches to learning
1.67%
Gender
0.05%
Race and ethnicity
1.25%
Disability status
0.49%
Child Total
5.19%
Parental Characteristics
Socioeconomic status
5.15%
Parental employment status
2.17%
Parental involvement
0.74%
Parent Total
6.33%
Classroom Characteristics
Teacher years of experience
0.03%
High quality teacher
0.00%
Closeness to teacher
0.88%
Conflict with teacher
0.08%
Classroom Total
0.89%
School Characteristics
School race/ethnicity & poverty
1.51%
Teacher absenteeism
0.06%
School theft, aggressive behaviors or bullying
0.54%
School Total
2.19%
Total
11.82%
0%
2%
4%
6%
8%
10%
12%
14%

Figure 4.

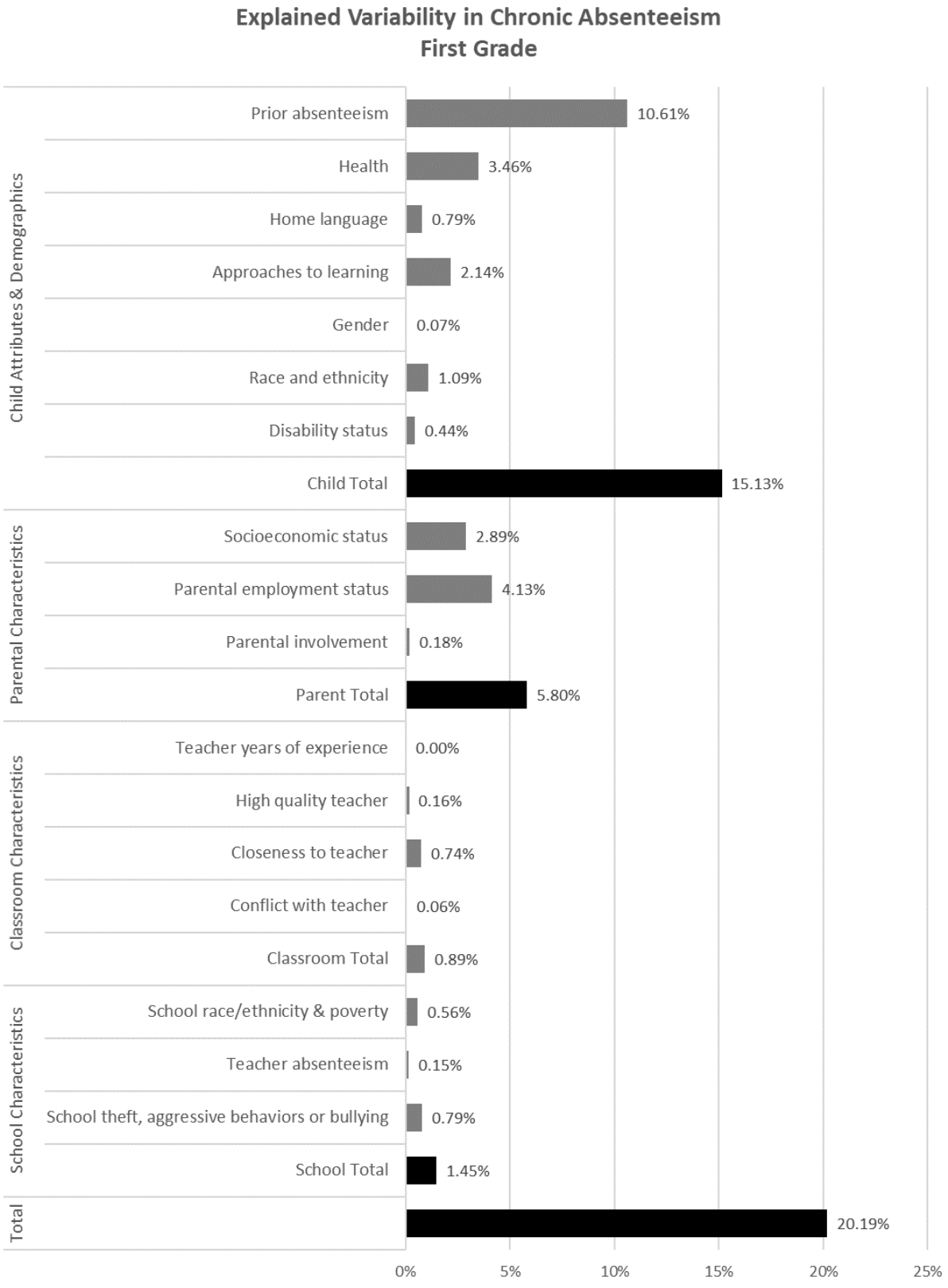

Explained Variability in Chronic Absenteeism
First Grade
Child Attributes & Demographics
Prior absenteeism
10.61%
Health
3.46%
Home language
0.79%
Approaches to learning
2.14%
Gender
0.07%
Race and ethnicity
1.09%
Disability status
0.44%
Child Total
15.13%
Parental Characteristics
Socioeconomic status
2.89%
Parental employment status
4.13%
Parental involvement
0.18%
Parent Total
5.80%
Classroom Characteristics
Teacher years of experience
0.00%
High quality teacher
0.16%
Closeness to teacher
0.74%
Conflict with teacher
0.06%
Classroom Total
0.89%
School Characteristics
School race/ethnicity & poverty
0.56%
Teacher absenteeism
0.15%
School theft, aggressive behaviors or bullying
0.79%
School Total
1.45%
Total
20.19%
0%
5%
10%
15%
20%
25%

Figure 5.

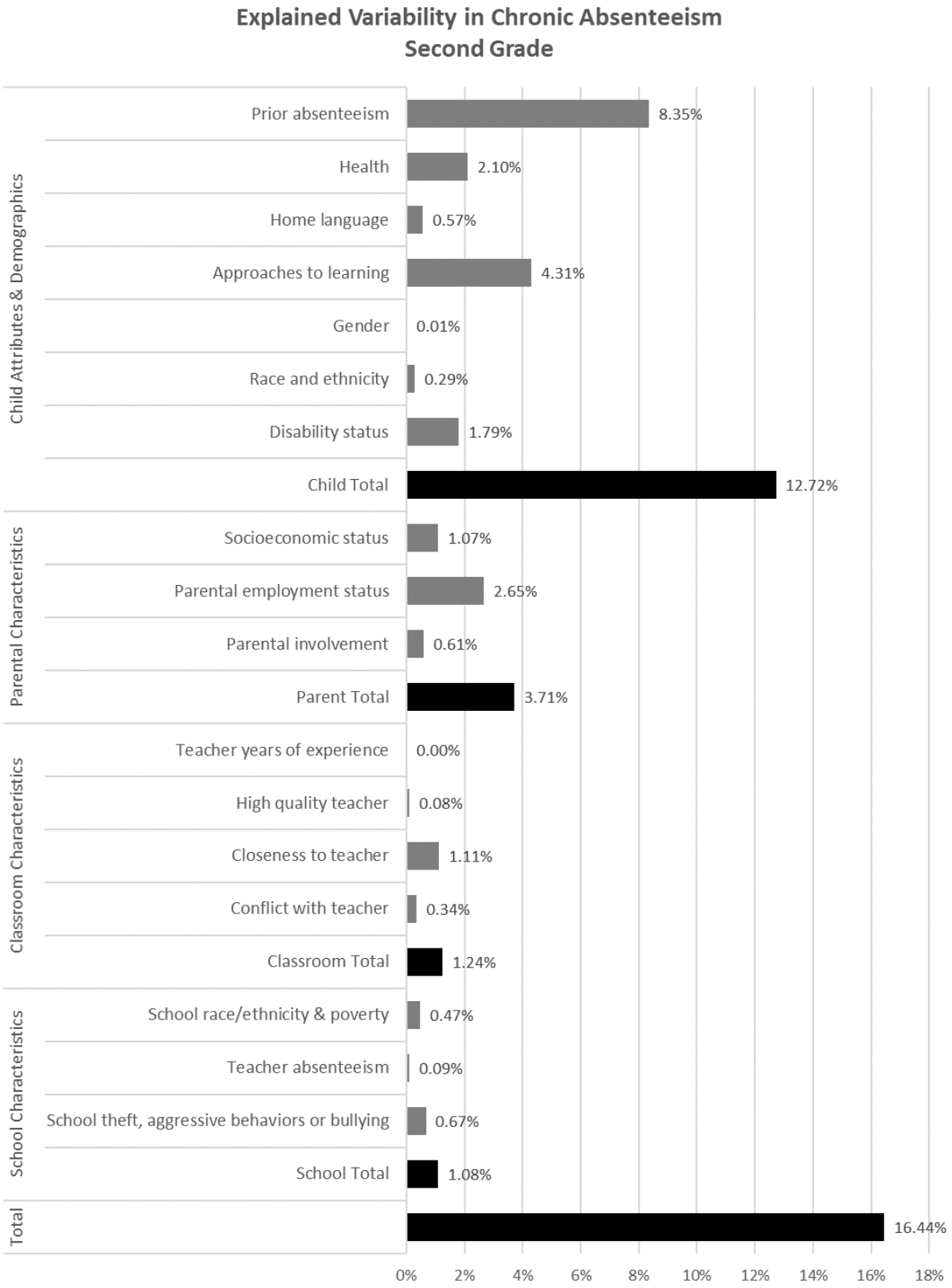
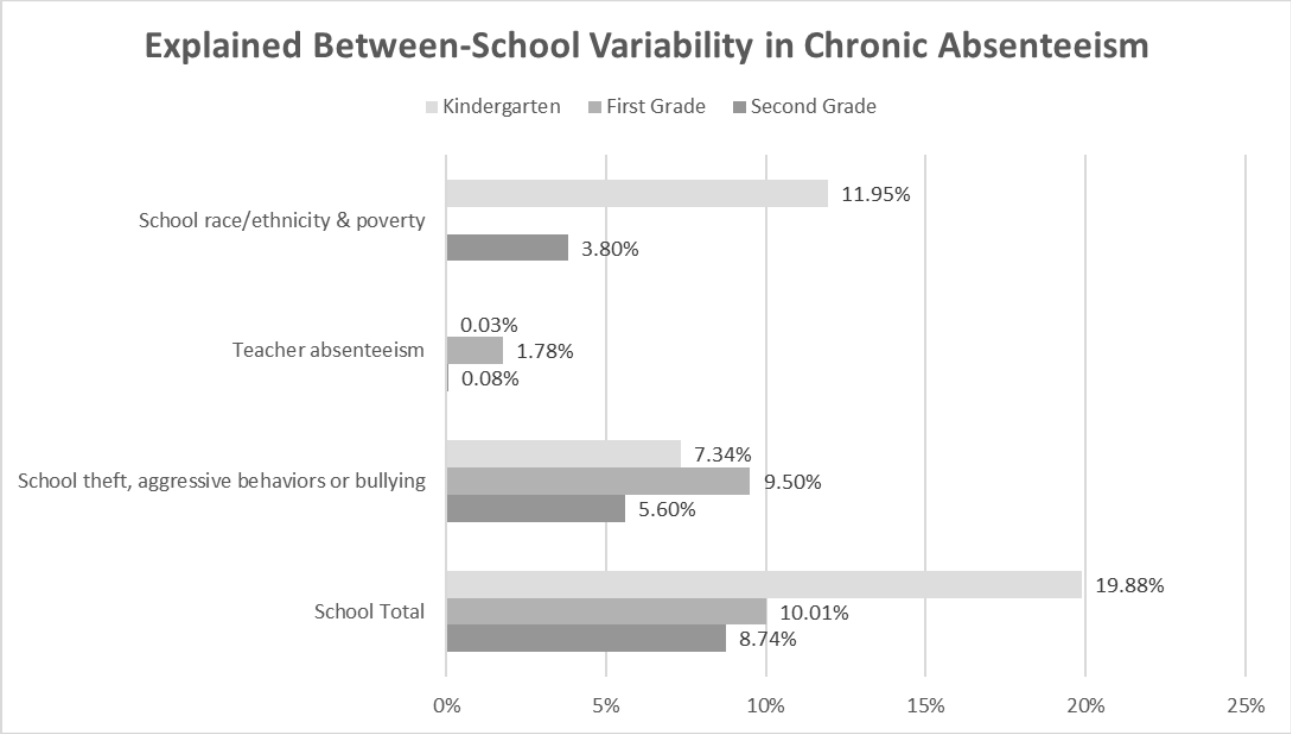

Explained Variability in Chronic Absenteeism
Second Grade
Child Attributes & Demographics
Prior absenteeism
8.35%
Health
2.10%
Home language
0.57%
Approaches to learning
4.31%
Gender
0.01%
Race and ethnicity
0.29%
Disability status
1.79%
Child Total
12.72%
Parental Characteristics
Socioeconomic status
1.07%
Parental employment status
2.65%
Parental involvement
0.61%
Parent Total
3.71%
Classroom Characteristics
Teacher years of experience
0.00%
High quality teacher
0.08%
Closeness to teacher
1.11%
Conflict with teacher
0.34%
Classroom Total
1.24%
School Characteristics
School race/ethnicity & poverty
0.47%
Teacher absenteeism
0.09%
School theft, aggressive behaviors or bullying
0.67%
School Total
1.08%
Total
16.44%
0%
2%
4%
6%
8%
10%
12%
14%
16%
18%

Figure 6.


Explained Between-School Variability in Chronic Absenteeism
Kindergarten
First Grade
Second Grade
School race/ethnicity & poverty
11.95%
3.80%
Teacher absenteeism
0.03%
1.78%
0.08%
School theft, aggressive behaviors or bullying
7.34%
9.50%
5.60%
School Total
19.88%
10.01%
8.74%
0%
5%
10%
15%
20%
25%