Teachers College Record
The Voice of Scholarship in Education

The Influence of Tardy Classmates on Students' Socio-Emotional Outcomes

by Michael A. Gottfried — 2014

Background/Context: Researchers, policymakers, and practitioners undoubtedly concur that missing school deteriorates student outcomes. And yet, in evaluating the deleterious effects of missing in-school time, empirical research has almost exclusively focused on absences, and the scant amount of empirical literature on tardiness has focused on academic achievement. Hence, this study contributes novel insight in two capacities: focusing on the effects of tardy classmates and focusing on socio-emotional outcomes.

Purpose: The purpose of this study is to determine the effects of peer-level tardiness on individual-level socio-emotional outcomes utilizing nationally representative, longitudinal data.

Population/Participants/Subjects: The data are sourced from the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K), which is a nationally representative sample of students, teachers, and schools. Information was first collected from kindergartners (as well as parents, teachers, and school administrators) from U.S. kindergarten programs in the 1998–1999 school year. This study utilizes data collected at spring of kindergarten, first grade, and third grade. Across all three waves of data, there were a total of N=21,765 student observations.

Research Design: This study combines secondary data analyses and quasi-experimental methods. There are five dependent socio-emotional variables utilized throughout this study, delineated into problem behaviors and social skills. Problem behaviors include two scales: (a) externalizing problem behaviors and (b) internalizing problem behaviors. Social skills include three scales: (a) level of self-control, (b) approaches to learning, and (c) interpersonal skills. This study begins with a baseline, linear regression model. To address issues pertaining to omitted variable bias, this study employs multilevel fixed effects modeling.

Findings: The coefficients on classroom tardies indicated statistically significant relationships between having a higher daily average number of classmate tardies and socio-emotional development. Students whose classmates are, on average, tardy more frequently have higher frequencies of problem behaviors and lower levels of social skills. The effects remain significant even after accounting for multiple omitted variable biases.

Conclusions/Recommendations: In addition to the previously well-established negative effects of missing school via absences, tardiness also diminishes student outcomes. Hence, the findings in this study—which brought to the surface new ways by which classmates' actions can influence other students' outcomes—would support the continuation of those school practices that successfully reduce multiple channels of missing school. Particularly high rates of peer tardies in addition to high rates of peer absences have both now been established in the research literature as detrimental to individual and classmate outcomes.

Policymakers and practitioners unequivocally agree that school tardiness (or *tardies* for short) has negative ramifications for student schooling success. Consequently, records of student tardies are well documented in schools, and policies have been set in place to remedy the actions of those students who are consistently late. These programs and policies directly aimed at reducing tardies have long been supported in the field as having the capacity to be successful (Busby, 2012; Hegner, 1987; Kerrins & Hayes, 1996). Moreover, even those programs not specifically aimed at remedying tardy behavior, such as school breakfasts or scheduling, have indirectly been successful at reducing tardies (McCoy, 1998; Meyers, Sampson, Weitzman, Rogers, & Kayne, 1989). Thus, there is certainly support in practice and policy to continue these programs that directly or indirectly lower tardies in schools. And yet, within the body of educational research, quantifying the precision by which tardies actually deteriorate student outcomes is highly under-researched. Further, within the scope of estimating the effects of missing school in particular, most studies have focused on the consequences of missing full days of school—i.e., absences (e.g., Gottfried, 2009).
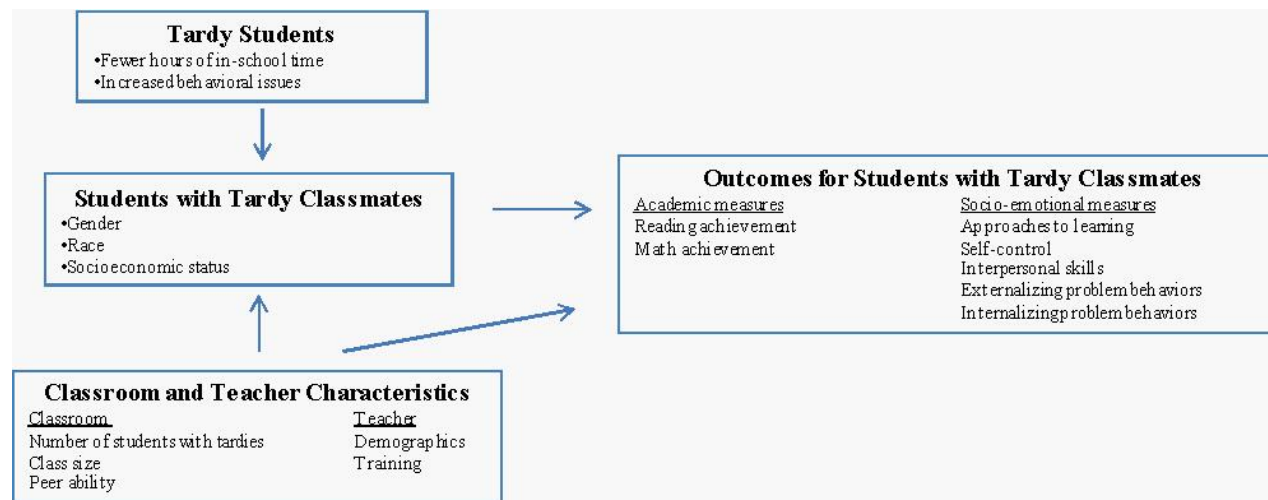
While absent students do miss school for entire days, tardy students nonetheless miss portions of in-school time. Hence, it is reasonable to infer that the individual-level educational and behavioral consequences correlated with frequent absence behavior may also be correlated with frequent tardy behavior. First, by missing in-school time, tardy students, similar to absent students, receive fewer hours of instruction compared to high-attending or on-time students. It has been well established that students who miss classroom instruction are more likely to have reduced levels of achievement (Chen & Stevenson, 1995; Connell, Spencer, & Aber, 1994; Finn, 1993). Hence, there is potentially increased risk of individual academic decline from missing school because of tardiness. Second, there are also individual-level behavioral ramifications associated

with missing school. Frequently absent students begin to feel a greater sense of alienation from their classmates, teachers, and schools and may thus develop negative social interactions and disengagement (Ekstrom, Goertz, Pollack, & Rock, 1986; Finn, 1989; Johnson, 2005; Newmann, 1981). The same may be true for students who are frequently tardy.

Just as individual-level ramifications arise from missing school, it is plausible that student tardiness can negatively influence the behavioral and socio-emotional outcomes of their classmates. Previous research on the peer effects of absent students provides the framework for hypothesizing about the drivers behind this influence that tardy students may exert on other students (e.g., Gottfried, 2011a); it is grounded in the individual-level academic and behavioral consequences resulting from missing portions of schooling, as described in the previous paragraph.

First, a peer effect may stem from the individual-level academic ramifications linked to tardy students. If tardy students receive less instruction by the fact that their own in-school learning time has decreased, then they may be performing at lower achievement levels and may, hence, require remedial instruction when they do arrive to school at irregular time points—an analogous mechanism exists for absent students (Monk & Ibrahim, 1984). If teachers respond to the academic disruption and higher educational needs of tardy students by reallocating regular classroom instructional time, then other classmates may be adversely affected: as the quality of the learning environment has diminished through these physical and instructional disruptions and as teachers must spend a subsequent disproportionate amount of time on remediation (Lazear, 2001) and in doing so may potentially become more distracted, less motivated, and more irritable (Henry & Rickman, 2007; Patterson, Reid, & Dishion, 1992), the classroom becomes less engaging for all other students because teachers spend less time fostering academic and developmental skills (Gottfried, 2012; Henry & Rickman, 2007; Reinke, Lewis-Palmer, & Merrell, 2008). Indeed, research has supported that disruptions and/or lower peer ability (as it relates to slowing of classroom instruction) does in fact induce disengagement issues and decrease school and developmental success for other students (Henry & Rickman, 2007; Lazear, 2001; West & Sloane, 1986). Hence, increasingly larger numbers of classmate tardies would suggest even greater classroom-level issues (i.e., greater slowing of teaching time and thinner spreading of classroom resources), thereby increasing both educational and developmental risks for other students (Kellem, Ling, Merisca, Brown, & Ialongo, 1998; Reinke & Herman, 2002). Figure 1 presents a graphical representation of this framework.

Figure 1. Outcomes for students with tardy classmates

Second, a peer effect may also stem from the individual-level behavioral ramifications linked to tardy students. Students who are absent from school develop greater attitudinal and behavioral issues, such as school disengagement, alienation, or disruption, and the same may be true about students who are tardy. Thus, just as absent students disrupt the classroom environment with negative behavioral interactions (Reid, 1983), tardy students may also exert an influence on their classmates through increased behavioral disruption or inattentiveness. Research on disruptive behavior in school indicates that students who are exposed to peers exhibiting disruptive behavior are more likely to experience a decline in their own school engagement and in attitudes regarding school (Juvonen, Graham, & Schuster, 2003) and begin to exhibit negative behaviors themselves (Dake, Price, & Telljohann, 2003; Kochenderfer & Ladd, 1996). Research has also shown that exposure to antisocial peers is related to increases in an individual's own antisocial behavior (Dishion, McCord, & Poulin, 1999; Dodge, Dishion, & Lansford, 2006; Haynie & Osgood, 2005; Warr, 2002). Thus, it is highly likely that being in a classroom with disruptive, disengaged, and antisocial classmates, as stemming from tardy behavior, increases an individual's own tendency for rule-breaking, negative

school attitudes, and antisocialism. Indeed, research suggests that developmental outcomes stemming from peer effects may differ by individual demographic characteristics and socioeconomic status (Kellem et al., 1998; Wicks-Nelson, 1984). Hence, they are tested in this present study.

Given these potential sources of classroom effects as stemmed from individual-level tardiness effects, this study estimates the effects of tardy students on their classmates' socio-emotional outcomes (i.e., problem behaviors and social skills). Though many studies have evaluated the negative ramifications of missing entire days of school (i.e., absences), the research is essentially nonexistent on disentangling the classroom effects of students who miss partial days of school. Given the aforementioned mechanisms to hypothesize that tardy students might contribute to the behavioral and social developmental decline of their classmates and given that schools continue to pay attention to patterns of tardiness year after year, it seems highly likely that quantifying the effects of student tardies would yield significant value for researchers, policymakers, and practitioners.

BACKGROUND

Research on the consequences of missing school has almost exclusively focused on the effects of school absences. Tardiness has received very little attention in the field, and the work that has been done has focused on the effect of tardies on measured academic achievement. Nonetheless, these prior studies are relevant to the execution of this present research study, as each has unequivocally concluded that missing school (either full days as absences or partial days as tardies) is negatively correlated with schooling success.

An early quantitative study set the foreground for evaluating the effect of tardies. Using a cross section of urban school district data from the 1970s, Summers and Wolfe (1977) implemented a student-level empirical model of achievement and found a significant association between individual "latenesses" and standardized testing performance. The authors defined latenesses as the annual number of tardies per student. Their empirical analyses suggested a negative prediction of latenesses on student achievement, hence providing early evidence that tardiness is a risk factor in schooling performance. Moreover, the results were pronounced for lower income students, hence providing evidence of the existence of differential results based on individual-level, socio-demographic characteristics. The authors did not evaluate the classroom peer effect of tardiness, and thus their work laid the foundation for further empirical research in this area.

Since then, however, empirical research has virtually ignored the effects of tardies in the realm of the effects of missing school (an exception is Gottfried, 2012, as described below). That said, however, the absence literature remains relevant to this study, as the field concludes that missing school days is detrimental to concurrent and future schooling outcomes (Dryfoos, 1990; Finn, 1993; Lehr, Hansen, Sinclair, & Christenson, 2004; Stouthamer-Loeber & Loeber, 1988). In addition to lower standardized testing achievement levels correlated with missing school (Gottfried, 2009), students with higher track records of absence behavior face additional educational and socioeconomic consequences, including: grade retention (Nield & Balfanz, 2006), high school dropout (Rumberger, 1995; Rumberger & Thomas, 2000), and future unemployment (Alexander, Entwisle, & Horsey, 1997; Broadhurst, Patron, & May-Chahal, 2005; Kane, 2006). Students who miss school more frequently also face higher risks of smoking tobacco, consuming alcohol, and using drugs (Halfors et al., 2002).

Although most research focuses on absences at the middle or high school levels, research also finds that missing school significantly affects young children (Gottfried, 2011b; Balfanz & Legters, 2004; Fine, 1994; Orfield & Kornhaber, 2001). Moreover, while there is a verifiable negative effect of missing school for elementary school students (Author, 2011b), the negative relationship between missing school and achievement also grows stronger as students progress into later grades of schooling (Easton & Englehard, 1982; Fine, 1991; Wasley, 2002). Thus, negative behaviors pertaining to missing school in one period of schooling have significant ramifications for outcomes in different, future periods of education; this is particularly evident for minority and high-poverty students (Orfield, Losen, Wald, & Swanson, 2004; Swanson, 2004).

In addition to focusing predominantly on absences, the empirical literature on the effects of missing school has also almost exclusively examined the individual-level effect —i.e., student-level absences on student-level achievement or student-level tardies on student-level achievement. The classroom contextual effects of missing school have generally been under-researched. Two recent studies are exceptions.

First, Gottfried (2011a) utilized student, classroom, and school-level observations from a longitudinal dataset of urban elementary youth and employed a quasi-experimental methodology to estimate the effect of absent classmates on achievement outcomes. The author found that having classmates with higher rates of absences negatively affected individual reading and math test performance. Hence, the study was the first to quantify the idea that students who miss school may exert a negative spillover effect onto their classmates. Second, Gottfried (2012) directly examined the achievement effects of having an increasingly higher average number of tardy peers. The author found that students whose classmates are tardy more frequently in a given academic year also have lower reading and math achievement scores in that same year. This study relied on administrative school district data to arrive at these conclusions. The findings have implications for the direct achievement consequences of having frequently tardy classmates. However, having relied on district data leaves open the opportunity to evaluate the socio-emotional effects of having tardy classmates with nationally representative data.

Without a doubt, the field has amassed significant research evidence concluding that missing school (predominantly in terms of absences) negatively relates to schooling success. However, little is known about the ways in which the classroom context of tardiness contributes to student success or failure, particularly outside the scope of academic achievement. Hence, this present study advances the field in three significant and meaningful ways.

First, whether missing school is defined as tardies or absences, little research has nonetheless been conducted on the relationship between classmates who miss school and student outcomes. While one prior research study has examined the relationship between having tardy classmates and standardized testing achievement, no previous study has evaluated the socio-emotional effect that tardy classmates may exert on other students. Socio-emotional outcomes, however, are important to examine: they have been shown to be correlates of academic achievement (Duckworth & Seligman, 2005), economic earnings (Heckman & Rubinstein, 2001), occupational status (Waddell, 2006), and health behaviors related to drinking, exercise, and smoking (Chiteji, 2010; Heckman, 2008). Thus, this study provides new insight in terms of classroom context and student outcomes, thereby contributing a more complete description as to how students who miss school are not only a detriment to themselves but also to their classmates.

Second, the dataset employed in this study is longitudinal, comprehensive, contains individual and classmate tardy information, and classroom identification information for each student in every wave of data collection. Hence, the analyses in this study can rely on multiple quasi-experimental methods upheld as valid in the quantitative educational research (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). In particular, this study employs fixed effects modeling to control for unobservable influences over time that may otherwise be confounding the estimates of having tardy classmates.

Finally, most studies on missing school have focused on the educational outcomes of middle or high school students: this study exclusively evaluates the effects of tardy classmates for elementary school students. Studying these classroom effects in elementary schools has two key advantages. The first is methodological. Unlike high school students, elementary students are generally assigned to a single classroom for the entire academic year. Therefore, studying elementary classrooms allows for a more clear-cut identification of classmates with whom other students interact. This effect becomes too confounded to estimate in empirical studies on middle or high school students as they shift classrooms throughout the school day.

The second advantage relates to policy. Quantifying the extent to which tardiness affects socio-emotional outcomes is significant, such that policies and practices can be designed to combat the negative effects of missing school based on a more complete description of achievement outcomes (i.e., prior studies) and socio-emotional outcomes (i.e., this study). It is crucial to quantify the factors of schooling and development risk such that research can structure policy and practice in the context of what supports and resources are required to hedge the negative effects arising from classroom composition. Doing so for young schoolchildren is especially pertinent, as it is possible to identify risk factors before these students enter into secondary education where the ramifications of missing school become increasingly harmful to lifelong academic, socio-emotional, health, and financial well-being.

This study makes these meaningful contributions through three key research questions.

Research Question 1. Are there effects of classmate tardies on the socio-emotional outcomes of members of the same classroom? Are these results generalizable across multiple outcome measures?

Prior research has not considered the issue as to how individual tardies may spill over onto the socio-emotional outcomes of other students in the classroom. Thus, this study investigates this new issue by assessing if a relationship exists between exposure to varying levels of classmate tardies and five socio-emotional scales. Given the widespread findings of a negative effect of missing school on individual-level outcomes, it is hypothesized in this study that there will be a negative spillover effect on the outcomes for other students in the same classroom.

Research Question 2. How do gender, race, and socioeconomic status moderate the effect of having tardy classmates?

Previous research indicated that individual demographic characteristics may play a role in the vulnerability of peer influences (Kellem et al., 1998; Reinke & Herman, 2002). Non-White youth, children from low-SES backgrounds, and males are more susceptible to peer influences than others (Fletcher, 2010; Leeper-Piquero, Gover, MacDonald, & Piquero, 2005; Mears, Ploeger, & Warr, 1998). Given past findings of differential effects by gender, race, and socioeconomic status, it is hypothesized in this study that there will be differential effects of grade retained classmates by demographic characteristic.

Research Question 3. Are the findings robust to multiple methodological approaches?

With the dataset employed in this study, it is possible to link students to classrooms, teachers, and schools as well as other covariates, such as demographic information and school data. Therefore, having these comprehensive, multilevel, and longitudinal data of elementary school students allows for the precise identification of classroom measures for every student over time. Hence, it is possible to fully utilize quasi-experimental variation in classroom data to address issues pertaining to omitted variable bias.

With the new information provided through answering these research questions, this study contributes to policy, practice, and scholarship surrounding the issue of the effects of missing school. As for policy: the new results pertaining to how tardy classmates influence peers' socio-emotional development support policymakers' continued efforts to promote prevention strategies targeting students, classrooms, and schools with high levels of tardiness. As for practice, this study's data-driven findings, based on multilevel information, alert schools that tardies at both student and classroom levels not only influence academic success but also socio-emotional development; this enables schools to rely more heavily on these research findings to encourage furthering on-site practices that reduce sources of risk stemming from tardies. Finally, as for educational scholarship, this study improves scientific knowledge by providing a more refined understanding of how the classroom setting, specifically repeated exposure to tardy classmates, may affect developmental outcomes of young students as they progress through the formative years of their education.

METHOD

DATASET

To evaluate the relationship between peer tardiness and individual-level socio-emotional outcomes, this study relies on a comprehensive, longitudinal dataset developed by the National Center for Education Statistics (NCES). The data are sourced from the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K), which is a nationally representative sample of students, teachers, and schools. The ECLS-K used a three-stage stratified sampling design, in which geographic region represented the first sampling unit, public and private schools represented the second sampling unit, and students stratified by race/ethnicity represented the third sampling unit. Hence, the children in ECLS-K are representative of a diversity of school types, socioeconomic levels, and racial/ethnic backgrounds across the United States.

Information was first collected from kindergartners (as well as parents, teachers, and school administrators) from approximately 1,000 kindergarten programs in both the fall and spring of the 1998–1999 school year. This is a panel study where the initial sample has currently been followed up through grade 8, with data follow-up collection on the full sample in the spring of grades 1, 3, 5, and 8. This study utilizes data collected at spring of kindergarten, first grade, and third grade. The exclusion of middle grades (i.e., grades 5 and 8) was necessary in this evaluation: it is in middle school where students begin alternating classrooms with each academic period, and, hence, it becomes difficult if not impossible to isolate a classroom peer effect as students experience multiple peer groupings throughout a single school day. On the other hand, because K–3 students are typically taught within self-contained classrooms throughout the school day and school year, identification of the classroom peer effect can be accomplished (Gottfried, 2011a).

Since the ECLS-K is a panel survey, a concern regarding the data was the extent of attrition in the sample as children progressed from kindergarten to subsequent grades. If attrition is not random, then estimates generated using the sample of non-attritors may be biased. A distinguishing feature of the ECLS-K, however, is that the study followed up all movers from a random 50% of base year schools, and a random 50% of the movers in each subsequent wave. Therefore, most of the children who were lost to follow up in subsequent grade were those who were randomly selected for no follow up.

Across all three waves of data, there were a total of N=21,765 student observations in this study in what is referred to as the "full sample." The full sample is composed of three survey waves, with data sourced from the spring of each respective academic year: the kindergarten sample has N=7,268, the first grade sample has N=7,585, and the third grade sample has N=6,912. The analyses in this study are limited to first-time kindergartners only and children who had no missing information on socio-emotional outcomes in all waves.

OUTCOME VARIABLES

Table 1 presents means and standard deviations for the socio-emotional outcomes employed in this study. Consistent with prior research utilizing ECLS-K to evaluate socio-emotional outcomes (e.g., Morgan, Frisco, Farkas, & Hibel, 2010), this study relies on a modified version of the *Social Skills Rating System* (SSRS; Gresham & Elliott, 1990) to measure a child's behavior or socio-emotional development. Correlational and factor analyses support these original measures' construct validity (Feng & Cartledge, 1996; Furlong & Karno, 1995). NCES modified the original scales and created its own *Teacher Social Rating Scale* (SRS). Meisels, Atkins-Burnett, and Nicholson (1996) provide detail on these modifications from SSRS to the ECLS-K SRS

Table 1: Descriptive Statistics, ECLS-K

	Full Sample		Kindergarten		Grade 1		Grade 3	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Outcomes								
Problem behaviors								
Externalizing behavior problems	1.65	0.62	1.64	0.63	1.64	0.63	1.68	0.59
Internalizing behavior problems	1.58	0.51	1.55	0.50	1.58	0.51	1.62	0.53
Social skills								
Level of self-control	3.21	0.61	3.22	0.62	3.20	0.61	3.22	0.61
Approaches to learning	3.10	0.68	3.16	0.66	3.07	0.69	3.08	0.67
Interpersonal skills	3.13	0.64	3.15	0.63	3.12	0.64	3.11	0.64
Key Variable								
Average daily classmate tardies	1.28	1.28	1.32	1.43	1.33	1.23	1.19	1.15
Student-level inputs								
Total tardy days during school year	3.36	7.36	3.44	7.84	3.62	7.42	3.00	6.74
Lagged math achievement score	30.93	12.89	20.30	7.36	28.77	8.59	44.48	8.80
Male	0.50	0.50	0.50	0.50	0.49	0.50	0.49	0.50
Black	0.11	0.32	0.12	0.33	0.11	0.32	0.10	0.30
Hispanic	0.14	0.34	0.13	0.34	0.14	0.35	0.14	0.35
Asian	0.04	0.20	0.04	0.21	0.04	0.20	0.04	0.20
Other	0.06	0.23	0.06	0.25	0.06	0.23	0.05	0.22
Student has disability	0.18	0.39	0.13	0.34	0.16	0.36	0.26	0.44
English is primary language	0.91	0.29	0.91	0.28	0.91	0.29	0.91	0.29
Family-level inputs								
At or below poverty threshold	0.16	0.36	0.16	0.36	0.15	0.36	0.15	0.36
Number of siblings	1.49	1.10	1.43	1.11	1.49	1.09	1.55	1.10
Number of adults in household	2.05	0.66	2.04	0.65	2.04	0.65	2.07	0.69
Mother's highest degree: high school	0.35	0.48	0.37	0.48	0.36	0.48	0.32	0.47
Classroom-level inputs								
Class size	20.94	4.63	20.81	5.24	20.82	4.29	21.20	4.27
Percent of classroom, female	0.49	0.09	0.49	0.10	0.50	0.09	0.50	0.09
Percent of classroom, gifted/talented	0.04	0.10	0.02	0.08	0.03	0.08	0.07	0.12
Teacher is white	0.91	0.29	0.93	0.26	0.91	0.28	0.89	0.31
Teacher years of experience	13.16	9.76	9.61	7.85	14.81	10.06	15.10	10.22
School-level inputs								
School is less than 149 students	0.05	0.22	0.06	0.24	0.04	0.21	0.05	0.22
School is less than 10 percent minority	0.38	0.48	0.37	0.48	0.37	0.48	0.40	0.49
Private school indicator	0.22	0.41	0.23	0.42	0.22	0.41	0.22	0.41
Urban	0.36	0.48	0.39	0.49	0.35	0.48	0.33	0.47
Rural	0.24	0.43	0.23	0.42	0.23	0.42	0.26	0.44
n	21,765		7,268		7,585		6,912	

Five teacher-rated SRS scales are utilized throughout this study, delineated into problem behaviors and social skills. Problem behaviors include two SRS scales: (a) externalizing problem behaviors and (b) internalizing problem behaviors. The externalizing problem behaviors scale measures the frequency with which a child argues, fights, gets angry, acts impulsively, and disturbs ongoing activities. The internalizing problem behaviors scale rates the presence of anxiety, loneliness, low self-esteem, and sadness.

Social skills include three SRS scales: (a) level of self-control, (b) approaches to learning, and (c) interpersonal skills. The self-control scale measures the frequency of the student's ability to control his or her temper, respect others' property, accept peer ideas, and handle peer pressure. The approaches to learning scale rate a child's frequency of organization, eagerness to learn new things, independent work ability, adaptability to change, persistence in completing tasks, and ability to pay attention (in third grade, ability to follow classroom rules was added into the scale). Finally, the interpersonal skills scale measures the frequency that a child has been getting along with people, forming and maintaining friendships, helping other children, showing sensitivity to the feelings of others, and expressing feelings, ideas, and opinions in positive ways.

Each construct is continuous, as it averages a series of questions for each scale rated on a scale of 1 (never) to 4 (very often). Note that a high score of self-control, approaches to learning, and interpersonal skills reflects a favorable outcome (i.e., social skills scales), whereas a high score on externalizing or internalizing scales reflects an unfavorable outcome (i.e., problem behavior scales). While these scales are teacher-rated and might potentially be subjective based on students in a classroom in any particular year, they nonetheless have high construct validity as assessed by test–retest reliability, internal consistency, inter-rater reliability, and correlations with more advanced behavioral constructs. In fact, these scales are considered to be the most comprehensive social skill assessment that can be widely administered in large surveys such as the ECLS-K (Demaray, Ruffalo, Carlson, Busse, & Olson, 1995).

INDEPENDENT VARIABLES

Table 1 also presents mean and standard deviation values for the independent variables utilized in this study. The key variable in this study is the effect of having a larger daily average number of tardy classmates. It is sourced from the spring teacher survey in each wave. Each teacher was asked to report the average daily number of student tardies in that school year: "How many children in your class have the following characteristics? . . . Are tardy, on an average day." The question was presented in the same format in kindergarten, first grade, and third grade teacher surveys. Because the teacher was asked for an average estimate over time, this does not threaten the validity of using this measure (whereas asking for a precise daily recount might).

This study also includes, as an independent predictor, the total number of individual-level tardies in an academic year to account for individual-level tardiness behavior. Tallies of tardies were sourced from official student records at school. However, given that individual-level tardies are available, it is necessary to modify the average number of daily tardies above, so as to not include the student's individual record in the average classmate tardy calculation. That is, to avoid confounding empirical issues, the classroom-level tardy variable for student i must not include student i's own measure of tardiness. This way, the effect of tardy peers does not contain a student's own tardy information, but instead, strictly refers to the daily tardy rates of the student's classmates. This is accomplished by subtracting average daily tardiness for student i (approximated by dividing total yearly tardies by number of days in the school year) from total daily classroom tardies reported by the teacher as described in the previous paragraph. As such, every student with tardies has a slightly different value for classroom peer effects, depending on his or her unique individual record.

A range of additional student-, classroom-, and school-level variables are also included as additional explanatory variables in the estimation. Student-level academic and demographic variables include one-wave lagged math achievement scaled score,[1] race, gender, disability status, an indicator for whether English is the primary language spoken at home, poverty status, household composition (measured by number of siblings and number of adults in the household), and mother's education.

Prior research has suggested that several classroom factors may serve as protective factors in socio-emotional outcomes and are hence included as control variables in this study. They include class size (see e.g., Dee & West, 2012), gender breakout of the classroom (see e.g., Hoxby, 2000), and percentage of the classroom that is classified as gifted or talented (see e.g., A. W. Gottfried, A. E. Gottfried, Bathurst, & Guerin, 1994). Teacher characteristics include teacher race and years of experience.

School-level variables include size of the school as measured by the enrollment, percentage that are minorities, public or private school, and indicators for urbanicity. Note that the "percent minority" variable is broken into five indicator variables (0–10%, 10–25%, 25–50%, 50–75%, and 75–100%). However, for the sake of clarity, only 0–10% is reported in the table, though all indicators are included in the analyses. As consistent with prior studies measuring peer effects using ECLS-K data (e.g., Fletcher, 2010), dummy variables were utilized to indicate missing student, classroom, or school information in the analyses to follow.

Table 2 presents partial correlation coefficients and their significance levels between the average daily number of classroom tardies and other independent variables in this analysis. Partial correlations were purposefully selected, as they test the association between two variables while holding constant the influence of additional variables. Importantly, the lower portion of the table suggests that, in the sample, there are low correlation values between classroom/teacher characteristics and average daily classroom tardies. Thus, classrooms with higher daily averages of tardy students do not appear to be systematically related to other observable characteristics of the classrooms or teacher characteristics.[2]

Table 2: Correlations Between Classroom Average Tardies and Other Independent Variables: Full Sample

Student-level inputs	
Total tardy days during school year	0.14 ***
Lagged math achievement score	-0.03 ***
Male	0.01 +
Black	0.02 *
Hispanic	0.01
Asian	-0.02 *
Other	0.01
Student has disability	0.00
English is primary language	0.00
Family-level inputs	
At or below poverty threshold	0.03 ***
Number of siblings	-0.01
Number of adults in household	0.00
Mother's highest degree: high school	0.02 *
Classroom-level inputs	
Class size	0.12 ***
Percent of classroom, female	0.00
Percent of classroom, gifted/talented	-0.02 *
Teacher is white	-0.01 *
Teacher years of experience	-0.06 ***
School-level inputs	
School is less than 149 students	0.01
School is less than 10 percent minority	-0.12 ***
Private school indicator	0.02 *
Urban	-0.05 ***
Rural	-0.09 ***

Table 2 also presents very small correlation values between additional covariates and the average daily number of classroom tardies. For instance, there is approximately zero correlation between gender and race and the average daily number of classroom tardies. Similarly sized low correlation coefficients of approximately zero are also presented for other student demographic characteristics, thereby suggesting that these individual-level factors are not systematically related to the average daily number of tardies in the student's classroom. Finally, there are low correlation values between school characteristics and average daily classroom tardies. Again, there is nothing systematic in the relationships between average daily classroom tardies and the set of independent variables that would appear to bias the data in any particular direction.

ANALYTIC APPROACH

Baseline Model

To examine the effects of being in classrooms with higher daily average classmate tardies, this study begins with a linear regression model, presented as follows:

$$NC_{ijkt} = \beta_0 + \beta_1 P_{-ijkt} + \beta_2 I_{ijkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \beta_5 S_{kt} + \varepsilon_{ijkt} \qquad (1)$$

where NC is a socio-emotional SRS outcome for student i in classroom j in school k in survey wave t as the dependent variable on the left side of the equation. Note that this model represents an analysis based on utilizing observations from the full sample. In subsequent regressions, the analysis is broken out by kindergarten, grade 1, and grade 3, thereby allowing the wave t indicator to be dropped from the analysis. However, going forth in this section, the wave indicator remains present in the descriptions of the models.

Empirically, the sets of independent variables described by the model are estimated as follows. The key independent variable, P is the average daily number of classmate tardies in classroom j in school k in wave t. At the student level, the sets of independent variables include I, a vector of a student's academic and demographic characteristics in wave t.

At the classroom level, the model assigns the following inputs: C is other classroom characteristics (e.g., class size) for classroom j in school k in wave t; and T is teacher effects (e.g., gender) in classroom j in school k in wave t. Finally, there are school-level variables in vector S, including school size.

The error term ε includes all unobserved determinants of the outcome. Empirically, this latter component is estimated with Huber/White/sandwich robust standard errors, adjusted for classroom clustering (i.e., children in the dataset who are in the same classroom). It is in this error term that the multilevel structure of the data is taken into account. Because students are nested in schools by classroom and hence share common but unobservable characteristics and experiences, clustering student data at the classroom level provides for a corrected error term given this non-independence of individual-level observations. As a result, all coefficient estimates are more robust, as they have been corrected for this multilevel nature of the data (Primo, Jacobsmeier, & Milyo, 2007).

Accounting for unobserved heterogeneity

An estimation issue that might possibly arise with the empirical specification as described thus far is that there may be unobserved school factors that are correlated with both the average daily number of tardies in a classroom as well as with individual socio-emotional outcomes. For example, some schools may, for unobserved reasons, attract a set of highly involved parents who ensure that their children arrive at school on time. Moreover, highly involved parents might also be making other investments that would boost their children's socio-emotional outcomes. If it were common for all students in a school to have parents such as these, then the effect of classmate tardiness would be confounded by a high level of parental involvement. This would bias the empirical estimates of average daily classmate tardies. As a second example, schools that have invested in a greater number of policies and practices for the socio-emotional development of their students might also be more likely to have strict tardy policies. In this case, one might underestimate the negative influence of tardy classmates. Indeed, these many underlying school-level factors are unobserved to the researcher, even with a wide range of control variables included in a baseline model.

As a result, a second specification in this study includes school-level fixed effects:

$$NC_{ijkt} = \beta_0 + \beta_1 P_{-ijkt} + \beta_2 I_{ijkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \delta_k + \varepsilon_{ijkt} \qquad (2)$$

where δ_k are school fixed effects for school k. Technically, the term δ_k is a set of binary variables that indicates if a student had attended a particular school (for each school variable in the dataset, 1 indicates yes, and 0 indicates no). This set of school indicator variables leaves out one school as the reference group (this process is analogous to

creating indicator variables for race, where one racial category is left out as the reference group).

School fixed effects δ_k control for the unobserved influences of schools by capturing systematic differences across each unique school. By holding constant those omitted school-specific factors, such as school educational investments, school climate, organizational practices, aggregate parental involvement, and tardiness policies, the principal source of variation used to identify the classmate effect occurs across classrooms within each school. In other words, by controlling for unobserved school-level factors and by implementing classroom-level clustering, school fixed effects allow for a focus on within-school and between-classroom differences. Consequently, note that school-level variables drop away in this model.

In addition to biases on the estimates that may arise from the influences of unobserved school factors, there may also be biases that result from within-school sorting (i.e., various student groupings across classrooms in a given grade). On the one hand, principals might be more likely to assign more resilient students—i.e., students who are least likely to experience negative socio-emotional effects of having a greater number of tardy classmates—into classrooms that have greater numbers of students who are more likely to be tardy. In this case, a negative effect of having tardy classmates would be biased downward. On the other hand, principals might have policies that place less resilient students with a greater number of tardy classmates as a way to sort students. In this case, the match of less resilient students with more tardy students would bias upward the negative spillover effects of tardy classmates. Given the potential biases in the data, a student fixed effects model is employed:

$$NC_{ijkt} = \beta_0 + \beta_1 P_{-ijkt} + \beta_2 I_{ijkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \delta_i + \varepsilon_{ijkt} \qquad (3)$$

where δ_i represent student fixed effects. Analogous to the school fixed effects model in this study, student fixed effects are binary indicators for each individual student (based on student ID code), in which one student category is omitted as the reference.

Employing a school fixed effects model underscores the importance of relying on a longitudinal dataset, such as ECLS-K. Essentially, equation (3) is conducting a within-student analysis, where it is possible to measure how changes to going in and out of rooms with varying levels of average daily tardy classmates.[3] Student fixed effects essentially control for all unobserved student confounders that remain constant over time (such as motivation or family environment), and what remains in the equation are solely time-varying characteristics. Accounting for within-student variation, this eliminates any bias caused by correlation between the regressors and the unobserved influences, such as within-school sorting. Note that there is variation among the number of classmate tardies across all three survey waves: the correlation between average daily classmate tardies in kindergarten and grade 1 is 0.24, and between grade 1 and 3 is 0.25. Hence, there is a fairly weak correlation between the average daily number of classmate tardies that a student experiences from one grade to the next in this dataset.

RESULTS

BASELINE RESULTS

Table 3 presents coefficient estimates and Huber/White/sandwich robust standard errors adjusted for classroom clustering for the five specifications examining the effect of having tardy classmates on the five ECLS-K SRS outcomes. These models are based on equation (1), as presented above. The sample employed to produce the results in this table is the full sample, which includes all student observations across all three grades/waves.

Table 3: Estimates of Spillover Effects of Tardy Classmates and Other Inputs on Non-Cognitive Classroom Skills: Full Sample and Baseline Model

	Problem Behaviors		Social Skills		
	Externalizing	Internalizing	Self Control	Approaches to Learning	Interpersonal Skills
Key variable					
Average daily classmate tardies	0.02 ***	0.01 ***	-0.02 **	-0.01 *	-0.01
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Effect size [a]	_0.03_	_0.04_	_-0.03_	_-0.02_	_-0.01_
Model controls					
Student-level inputs					
Total tardy days during school year	0.00 ***	0.00 ***	0.00 ***	-0.01 ***	0.00 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lagged math achievement score	-0.01 ***	-0.01 ***	0.01 ***	0.03 ***	0.01 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Male	0.25 ***	0.04 ***	-0.21 ***	-0.32 ***	-0.25 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Black	0.16 ***	-0.06 ***	-0.13 ***	-0.09 ***	-0.12 ***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Hispanic	-0.02	-0.04 **	0.01	0.01	0.00
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Asian	-0.11 ***	-0.08 ***	0.09 ***	0.11 ***	0.05 *
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Other	0.04 *	0.01	-0.04 *	0.00	-0.07 ***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Student has a disability	0.09 ***	0.11 ***	-0.09 ***	-0.14 ***	-0.08 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
English is primary language	0.09 ***	0.06 ***	-0.07 ***	-0.09 ***	-0.05 **
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)

(continued on next page)

Table 3: *continued*

	Problem Behaviors		Social Skills		
	Externalizing	Internalizing	Self Control	Approaches to Learning	Interpersonal Skills
Family-level inputs					
At or below poverty threshold	0.09 ***	0.09 ***	-0.08 ***	-0.09 ***	-0.10 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Number of siblings	-0.05 ***	-0.01 **	0.03 ***	0.02 ***	0.02 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of adults in household	-0.03 ***	-0.03 ***	0.03 ***	0.03 ***	0.03 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Mother's highest degree: high school	0.01	-0.03	0.04	0.02	0.02
	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Classroom-level inputs					
Class size	-0.01 ***	0.00	0.00 **	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Percent of classroom, female	0.04	-0.09 +	-0.02	-0.13 *	0.02
	(0.06)	(0.05)	(0.07)	(0.06)	(0.07)
Percent of classroom, gifted/talented	0.04	0.00	-0.01	-0.12 *	-0.05
	(0.05)	(0.04)	(0.06)	(0.06)	(0.06)
Teacher is white	0.00	0.03	0.05 *	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Teacher years of experience	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
School-level inputs					
School is less than 149 students	0.00	-0.03	0.01	0.07 +	0.02
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
School is less than 10 percent minority	-0.05 *	0.00	0.04	0.06 **	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Private school indicator	0.03 +	0.02	-0.03	-0.05 **	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Urban	-0.02	-0.03 *	0.01	0.00	0.03
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Rural	0.04 *	-0.01	-0.03 *	-0.04 *	-0.03
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
n	21,765	21,765	21,765	21,765	21,765
R^2	0.11	0.08	0.10	0.24	0.11

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Robust Huber-White standard errors adjusted for clustering within classrooms are in parentheses. All regressions include a constant.

Regressions also include additional control variables not presented in Table 1: grade level of the student, and indicator variables for mother's

highest completed degree, level of school enrollment, and level of school percent minority. These coefficients are available upon request.

The coefficients on average daily classmate tardies are statistically significant for four out of the five socio-emotional scales. Recall that higher numbers mean greater problem behaviors for the first two scales, whereas higher numbers imply greater social skills for the latter three scales. Hence, students who have a greater number of tardy peers on a daily basis also tend to have greater externalizing and internalizing behavioral issues and tend to have lower frequencies of self-control and approaches to learning. Indeed, the table indicates that the point estimate increase or decrease is approximately similar in value across all socio-emotional scales, thereby showing a consistency in the analysis.

The measure of effect sizes in this study, as supported by many education empiricists in nonexperimental studies, is the standardized beta coefficient (e.g., Gottfried, 2009, 2011a, 2011b, 2012; Caldas, 1993; Hoxby, 2000; McEwan, 2003). The relationship between average daily classmate tardies and socio-emotional outcomes corresponds to an effect size of approximately -0.02σ or -0.04σ across all statistically significant outcomes. The magnitude of these effect sizes are in-line and consistent with previous

nonexperimental research on classroom peer effects in general (e.g., Ammermueller & Pischke, 2006; Hoxby, 2000), research on classmate behavior (Fletcher, 2010), research on classmates who miss school (e.g., Gottfried, 2011a), and research on classmate tardiness (Gottfried, 2012). What this effect size does indeed show, then, is that an increase by one standard deviation in the average daily number of classroom tardies is associated with a statistically significant negative decline in behavioral development—one that remains significant above and beyond individual tardiness and other student, classroom, and school attributes.

Briefly examining the control variables in Table 3 provides the following results. As expected, compared to females, males tend to exhibit higher externalizing and internalizing behavioral problems and lower levels of self-control, approaches to learning, and interpersonal skills. At the student level, the results across all five socio-emotional outcomes are also delineated by race, disability status, and English language status. This provides even further justification to examine the results by student characteristic, as presented at a later point in this Results section. There is less consistency across the results for the covariates pertaining to classroom or school.

SCHOOL FIXED EFFECTS

Table 4 presents the results from employing school fixed effects models on both full and separated grade samples. Each cell represents the coefficient on the average daily classroom tardies based on the grade level indicated in the column heading. With the utilization of school fixed effects, the independent school variables have been dropped from the model as depicted in equation (2).

Although R^2 values are not presented for the sake of clarity, the inclusion of school fixed effects improves the explained portion of the variance of the socio-emotional outcomes evaluated in this study. As an example, R^2 for the third grade sample/interpersonal relations regression was 0.11. In Table 5, the analogous regression has an R^2 value of 0.37. Additional R^2 values are available upon request.

Table 4: Estimates of Spillover Effects of Tardy Classmates and Other Inputs on Non-Cognitive Classroom Skills: All Waves

	Full Sample		Kindergarten		Grade 1		Grade 3	
	Baseline (Estimates from Table 3)	School Fixed Effects	Baseline	School Fixed Effects	Baseline	School Fixed Effects	Baseline	School Fixed Effects
Dependent variable								
Problem behaviors								
Externalizing behavior problems	0.02 ***	0.02 ***	0.02 +	0.02 **	0.01	0.02 *	0.02 ***	0.04 ***
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Internalizing behavior problems	0.01 ***	0.02 ***	0.02 **	0.02 *	0.01 *	0.03 ***	0.01	0.02 *
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Social skills								
Level of self control	-0.02 **	-0.02 ***	-0.02 *	-0.01 *	-0.01	-0.02 *	-0.02 *	-0.03 *
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Approaches to learning	-0.01 *	-0.02 ***	-0.01	-0.01	0.00	-0.02 *	-0.01 *	-0.03 **
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Interpersonal skills	-0.01	-0.01 *	-0.01	0.00	0.00	-0.01	-0.02 +	-0.02 +
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
n	21,765	21,765	7,268	7,268	7,585	7,585	6,912	6,912

Note: *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10.

Robust Huber-White standard errors adjusted for clustering within classrooms are in parentheses. All regressions include a constant.

Regressions also include additional control variables not presented in Table 1: grade level of the student (full, grade 1, and grade 3 samples), missing variable dummies, and indicator variables for mother's highest completed degree, level of school enrollment, and level of school percent minority. These coefficients are available upon request.

Looking first at the results for the full sample in the two leftmost columns, the estimates suggest a consistency in interpretation between both baseline and school fixed effects analyses: A greater classroom daily average of tardy students implies more problem behaviors and weaker social skills for those other students in that same classroom. However, there are differences that underscore the value of relying on school fixed effects. For instance, when examining more carefully the magnitudes and statistical significance of the results for the full sample between baseline and school fixed effects models, there appears to have been an underestimation of the effect of average daily classmate tardies on the socio-emotional scales. For example, the results for the approaches to learning scale has not only doubled in size but has also increased in statistical significance. Hence, the importance of relying on school fixed effects is clear: school fixed effects restrict variation to be within school and between classroom in order to exclude omitted school-level biases. These biases appeared to have weakened the baseline estimates, and hence, this represents an important step in the analysis, thereby further supporting the fundamental premise in this study—that having greater levels of average daily classmate tardies diminishes the socio-emotional outcomes for other students in that classroom.

The differences between baseline and school fixed effects approaches become exacerbated when looking at the results broken out by grade—kindergarten, grade 1, and grade 3 (i.e., the next three sets of analyses in Table 4)—and hence, the importance of relying on this latter, more stringent approach becomes evident. Overall, the school fixed effects models for each grade suggest that having a higher average daily number of classmate tardies is related to higher problem behaviors and lower social skills. These effects would have been drastically underestimated (both in terms of size and statistical significance) if relying solely on a baseline model. This is presented consistently across all school fixed effects models in the table for externalizing and internalizing problem behaviors, level of self-control, and approaches to learning.

In more detail, the results have the greatest number of statistically significant effects in grades 1 and 3, though, that being said, the results for the kindergarten sample are nonetheless in-line with the results presented for the full sample and other grades. Indeed, the sizes of these effects become larger in magnitude in older elementary grades —i.e., larger effects of tardy classmates in grade 3 can be seen on the externalizing problem behaviors, level of self-control, and approaches to learning scales. It is also in grade 3 where a significant relationship arises between having a greater average number of classmate tardies and lower interpersonal skills.

STUDENT FIXED EFFECTS

The final step in the empirical analysis involves controlling for time-varying individual-level factors as well as within-school sorting. This is accomplished by implementing student fixed effects models, as equation (3) describes. Because student fixed effects conduct a within-student analysis, it is necessary to rely on more than one data point per individual-level observation. As such, it is not possible to evaluate the effect separately by each individual grade level (i.e., wave). Instead, Table 5 presents results from relying on the full sample of observations. The first column is the full sample, which includes observations across all three grades.

Table 5: Estimates of Spillover Effects of Tardy Classmates and Other Inputs on Non-Cognitive Classroom Skills: Student Fixed Effects on Full Sample

	Full Sample	Male	Female	White	Black	Hispanic	Asian	Poverty	Non-Poverty
Dependent variable									
Problem behaviors									
Externalizing behavior problems	0.02 ***	0.02 **	0.02 ***	0.03 ***	0.00	0.01	-0.01	0.01	0.02 ***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.00)
Internalizing behavior problems	0.01 **	0.01	0.02 **	0.02 ***	-0.03 **	0.01	0.00	0.00	0.02 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.00)
Social skills									
Level of self control	-0.02 ***	-0.01 *	-0.02 ***	-0.02 ***	-0.01	-0.02 *	0.00	-0.03 *	-0.02 ***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Approaches to learning	-0.02 ***	-0.01 *	-0.02 ***	-0.02 ***	-0.02 +	-0.02 +	0.00	-0.03 *	-0.01 **
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Interpersonal skills	-0.01 *	-0.01	-0.01 *	-0.01	0.00	-0.02 *	0.02	-0.02	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
	21,765	10,789	10,976	14,129	2,452	2,998	935	3,382	18,383

Note: *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10.

Robust standard errors are in parentheses.

Only time varying control variables remain in the regression.

Each cell of Table 5 represents the coefficient on the average daily classroom tardies from a model based on the sample indicated in the column heading. The outcome is indicated on the leftmost part of the table. As before, R^2 values are not presented for the sake of clarity. However, when examining the full model, the values of R^2 for models with interpersonal skills as an outcome jump from 0.09 in the baseline model to 0.20 in the school fixed effects model to 0.69 in the student fixed effects model. Hence, increasingly more stringent models greatly improve the explained portion of the variance of the outcomes evaluated in this study. This is representative of all outcomes across all samples, and additional R^2 values are available upon request.

Overall, the first column of Table 5 suggests that the point estimates and statistical significance levels for these student fixed effects models (i.e., conducting a within-student analysis) are comparable to prior fixed effects models in the analysis—thereby providing additional support for prior findings in this study. This also provides evidence that any underlying within-school sorting factors or omitted individual-level variables were not drastically biasing the capacity of the school fixed effects models to accurately estimate the relationship between average daily classmate tardiness and the five outcomes.

Hence, the results throughout Table 5 put forth an interpretation consistent with the school fixed effects models—that a significant relationship exists between the average daily number of tardy classmates and socio-emotional outcomes, one that points toward causality as supported by using multiple fixed effects approaches in educational research (Schneider et al., 2007). Though some coefficients are very slightly different compared to the school fixed effects results in Table 4, the effect sizes are equivalent to those in Table 4, and hence the conclusion of the analyses continues to uphold that having a higher number of average daily classmate tardies in elementary school has negative implications that are generalizable to multiple metrics and multiple methods. That is, in this study, moving into classrooms with a larger average daily number of tardy classmates undeniably poses a greater risk in terms of socio-emotional outcomes for students.

RESULTS BY STUDENT CHARACTERISTIC

Table 5 also separately examines the results by student characteristic. The purpose is to determine if different subsets of students are differentially affected by having classmates with higher average daily tardies. Each cell is the coefficient on the average daily classroom tardies from a model based on the sample indicated in the column heading.

Table 5 suggests that the results for the demographic characteristics of the students in the room differ based on socio-emotional scale; hence, the distinction between demographic groups and between all five scales is a crucial one. First, the effects of having a higher daily average number of classmate tardies differ by gender and race. The effect of having a higher daily average of classmate tardies permeates a greater number of outcomes for girls than for boys. While both genders experience negative effects in externalizing behavioral problems, self-control, and approaches to learning, only girls appear to have greater internalizing problems and lower interpersonal skills with a higher daily average of classmate tardies.

As for race/ethnicity, the effects of having more tardy classmates tend to be more pronounced for White and Black students compared to Hispanic and Asian students. Of all race/ethnicity groups, only White students have greater externalizing behavior problems as the average daily number of tardy classmates increases. On the other hand, of all of the race/ethnicity groups, only Hispanic students have lower frequencies of interpersonal skills as the average daily number of classmate tardies increases. Indeed, Black students have the largest increase in internalizing behavior problems as a result of having a higher classroom daily average of tardy classmates.

Finally, the effects of having a higher daily average number of classmate tardies differ by socioeconomic status. The effect of having a higher daily average of classmate tardies permeates a greater number of outcomes for nonpoverty students than for poverty students. While both groups experience negative effects of self-control and approaches to learning, only nonpoverty students appear to have greater externalizing or internalizing problems resulting from a higher daily average of classmate tardies.

DISCUSSION

This study has contributed unique insight into the interplay between school tardiness, classroom contexts, and socio-emotional development. Though it is widely assumed that school tardiness is negatively related to student success, prior to this study, little research had quantified the precision by which tardies actually permeate student outcomes. This study, however, has filled this gap by documenting that negative consequences of tardies do in fact exist across multiple measures. The relationship between classmate tardies and five socio-emotional outcomes was evaluated with a nationally representative and comprehensive dataset of elementary school children. In this way, the results derived from employing these data can generalize to the needs of all elementary school children and can be differentiated by subgroup characteristics. Moreover, conducting this research for elementary school classrooms not only has its methodological advantages (i.e., children are contained in a single classroom through the day and year), but also policy implications as to how the classroom contexts of missing school influence early socio-emotional development.

There was a robustness in the methods employed in this study, as demonstrated across three approaches. The first approach relied on a baseline assessment, employing a linear regression model where each of five socio-emotional outcomes was modeled based on strictly observable individual, classroom, and school characteristics, which

included individual-level tardies as well to control for individual-level behavior pertaining to missing school. Importantly, the coefficients on classroom tardies indicated statistically significant relationships between having a higher daily average number of classmate tardies and socio-emotional development. These initial results hence provided formative evidence that higher average daily classmate tardies increases externalizing and internalizing behavioral problems and decreases self-control and approaches to learning.

To account for unobservable school-level factors that may be influencing both classmate tardies as well as socio-emotional development, a second empirical approach was built directly upon the baseline model of assessment and incorporated school fixed effects to examine within-school, between-classroom variation. Empirical models with fixed effects are supported in quantitative educational research on large-scale datasets as appropriate tools for studying classroom effects (e.g., Gottfried, 2011a; Fletcher, 2010; Hanushek, Kain, Markman, & Rivkin, 2003; Schneider et al., 2007) and specifically the effects of having classmates who miss school (Gottfried, 2011a, 2012). With the inclusion of school fixed effects, the magnitudes of the effects increased as did statistical significance. Thus, while the interpretation remains similar between methods, this research shows that not accounting for the unobserved school environment greatly biases the estimates. This underscores the importance of relying on increasingly complex models to estimate classmate effects.

A final approach employed individual (student) fixed effects (i.e., a within-student analysis). Estimates of classmate tardies were identified from within-student variation in student experiences in different classrooms over time. As explained, doing so enabled this evaluation to account for unobserved school sorting and omitted variable bias. What remained in the analyses were time-varying average classroom tardies (in addition to all time-varying control variables). Using individual fixed effects, the analyses have pointed toward evidence of causality (Schneider et al., 2007): controlling for a wide range of observable characteristics and unobserved individual-level influences, the estimates were consistent to the school fixed effects results conducted in this study.

Unequivocally, the findings in this study indicate a negative classmate effect: students whose classmates are, on average, tardy more frequently have lower individual socio-emotional outcomes. It thus appears that individual tardy behavior can diminish the outcomes for other students in the classroom. Hence, the findings in this study provide support for the two mechanisms described in the introduction to this article. First, if the classroom academic environment can be classified as a public good as Lazear (2001) has suggested, then any disruption and deviance from regular instruction caused by one student can be interpreted as a negative externality, or congestion, onto his or her peers. With tardy students entering the classroom at atypical points in the day, potentially missing a large number of cumulative instructional hours and causing academic disruptions, teachers must divert their attention away from regular fostering of the academic and developmental skills of all children and instead toward remediation. Increased academic disruption and remediation leads to an increased misallocation of teaching time and classroom resources, hence diminishing the quality of the learning environment and causing other students to become disengaged from the classroom. This materialized in this study as a decline in the "approaches to learning" scale with an increase in the average daily number of classmate tardies.

Second, as tardiness may lead to greater individual-level behavioral issues in the same way that absences do (Bealing, 1990; Harte, 1995; Reid, 1983; Southworth, 1992), a negative effect surfaced for the additional measures of socio-emotional scales evaluated in this study. In finding a consistently negative effect on externalizing and internalizing problem behaviors and the self-control social scale, this study corroborates prior research, which supports the contention that classrooms with disruptive, disengaged, and antisocial classmates increase an individual's own tendency for rule-breaking, negative school attitudes, and antisocialism (Dake et al., 2003; Dishion et al., 1999; Dodge et al., 2006; Haynie & Osgood, 2005; Juvonen et al., 2003; Kochenderfer & Ladd, 1996; Warr, 2002).

In addition to supporting the proposed mechanisms, there are also data-driven policy implications. First, this study contributes new insight by establishing the extent to which individual school tardies negatively spill over onto the outcomes of other students in the same classroom. Thus, the analyses here have demonstrated that in addition to the previously well-established negative effects of missing school via absences (e.g., Gottfried, 2011a), tardiness also diminishes student attainment. Hence, the findings in this study—which brought to surface new ways by which classmates' actions can influence other students' outcomes—would support the continuation of those school practices that successfully reduce multiple channels of missing school. Particularly high rates of peer tardies in addition to high rates of peer absences have both now been established in the research literature as detrimental to individual and classmate outcomes.

Second, the data and analyses in this study were longitudinal and multilevel; both characteristics illuminate how schools can acquire and rely on multiple sources of information to make decisions. School performance is often evaluated on the basis of school-wide measures, such as an average rate of attendance or tardies. School-wide measures are important, as they provide insight into aggregate school performance over time. However, the classroom-level findings in this study demonstrate that relying on school-level measures alone would have been incomplete. For instance, a measure of average school tardies only indicates the status of one school as compared to another. Without documenting tardies at more refined levels, however, relying only on school-level information would not permit researchers, policymakers, and practitioners to acquire the requisite details to determine the effects of tardiness on student outcomes. However, by documenting patterns of classroom-level tardies in conjunction with school aggregate measures, each school can reflect on its own status every year and determine if and how the effects of tardiness are distributed across its classrooms rather than simply assessing an aggregate measure.

A related third implication underscores the importance of relying on student-level data in conjunction with classroom-level data in order to generate findings and develop policy. A final step in this study differentiated outcomes by individual student characteristics: gender, race/ethnicity, and socioeconomic status. This exercise proved to be significant: there was a differential effect of classroom tardies particularly based on gender and race. Hence, researchers and practitioners can rely on these differences in understanding the extent to which missing school may affect the outcomes of specific groups of students and their classmates.

Fourth, in conjunction with previous work that established a link between classroom tardies and multiple measures of academic achievement (Gottfried, 2012), the findings of this study were significant across multiple socio-emotional outcomes. Hence, the effect that classroom tardies have on individual outcomes is not domain specific, but instead is now supported as inhibiting educational, behavioral, emotional, and developmental success. The findings of this study, hence, provide new information about the potential widespread negative effects of tardies; this might alert school personnel of the even further reaching ramifications of students' missing school, thereby supporting continued efforts in reducing tardiness.

Finally, focusing on elementary school students has proven to be critical. This analysis has not only documented that classroom tardies are detrimental to socio-emotional development in any single academic year, but that the effect is persistent across multiple years of early education (and grows stronger in older elementary grades, as shown in Table 4). With new findings of how classmate tardies influence the socio-development of young children, schools can utilize this information as support for ensuring that successful practices against school tardies (and its consequences) are in-place early in schooling, rather than delaying and only taking action when students are in middle or high school where the detrimental effects of missing school have already become more severe.

CONCLUSION

Unequivocally, this study supports that a pervasive, negative effect of classmate tardies is exerted on the socio-emotional outcomes of elementary school children. In addition to bringing forward new evidence in an under-researched area, this study has demonstrated that the negative ramifications of school tardiness are not restricted to the individual tardy student per se; rather, tardiness can infiltrate the schooling outcomes for additional members of the same classroom.

Grounded on the data and findings of this study, future research in the area of school tardies would yield additional insight into the consequences of missing school. First, the data in this study provided measures on the average daily number of classroom tardies over the course of an entire school year. However, in the dataset, there is no information on when in the year these tardies occurred. Hence, relying on administrative school or district data may allow for future research to evaluate patterns of tardies —i.e., if tardies are more frequent at different points of the week, different weeks of the month, or different months of the year—and how these patterns might impact classmates' outcomes.

Second, this research has examined socio-emotional outcomes, thereby contributing unique insight to a field predominantly focused on achievement. Future research might examine the effects of classroom tardies on school-related health outcomes, such as increased attention deficit disorders, which may arise from an increased level of disruption and frequent remediation in the classroom. Research on peer tardies in this dimension would allow for an analysis to parse out if having classmates who are more frequently tardy leads to a decline in school-related health.

Third, while fixed effects modeling controls for alternative explanations, which hence allow these models to point toward causality (Schneider et al., 2007), these alternative explanations can be incorporated into a model that examines moderating effects. As an example, student, parent, classroom, or school-level factors may be assessed in conjunction with the main effect of classmate tardies to determine how these factors reduce or exacerbate the outcomes presented in this study. This would enable future research to expand the analysis to the evaluation of both main effects as well as contextual influences.

Finally, further research might incorporate an analysis of students in older grades. While it is a challenge to identify a peer effect in middle and high schools because students frequently shift classrooms period-by-period, there is nonetheless work to be accomplished with these students. For instance, evaluating which grade levels or specific class subjects experience frequent tardies would yield new results and insight. With the latter, it would be possible to evaluate the effect of tardies based on each unique school subject. Furthermore, by examining elementary, middle, and high school observations in conjunction with one another, it may be possible to evaluate the extent to which classmate tardies continue to affect student outcomes over time. Doing so will continue to improve schooling success, thereby boosting a young student's probability of greater academic, social, and economic outcomes later in life.

Notes

1. There are two survey waves conducted in kindergarten: fall and spring. Hence, one wave lagged math achievement; outcomes for the analysis of kindergarten are sourced from the fall survey.
2. To address, in more detail, the allocation of students to classrooms, two ancillary models were tested in which the average number of classmate tardies was regressed on all

other covariates in the main specification. In all models, there is a lack of statistical significance on class size and mean classroom ability, thereby suggesting that a nonsystematic relationship exists between the average classmate tardies and observable classroom characteristics.

3. Although it is possible to conduct this analysis with a binary indicator of being in a room with a late student versus not, doing so would diminish the richness in variation that exists by having the peer effect of tardy students in terms of continuous averages.

References

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, *70*, 87–107.

Ammermueller, A., & Pischke, J. (2006). Peer effects in European primary schools: Evidence from PIRLS (NBER working paper 12180). Retrieved from http://www.nber.org/papers/w12180

Balfanz, R., & Legters, N. (2004). *Locating the dropout crisis*. Baltimore, MD: Center for Research on the Education of Students Placed at Risk, Center for Social Organization of Schools, Johns Hopkins University.

Bealing, V. (1990). Pupil perception of absenteeism in the secondary school. *Maladjustment and Therapeutic Education*, *8*, 19–34.

Broadhurst, K., Patron, K., & May-Chahal, C. (2005). Children missing from school systems: Exploring divergent patterns of disengagement in the narrative accounts of parents, careers, children, and young people. *British Journal of Sociology of Education*, *26*, 105–119.

Busby, S. (2012, March 12). Tardy policy unpopular, but school officials call it effective. *Smyrna-Vinings Patch*. Retrieved from http://smyrna.patch.com/groups/schools/p/reaction-to-tardy-policy-results-in-parent-student-meeting

Caldas, S. J. (1993). Reexamination of input and process factor effects in public school achievement. *The Journal of Educational Research*, *86*, 206–214.

Chen, C., & Stevenson, H. W. (1995). Motivation and mathematics achievement: A comparative study of Asian-American, Caucasian, and East Asian high school students. *Child Development*, *66*, 1215–1234.

Chiteji, N. (2010). Time-preference, non-cognitive skills and well-being across the life course: Do non-cognitive skills encourage healthy behavior? *American Economic Review*, *100*(2), 200–204.

Connell, J. P., Spencer, M. B., & Aber, J. L. (1994). Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. *Child Development*, *65*, 493–506.

Dake, J. A., Price J. H., & Telljohann, S. K. (2003). The nature and extent of bullying at school. *Journal of School Health, 73*, 173–180.

Dee, T. S., & West, M. R. (2012). The non-cognitive returns to class size. *Educational Evaluation and Policy Analysis*, *33*, 23–46.

Demaray, M. K., Ruffalo, S. L., Carlson, J., Busse, R. T., & Olson, A. E. (1995). Social skills assessment: A comparative evaluation of six published rating scales. *School Psychology Review*, *24*, 648–671.

Dishion, T. J., McCord, J., & Poulin, F. (1999). When interventions harm. *American Psychologist, 54*, 755–765.

Dodge, K. A., Dishion, T. J., & Lansford, J. E. (Eds.). (2006). *Deviant peer influences in programs for youth: Problems and solutions*. New York, NY: Guilford.

Dreyfoos, J. (1990). *Adolescents at risk: Prevalence and prevention*. New York, NY: Oxford.

Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science, 16*(12), 939–944.

Easton, J. Q., & Englehard Jr., G. (1982). A longitudinal record of elementary school absence and its relationship to reading achievement. *Journal of Educational Research*, *75*, 269–274.

Ekstrom, R. B., Goertz, M. E., Pollak, J. M., & Rock, D. A. (1986). Who drops out of high school and why? Findings from a national study. *Teachers College Record*, *87*, 356–373.

Feng, H., & Cartledge, G. (1996). Social skill assessment of inner city Asian, African, and European American students. *School Psychology Review*, *25*, 228–239.

Fine, M. (1991). *Framing dropouts: Notes on the politics of an urban public high school*. Albany, NY: State University of New York Press.

Fine, M. (1994). Chartering urban school reform. In M. Fine (Ed.), *Chartering urban school reform*. New York, NY: Teachers College Press.

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research*, *59*, 117–142.

Finn, J. D. (1993). *School engagement and students at risk*. Washington, DC: National Center for Education Statistics.

Fletcher, J. (2010). Spillover effects of inclusion of classmates with emotional problems on test scores in early elementary school. *Journal of Policy Analysis and Management*, *29*(1), 69–83.

Furlong, M. J., & Karno, M. (1995). Review of the social skills rating system. In J. C. Conoley & J. C. Impara (Eds.), *Twelfth mental measurements yearbook* (pp. 697–969). Lincon, NE: Buros Institute of Mental Measurement.

Gottfried, M. A. (2009) Excused versus unexcused: How student absences in elementary school affect academic achievement. *Educational Evaluation and Policy Analysis*, *31*, 392-419.

Gottfried, M. A. (2011a). The detrimental effects of missing school: Evidence from urban siblings. *American Journal of Education, 117*, 147-182.

Gottfried, M. A. (2011b). Absent peers in elementary years: The negative classroom effects of unexcused absences on standardized testing outcomes. *Teachers College Record*, *113*(8), 1597-1632.

Gottfried, M. A. (2012). The achievement effects of tardy classmates: Evidence in urban elementary schools. *School Effectiveness and School Improvement*.

Gottfried, A. W., Gottfried, A. E., Bathurst, K., & Guerin, D. (1994). *Gifted IQ: Early developmental aspects.* New York, NY: Plenum Publishing.

Gresham, P. M., & Elliot, S. N. (1990). *Social Skills Rating System*. Circle Pines, NM: American Guidance Service.

Halfors, D., Vevea, J. L., Iritani,B., Cho, H., Khatapoush, S., & Saxe, L. (2002). Truancy, grade point average, and sexual activity: A meta-analysis of risk indicators for youth substance use. *Journal of Social Health*, *72*, 205–211.

Hanushek, E. A., Kain, J. F., Markman, J. M., & Rivkin, S. G. (2003). Does peer ability affect student achievement? *Journal of Applied Econometrics*, *18*, 527–544.

Harte, A. J. (1995). *Improving school attendance: Responsibility and challenge*. Canadian Education Association, Toronto.

Haynie, D. L., & Osgood, W. D. (2005). Reconsidering peers and delinquency: How do peers matter? *Social Forces*, *84*, 1109–1130.

Heckman, J. J. (2008). Schools, skills, and synapses. *Economic Inquiry, Western Economic Association International*, *46*(3), 289-324.

Heckman, J. J., & Rubinstein, Y. (2001). The importance of noncognitive skills: Lessons from the GED testing program. *American Economic Review, 91*(2), 145-149.

Hegner, M. (1987). Absentee prevention: A model for intervention. *NASSP Bulletin*, *71*, 125–126.

Henry, G. T., & Rickman, D. K. (2007). Do peers influence children's skill development in preschool? *Economics of Education Review*, *26*, 100-112.

Hoxby, C. (2000). The effects of class size on student achievement: New evidence from population variation. *Quarterly Journal of Economics, 115*, 1239-1285.

Johnson, G. M. (2005). Student alienation, academic achievement, and WebCT use. *Educational Technology and Society*, *8*, 179-189.

Juvonen, J., Graham, S., & Schuster, M. A. (2003). Bullying among young adolescents: The strong, the weak, and the troubled. *Pediatrics, 112*, 1231-1237.

Kane, J. (2006). School exclusions and masculine, working-class identities. *Gender and Education*, *18*, 673-685.

Kellem, S. G., Ling, X., Merisca, R., Brown, C. H., & Ialongo, N. (1998). The effect of the level of aggression in the first grade classroom on the course and malleability of aggressive behavior into middle school. *Development and Psychopathology, 10*, 165-185.

Kerrins, J. A., & Hayes, D. (1996). Working with students and parents to solve the problem of tardiness. *Middle School Journal*, *27*, 46-51.

Kochenderfer, B. J., & Ladd, G. W. (1996). Peer victimization: Manifestations and relations to school adjustment in kindergarten. *Journal of School Psychology, 34*, 267-283.

Lazear, E. (2001). Educational production. *The Quarterly Journal of Economics*, *116*, 777-803.

Leeper-Piquero, N., Gover, A. R., MacDonald, J. M., & Piquero, A. (2005). The influence of delinquent peers on delinquency: Does gender matter? *Youth Society, 36,* 251-275.

Lehr, C. A., Hansen, A., Sinclair, M. F., & Christenson, S. L. (2003). Moving beyond dropout prevention to school completion: An integrative review of data based interventions. *School Psychology Review*, *32*, 342-364.

McCoy, M. H. S. (1998). Block scheduling: Does it make a difference? A high school case study. Paper presented at the annual meeting of the Southwest Educational Research Association, Houston, TX.

McEwan, P. (2003). Peer effects on student achievement: Evidence from Chile. *Economics of Education Review*, *60*, 131-141.

Mears, D. P., Ploeger, M., & Warr, M. (1998). Explaining the gender gap in delinquency: Peer influence and moral evaluations of behavior. *Journal of Research in Crime and Delinquency*, *35*, 251-266.

Meisels, S. J., Atkins-Burnett, S., & Nicholson, J. (1996). *Assessment of social competence, adaptive behaviors, and approaches to learning with young children.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Meyers, A. F., Sampson, A. E., Weitzman, M., Rogers, B. L., & Kayne, H. (1989). School breakfast program and school performance. *American Journal of Diseases of Children*, *143*, 1234-1239.

Monk, D. H., & Ibrahim, M. A. (1984). Patterns of absence and pupil achievement. *American Educational Research Journal, 21,* 295-310.

Morgan, P. L., Frisco, M. L., Farkas, G., & Hibel, J. (2010). A propensity score matching analysis of the effects of special education services. *Journal of Special Education*, *43*, 236-254.

Nield, R. C., & Balfanz, R. (2006). An extreme degree of difficulty: The educational demographics of urban neighborhood schools. *Journal of Education for Students Placed at Risk*, *11*, 123-141.

Newmann, F. (1981). Reducing student alienation in high schools: Implications of theory. *Harvard Educational Review*, *51*, 546-564.

Orfield, G., & Kornhaber, M. L. (2001). *Raisings standards or raising barriers? Inequality and high-stakes testing in public education.* New York, NY: Century Foundation Press.

Orfield, G., Losen, D., Wald, J., & Swanson, C. B. (2004). *How minority youth are being left behind by the graduation rate crisis.* Washington, DC: The Urban Institute.

Patterson, G. R., Reid, J., & Dishion, T. (1992). *A social learning approach: Vol. IV. Antisocial boys.* Eugene, OR: Castalia.

Primo, D. M., Jacobsmeier, M. L., & Milyo, J. (2007). Estimating the impact of state policies and institutions with mixed-level data. *State Politics and Policy Quarterly*, *7*, 446-459.

Reid, K. (1983). Institutional factors and persistent school absenteeism. *Educational Management Administration & Leadership*, *11*, 17-27.

Reinke, W., & Herman, K. (2002). Creating school environments that deter antisocial behaviors in youth. *Psychology in the Schools*, *39,* 549-559.

Reinke, W. M., Lewis-Palmer, T., & Merrell, K. (2008). The classroom check-up: A classwide teacher consultation model for increasing praise and discouraging disruptive behavior. *School Psychology Review*, *37*, 315-332.

Rumberger, R. W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Education Research Journal*, *32*, 583-625.

Rumberger, R. W., & Thomas, S. L. (2000). The distribution of dropout and turnover rates among urban and suburban high schools. *Sociology of Education*, *73*, 39-67.

Schneider, B., Carnoy, M., Kilpatrick, J., Schmidt, W. H., & Shavelson, R. J. (2007). *Estimating causal effects using experimental and observational designs*. Washington, DC: American Educational Research Association.

Southworth, P. (1992). Psychological and social characteristics associated with persistent absence among secondary aged school children with special reference to different categories of persistent absence. *Personality and Individual Differences*, *13*, 367-376.

Stouthamer-Loeber, M., & Loeber, R. (1988). The use of prediction data in understanding delinquency. *Behavioral Sciences and the Law*, *6*, 333-354.

Summers, B., & Wolfe, A. (1977). Do schools make a difference? *American Economic Review*, *67*, 639-652.

Swanson, C. B. (2004). *Who graduates? Who doesn't? A statistical portrait of public high school graduation, class of 2001*. Washington, DC: The Urban Institute.

Waddell, G. R. (2006). Labor-market consequences of poor attitude and low self-esteem in youth. *Economic Inquiry, 44*(1), 69-97.

Warr, M. (2002). *Companions in crime: The social aspects of criminal conduct*. New York, NY: Cambridge University Press.

Wasley, P. A. (2002). Small classes, small schools: The time is now. *Educational Leadership*, *59*, 6-10.

West, R. P., & Sloane, H. N. (1986). Teacher presentation rate and point delivery rate: Effects on classroom disruption, performance accuracy, and response rate. *Behavior Modification*, *10*, 267-286.

Wicks-Nelson, R., & Israel, A. (1984). *Behavior disorders in childhood*. Englewood Cliffs, NJ: Prentice-Hall.