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# THE POSITIVE PEER EFFECTS OF CLASSROOM DIVERSITY

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*Exploring the Relationship between English Language Learner Classmates and Socioemotional Skills in Early Elementary School*

## ABSTRACT

Recent federal, state, and district policies that have mainstreamed English language learner (ELL) students into general, English-only elementary school classrooms have raised questions among educational stakeholders about the widespread effects of these policies. Most research has focused on the outcomes of ELL students; almost nothing is known about the effects of these mainstreaming practices on non-ELL classmates, and no empirical research has evaluated their effects on socioemotional outcomes. The purpose of this study is to fill these research gaps by using quasi-experimental methods on a large-scale data set of kindergarten and first-grade students to examine the effects that mainstreamed ELL students have on 5 socioemotional scales for their classmates. The findings indicate a positive effect: kindergartners and first graders with a greater number of ELL classmates have lower problem behaviors and higher social skills. These findings are differentiated by individual characteristics and classroom contextual factors. Implications for policy and practice are addressed.

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**T**HOUGH the issue of developing schooling practices geared toward educating English language learner (ELL) students is long-standing in U.S. education, in recent decades it has once again moved into the spotlight within educational policy-making. Part of the reason for its resurgence is the increasing number of immigrant families (and hence school-aged students) whose

primary language is not English. Indeed, the growth in the number of ELL students has surpassed the growth in the number of non-ELL students (Fry, 2008). According to the National Center for English Language Acquisition (NCELA, 2010), the number of ELL students has increased more than 53% between 1997 and 2007. To put this into perspective, the overall school population has only grown by 8.5% over that same time period.

Moreover, while ELL students have traditionally been located geographically in only a few states (e.g., California), the trend in U.S. immigration is no longer so localized. Rather, due to changes in immigration patterns, states in the South and Midwest have experienced the largest increases in the number of ELL students in recent decades, with 100% growth or more (NCELA, 2010). Consequently, the issue of educating ELL students is now widespread throughout the United States and no longer remains a regionalized policy issue, as ELL students are found in almost 50% of all districts and schools across the country (Zehler et al., 2003).

Given these changes to the country's population of ELL students, state and federal educational agencies over the past decade have directly addressed practices pertaining to educating ELL students. As one critical turning point in recent years, many state policies, including Proposition 227 in California and Question 2 in Massachusetts, as well as federal policies, including No Child Left Behind, have mandated or induced districts and schools to educate ELL students with their non-ELL peers to the maximum extent possible in English-only classrooms.

This has resulted in mainstreaming practices in which ELL students are placed in the same general education classrooms as non-ELL students. Consequently, a majority of ELL students in the United States now receive instruction in classroom settings where teaching is conducted entirely in English (Espinosa, 2008; Zehler et al., 2003). Given that the proportion of ELL students continues to grow, as is the proportion of ELL students receiving 100% of their instruction in English from within the general education classroom, an increasing number of students, both with and without ELL needs, may thereby be affected by mainstreaming schooling practices.

This practice of mainstreaming ELL students into English-only general education classrooms has raised questions among policy-makers, practitioners, and parents about the effects that such policies have not only on ELL students *per se* but also on their classmates (i.e., through peer effects). Many educational stakeholders question whether general education classrooms can adequately provide services to ELL students (Curtin, 2005; Reeves, 2006). For example, general education teachers are often underprepared to educate ELL students (Reeves, 2006), and schools themselves may not have the resources to adequately address their needs (De Cohen, Deterding, & Clewell, 2005; Wiley & Wright, 2004).

That said, however, many educational stakeholders are also concerned that the mainstreaming of ELL students in English-only general education classrooms may also affect their non-ELL classmates (Cho, 2012). For instance, the mainstreaming of students with unique needs into general education classrooms often strains classroom resources, as teachers find it increasingly difficult to interact positively with and balance the needs of such a large range of students (Hayworth, 2009; Reeves, 2006). As such, there may be a reduction in outcomes for other students in that classroom (Hayworth, 2009). The ultimate direction of the classroom peer effect of mainstreaming ELL classmates into English-only classrooms remains inconclusive, however, because little empirical research has been conducted in this area. Concep-

tually, it is hypothesized that ELL students could positively or negatively affect the outcomes of non-ELL classmates through both direct and indirect mechanisms.

First, there are potential positive effects. For instance, mainstreaming policies can directly improve the interpersonal skills of non-ELL classmates by giving them opportunities to interact with diverse students and increasing their understanding of individual differences (Williams & Downing, 1998). Given that ELL students are often themselves from different countries, there may also be classroom opportunities to improve other classmates' approaches to learning by exploring new and foreign ideas and by experiencing different cultures and backgrounds (Cho, 2012). Or, having classmates with unique needs may impart lessons of patience, thereby improving another student's self-regulation and control. These policies can also indirectly improve the outcomes of non-ELL classmates, notably through changes in resource allocations. For instance, additional supports and services are often provided to classrooms containing students with unique needs (Lipsky & Gartner, 1995), so general education classrooms that include ELL students might potentially gain teaching resources that they otherwise would not have received (Hanushek, Kain, & Rivkin, 2002). These additional supports and resources thus free up a teacher's time for greater classroom monitoring and also enable him or her to have a greater level of interaction with all students. This is critical, as greater portions of teacher-to-student interactions have been shown in the research to be critical in nurturing and promoting positive social interactions in the classroom and in reducing problem behaviors (Kontos & Wilcox-Herzog, 1997; Newcomb, Bukowski, & Pattee, 1993; Parker & Asher, 1987).

On the other hand, mainstreaming ELL students into English-only general education classrooms might have negative effects on the outcomes of their classmates, again both directly and indirectly. As one direct mechanism, research supports that diversity might fracture a classroom environment (see, e.g., Banks & Banks, 1995). As a consequence, an increase in the number of ELL students may further this classroom fracture, thereby creating a negative learning environment and thus inducing problem behaviors and deteriorating self-control, interpersonal skills, and approaches to learning. Furthermore, given the unique educational needs of ELL students, it is possible that they may slow the progression of the entire classroom (Schmidt, 2000), as teachers must focus directly on their needs. That is, ELL students may potentially utilize a disproportionate amount of teaching time and attention, thereby skewing the teacher's ability to monitor other students or to properly interact with them (Hayworth, 2009; Karabenick & Noda, 2004). Under these circumstances, ELL students might negatively affect the outcomes of their classmates through direct mechanisms, such as inducing disengagement and problem behaviors from their classmates through a disruption of regular-paced classroom instruction (Karabenick & Noda, 2004). There may also be a decline in these outcomes through indirect mechanisms, such as by redirecting a teacher's attention to devoting more time to ELL students, thereby either allowing space for more disorder and problem behaviors to arise in others, or by leaving the teacher with less time to interact with others, which, as mentioned above, may relate directly to the increase in social interactions and reduction in problem behaviors (Kontos & Wilcox-Herzog, 1997; Schmidt, 2000).

Given these purported mechanisms, it appears highly likely that ELL students could have either positive or negative effects on various socioemotional outcomes of their classmates. And yet, even though there are numerous classroom studies on ELL

students, there are four notable gaps in the field that the present study directly addresses. First, the empirical research has focused predominantly on the outcomes of ELL students in mainstreamed classrooms, with one exception focusing on classmates' academic achievement (Cho, 2012). As such, it remains uncertain how the effects of ELL mainstreaming practices affect other members of that same classroom. That being said, however, schooling policy implications cannot be properly drawn without knowing the effects of these practices on all students.

A second research gap is as follows: consistent with the majority of the empirical literature on the effects of classroom composition in elementary school (e.g., Cho, 2012; Fletcher, 2010), the only other study on the peer effects of ELL classmates has focused on achievement (see Cho, 2012). Consistent with the present article, Cho (2012) utilizes a sample of kindergarten and first-grade students in ECLS-K and employs a robust quasi-experimental design. The author finds that having ELL peers decreases reading achievement (but not math—which, as the author discusses, may have arisen from the fact that numbers are universal symbols common to many cultures or that math is less dependent on one's verbal abilities during early elementary grades) during both kindergarten and first grade. Several contextual factors moderate these effects, including classroom ability grouping, gender, and family income. Hence, the case for assessing the effects of ELL classmates has been established.

Studying the effects of peers on others' achievement is certainly important. However, a second research gap boils down to the fact that nothing is known in the empirical literature about the effects of mainstreamed ELL classmates on the socio-emotional outcomes of those kindergarten and first-grade students sharing the same classroom environment. Socioemotional skills (defined in this study as problem behaviors and social skills), however, are crucial to examine as child outcomes. Socioemotional skills, such as approaches to learning and self-regulation, have been supported as strong correlates of academic achievement (Duckworth & Seligman, 2005; Duncan et al., 2007). Others have shown that these same skills are also highly predictive of future economic earnings (Heckman & Rubinstein, 2001) and occupational status (Waddell, 2006). Other socioemotional skills, such as interpersonal skills and internalizing and externalizing problem behaviors, have been linked to future maladjustment and long-term health behaviors (Chiteji, 2010; Heckman, 2008). Thus, even though these socioemotional skills are supported across an interdisciplinary body of literature as critical to academic, financial, and health success, there has not been any large-scale study that has examined the peer effects of ELL classmates on these socioemotional skills for their non-ELL classmates. The peer mechanisms described above, however, would make it logical to hypothesize that a relationship might exist between having ELL classmates and these skills.

A third research gap has been a general lack of examination of a number of potentially critical contextual factors in the literature on classroom peer effects. With some exceptions in empirical elementary school research (e.g., Cho, 2012), many studies on classroom composition posit that having more or less of a group of students is "better" or "worse" for classmate outcomes. However, many of these same studies do not continue forward in their analyses to determine which contextual factors may moderate these peer effects. This is a critical step, as what policy-makers and practitioners need to understand is how to organize elementary school class-

rooms based on the new findings—not simply knowing whether more or less of a student group is beneficial or detrimental.

Finally, many studies in the ELL literature have methodological limitations, such as small sample sizes, a lack of statistical controls for various student and classroom inputs, or a complete lack of classroom identification information (thereby making it a difficult if not impossible task to identify actual classmates). Also, much of the research surrounding ELL students is not guided by empirical rigor or large-scale data sets (Cho, 2012; Farver, Lonigan, & Eppe, 2009). As a result, the evidence has remained mixed (Slavin & Cheung, 2005; Willig, 1985).

Based on the gaps in the extant literature, this study asks the following questions: (1) In general education classrooms, is the presence of ELL students related to an improvement in the socioemotional outcomes of members of the same classroom in kindergarten and first grade? (2) Can these effects be increased by various individual academic and demographic characteristics, classroom contextual factors, and teacher characteristics?

Kindergarten and first grade serve as critical developmental years in which these socioemotional skills are forming and beginning to reach stability (Olson, Sameroff, Kerr, Lopez, & Wellman, 2005; Posner & Rothbart, 2000). Hence, it is crucial to address this study's research questions for students in kindergarten and first grade in order to identify early factors that can help promote proper socioemotional skill formation during this key schooling period. In fact, having difficulty with socioemotional skills in kindergarten has been cited as one primary reason why many young students cannot successfully transition into school (Rimm-Kaufman, Pianta, & Cox, 2000). On the other hand, positive socioemotional development in these early schooling years has been directly linked to successful educational outcomes in the same time period (Alexander, Entwistle, & Dauber, 1993). Thus, research has supported that the development of social skills in these initial years of schooling is as critical to foster as educational ability (Shonkoff & Phillips, 2000). Documenting which contextual factors (i.e., having ELL classmates) can foster individual social competencies will further research and policy's ability to promote overall social development at the onset of school entry (Duncan et al., 2007).

In addition to socioemotional skills being upheld as critical for school success during contemporaneous schooling years, research has also supported that the development of socioemotional skills in early elementary school has a longer-term or cumulative effect on future outcomes (Duncan et al., 2007). Research has shown that the development of social skills in these initial school years is extremely critical for setting the trajectory for future outcomes, throughout the schooling pipeline and beyond (Juel, 1988; Pianta & Walsh, 1996; Smith, 1997). Academic and behavioral characteristics of children in kindergarten and first grade have been highly correlated with future ability or inability to succeed in school (Spira, Bracken, & Fischel, 2005). For instance, Entwistle, Alexander, and Olson (2005) found that lower ratings of internalizing problems in first grade predicted adult educational attainment better than did achievement in first grade. A reason for this, as explained by Cunha, Heckman, Lochner, and Masterov (2006) and Entwistle et al. (2005), is that early socioemotional behaviors provide the foundation for positive classroom adaptation and subsequent achievement outcomes. Hence, the learning context of these significant and formative years of early education has implications for how very early sources of schooling success and risk can influence long-term educational and life-long out-

comes. This present study thus contributes new knowledge in this direction as to how the classroom context relates to socioemotional development in these early critical years of schooling so that practice can continue to shape supportive concurrent and future educational outcomes for all young students.

Given these issues and research questions, this study represents one of the first empirical investigations to evaluate the effects of ELL classmates on the outcomes of other students in the same classroom, for a range of socioemotional outcomes, and for a range of contextual factors during extremely critical years in education. As described in more detail below, the data set employed in this present study is longitudinal and comprehensive, and contains classroom identification information for students in kindergarten and first grade. Hence, the analyses in this study can rely on quasi-experimental methods upheld as valid in quantitative educational research (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007) and specifically in the education literature focusing on classroom peer effects (e.g., Fletcher, 2010; Gottfried, 2012) to make inferences about the influence of peer factors on socioemotional outcomes in kindergarten and first grade.

By relying on these data and methods and identifying how mainstreaming practices may facilitate or hinder the development of socioemotional skills for non-ELL kindergartners and first graders, this study will enable policy-makers and educators to make better decisions based on a broader understanding of the effects of such schooling practices. Quantifying the extent to which more ELL classmates may relate to positive or negative differences in socioemotional outcomes is significant, such that policies and practices can be designed to combat any negative peer effects or support any positive peer effects based on a more complete description of achievement outcomes (i.e., prior studies) and socioemotional outcomes (i.e., this study).

## Method

### Data Set

To evaluate the effects of ELL classmates on the socioemotional outcomes of other students in the same classroom, this study relies on a comprehensive, longitudinal data set developed by the National Center for Educational Statistics (NCES). The data are sourced from the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K). The ECLS-K used a three-stage stratified sampling design, in which geographic region represented the first sampling unit, public and private school 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. Unweighted regression estimates are presented in this study. This is consistent with prior published work using ECLS-K (see, e.g., Fletcher, 2010), particularly those studies evaluating socioemotional skills in ECLS-K (Claessens, Duncan, & Engels, 2009).

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 study exclusively evaluates outcomes measured at the spring of kindergarten and first grade. Data sourced from the fall kindergarten time period are used as independent variables, as described

below. In addition to the theoretical justification for assessing kindergarten and first grade described in the introduction, there are several analytical justifications for this decision as well. First, the removal of grades 5 and 8 (i.e., middle school) was a necessary analytical step: it is in middle school that students begin shifting classrooms, and hence classmates, throughout the school day. As such, it becomes unreliable to identify a consistent set of classroom peers when students themselves experience multiple classroom peer groupings throughout a single school day. On the other hand, because early elementary school students are typically taught within self-contained classrooms throughout the school day and school year, exact identification of the classroom peer set can be accomplished (Gottfried, 2011).

Additionally, grade 3 is removed from the sample, as consistent with Cho (2012) and Fletcher (2010). There are several reasons. First, after kindergarten and first grade were observed, there was a large amount of mobility starting in grade 3 in the sample, which reduces the efficacy of using school fixed effects as described below. Second, and relatedly, the ECLS-K survey does not include data for second grade. Hence, unlike data from kindergarten and first grade, there is a 2-year gap between grades 1 and 3, thereby making it impossible to control for second-grade characteristics in a third-grade model. Third, as mentioned above in more detail, kindergarten and first grade have been identified in the research as extremely critical schooling years for both academic and nonacademic outcomes (Pianta & Walsh, 1996).

When summing both kindergarten and first-grade observations into one sample, a total of 18,980 student observations are used in this study. This aggregated sample is referred to as the “full sample.” The full sample is composed strictly of students who are not ELL in either survey wave: the kindergarten sample has 9,640, and the first-grade sample has 9,340 (note that 9,640 plus 9,340 equals the full sample: 18,980). The analyses in this study are limited to first-time kindergartners and children who had nonmissing information on socioemotional scales, race, gender, and age in both waves.

Importantly, when assessing peer effects, it is critical that the sample be restricted to include only those students who are not classified by the survey questions as ELL or receiving English as a second language (ESL) services, so that it becomes feasible to identify peer effects of ELL classmates on other students in the classroom (Cho, 2012). Otherwise, there would be confounding statistical issues if ELL or ESL students remained in the sample when attempting to estimate the effect of these students on others in the classroom. Hence, students have been removed from this study if survey responses indicated either of the following: the student’s primary household language is other than English (derived from the parent survey), or the student receives ESL instruction in a language other than English at school (derived from the teacher survey). These questions were presented in the same format in kindergarten and first-grade surveys.

### Outcome Variables

Table 1 presents mean and standard deviation values for all outcomes and predictor variables in this analysis. Consistent with prior research utilizing ECLS-K to evaluate socioemotional 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) developed by NCES to measure a child’s behavior or socioemotional

Table 1. Descriptive Statistics for Students with ELL Classmates

	Full Sample		Kindergarten		Grade 1	
	Mean	SD	Mean	SD	Mean	SD
Outcome: problem behaviors:						
Externalizing behavior problems	1.65	.63	1.66	.64	1.63	.63
Internalizing behavior problems	1.56	.50	1.55	.50	1.56	.50
Outcome: social skills:						
Level of self-control	3.20	.61	3.20	.62	3.20	.61
Approaches to learning	3.13	.68	3.17	.66	3.10	.69
Interpersonal skills	3.15	.63	3.16	.63	3.14	.64
Key variable:						
No. of ELL classmates	.84	2.62	.69	2.03	.99	3.10
Student demographic information:						
Scaled baseline reading ability	23.30	9.15	23.24	8.65	23.36	9.64
Age (months)	80.73	7.46	74.71	4.32	86.94	4.23
Girl	.51	.50	.51	.50	.51	.50
Black	.15	.36	.16	.37	.14	.34
Hispanic	.11	.32	.09	.29	.13	.34
Asian	.04	.20	.03	.16	.05	.22
Other	.06	.24	.06	.24	.06	.23
Family income (presented here: less than 25K per year) <sup>a</sup>	.19	.39	.18	.38	.20	.40
At or below poverty threshold	.14	.33	.15	.31	.14	.34
Physical health (presented here: health rating is excellent) <sup>a</sup>	.55	.50	.56	.50	.55	.50
Socioeconomic status (presented here: bottom quintile) <sup>a</sup>	.09	.29	.09	.29	.09	.29
Classroom data:						
Class size	20.63	4.91	20.39	5.23	20.88	4.54
Percent class: White	.66	.34	.67	.34	.65	.34
Percent class: boys	.51	.24	.52	.16	.51	.30
Percent class: below grade level in reading	.18	.15	.16	.13	.21	.16
Teacher data:						
White, non-Hispanic	.88	.32	.89	.31	.86	.34
Male	.02	.13	.02	.13	.02	.14
Years of teaching experience	13.46	8.47	12.30	6.16	14.67	10.19
Formal training in ESL	.53	1.21	.48	1.09	.59	1.32
School-level data:						
School size (presented here: 0–149 students) <sup>a</sup>	.06	.24	.08	.27	.04	.20
School percent minority	32.85	32.87	31.58	32.29	34.15	33.41
Private	.22	.42	.23	.42	.21	.41
Urban	.38	.49	.39	.49	.38	.48
Rural	.14	.34	.14	.35	.14	.34
Midwest	.28	.45	.29	.45	.27	.44
West	.34	.47	.35	.48	.34	.47
South	.20	.40	.18	.39	.22	.41
N	18,980		9,640		9,340	

<sup>a</sup>All models include the full span of indicator variables: 13 indicators for level of family income (scale ranges from 1 to 13), 5 indicators for physical health rating (excellent, very good, good, fair, poor), 5 indicators of socioeconomic status (scale ranges from 1 to 5), and 5 indicator variables for school size (scale ranges from 1 to 5).

development with the ECLS-K data. 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) within the ECLS-K data. Meisels, Atkins-Burnett, and Nicholson (1996) provide detail on these modifications from SSRS to the ECLS-K SRS.

Five teacher-rated SRS scales are utilized throughout this study, delineated as problem behaviors and social skills. Each of these five scales was developed from

unique question items from the teacher's rating of an individual student. NCES provides detail on these individual survey questions used to create the five separate scales (U.S. Department of Education, 2002). Problem behaviors include two SRS scales: (1) externalizing problem behaviors and (2) 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: (1) level of self-control, (2) approaches to learning, and (3) 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 rates 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. Finally, the interpersonal skills scale measures the frequency with which 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.

Rather than being categorical, each construct is a continuous measure as it averages a series of questions for each scale rated from 1 (never) to 4 (very often). By construction of these scales, a high score on self-control, approaches to learning, and interpersonal skills reflects a favorable outcome (i.e., social skills scales). On the other hand, a high score on externalizing or internalizing scales reflects an unfavorable outcome (i.e., problem behavior scales). These scales have high construct validity as assessed by test-retest reliability, internal consistency, and interrater reliability, and correlate highly with other similarly designed behavioral constructs. For instance, according to the user's manual, the reliability for these scales ranges from approximately 0.77 to 0.90 (U.S. Department of Education, 2002). They 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). Note that the ECLS-K restricted-use data manual provides additional details on the psychometric properties of these scales (NCES, 2002).

### Independent Variables

**Key predictor.** Table 1 also presents mean and standard deviation values for the independent variables utilized in this study. The key variable in this analysis is the total number of ELL classmates. This is sourced from the teacher survey, in which teachers were to report the number of students with limited English proficiency in their classrooms. Hence, all peer information is sourced from the teacher. To be clear, the teacher reported the total number of students with limited English proficiency in his/her classroom, not simply those in the ECLS-K study. This question was presented in the same format in kindergarten and first-grade surveys.

**Student control variables.** Additional independent covariates that may be associated with changes in the outcomes are included as control variables. At the level of the student, the set of control variables includes a commonly accepted set of demographic variables, including baseline item response theory (IRT) reading ability measured at kindergarten entry, age, gender, and race.

Questions from the ELCS-K survey also provide information on a student's socioeconomic status and are utilized in this study as control variables, as SES has been supported as highly correlated with child development (Aber, Bennett, Conley, & Li, 1997; Brooks-Gunn & Duncan, 1997). In this study, widely accepted empirical measures of SES are employed as control variables (e.g., Cho, 2012), including family income (represented as 13 categories, although for the sake of clarity the mean and standard deviation are presented in Table 1 only for families earning under \$25,000), a binary indicator created by NCES for whether or not a student's family is at or below the poverty threshold, and a five-scale SES composite also created by NCES. Additionally, at the student level is a measure of a student's health, given that health is supported as correlated with socioemotional/psychological outcomes (Drotar, 1997). As such, this study includes a parental rating of the child's physical health upon kindergarten entry (which ranges from excellent, very good, good, fair, to poor).

Although not presented in Table 1 for the sake of clarity, the set of independent variables utilized in the proceeding regression models also includes a lagged outcome measure. This is because there are current and past unobservable factors that can influence both the presence of having an ELL classmate as well as a given socioemotional outcome. For instance, family involvement might simultaneously be related both to having an ELL classmate (i.e., families may choose to send their children to schools with or without ELL students) and socioemotional development (i.e., the same families might be highly nurturing). To remedy this issue, a variant on a value-added model strategy is employed to mitigate this bias (see, e.g., Neidell & Waldfogel, 2010). In the literature, this lagged outcome is assumed to capture the influences of past inputs for a given student. Thus, biases that were created by omitted prior variables only bias the estimated coefficient of the lagged outcome (Hanushek, Kain, Markman, & Rivkin, 2003; Zimmer & Toma, 2000). Since this lagged variable accounts for historical information about the student, this measure can in essence serve as a proxy for individual fixed effects (Hanushek et al., 2003).

**Classroom and teacher control variables.** Many classroom characteristics serve as control variables in this analysis. Prior research has suggested that several classroom peer characteristics may serve as critical factors in student outcomes and are hence included as control variables in this study. They include class size (see, e.g., Dee & West, 2012), gender distribution of the classroom (see, e.g., Hoxby, 2000), and academic characteristics of one's classmates (see, e.g., Gottfried, Gottfried, Bathurst, & Guerin, 1994). As consistent with prior empirical work (e.g., Fletcher, 2010), the percentage of White students in the classroom is also included as a control variable.

Research supports that teacher characteristics correlate to a range of young children's outcomes, including socioemotional development (Coplan & Prakash, 2003; Kontos & Wilcox-Herzog, 1997). Based on prior empirical research using ELCS-K to evaluate peer effects, teacher characteristics employed as control variables include teacher race, gender, and years of experience (e.g., Cho, 2012; Fletcher, 2010; Neidell & Waldfogel, 2010). However, given that this study evaluates the effect of ELL classmates, it is crucial to incorporate an additional teacher measure that may account for teacher quality when it comes to teaching ELL students. Hence, this study includes the total number of course units the teacher has taken in ESL. This measure nonetheless serves as one indicator of the extent to which a student's teacher has had formal training in the area of ELL students and ESL instruction.

**School control variables.** School-level variables and contexts are supported as correlates of socioemotional outcomes for students (Anderman, 2002; Anderman & Kimweli, 1997; Baumeister & Leary, 1995; Bryk, Lee, & Holland, 1993). Hence, school-level variables are also included as control variables. School variables include size of the school as measured by the level of enrollment, percentage of the student body that belongs to a racial/ethnic minority, and indicators for private school, urbanicity, and region of the country. As consistent with prior studies using ECLS-K data (e.g., Cho, 2012; Datar, 2006; Duncan et al., 2007; Fletcher, 2010), dummy variables were utilized to indicate missing classroom or teacher control variables in the analyses to follow and missing information was replaced with sample mean values. Ancillary tests of means confirmed that students with missing information on socioemotional data are no different than students with complete information.

Table 2 presents partial correlation coefficients and their significance levels between the number of ELL classmates and other independent variables in this analysis.

Table 2. Correlations between Classroom Count of ELL Classmates and Other Independent Variables: Full Sample

Independent Variables	Correlation
Student demographic information:	
Scaled baseline reading ability	-.16 **
Age (months)	.02 *
Girl	-.01
Black	-.17 **
Hispanic	.14 **
Asian	.05 **
Other	-.09 **
Family income (presented here: less than 25K per year) <sup>a</sup>	-.01
At or below poverty threshold	.01 +
Physical health (presented here: health rating is excellent) <sup>a</sup>	-.02 **
Socioeconomic status (presented here: bottom quintile) <sup>a</sup>	.04 **
Classroom data:	
Class size	.05 **
Percent class: White	-.13 **
Percent class: boys	-.03 **
Percent class: below grade level in reading	.08 **
Teacher data:	
White, non-Hispanic	-.08 **
Male	.03 **
Years of teaching experience	-.03 **
Formal training in bilingual education	.24 **
School-level data:	
School size (presented here: 0–149 students) <sup>a</sup>	-.04
School percent minority	.00
Private	-.03 **
Urban	.04 **
Rural	-.03 **
Midwest	.00
West	-.02 *
South	.03 **

<sup>a</sup> All models include the full span of indicator variables: 13 indicators for level of family income (scale ranges from 1 to 13), 5 indicators for physical health rating (excellent, very good, good, fair, poor), 5 indicators of socioeconomic status (scale ranges from 1 to 5), and 5 indicator variables for school size (scale ranges from 1 to 5).

+  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

Partial correlations were purposefully selected, as they test the association between two variables while holding constant the influence of additional variables. Importantly, the middle portion of the table suggests that in the sample, there are only low correlations between classroom characteristics and teacher characteristics and number of ELL classmates. While these correlations may be statistically significant, the practical significance is quite low given the size of these correlation values: classrooms with higher numbers of ELL classmates do not appear to be systematically related in any meaningful way to other observable characteristics of the classrooms or teacher characteristics. In other words, there does not appear to be sorting of ELL students by classrooms or by teachers in a way that might influence the estimates to follow.

Table 2 also presents small correlation values between additional covariates and the number of ELL classmates. This suggests that there is nothing overly dramatic in the relationships between the number of ELL classmates and the set of independent variables that would appear to bias the data in any particular direction. While some correlation values may be higher than others (i.e., baseline reading ability and student race), ancillary *t*-tests adjusted by school show either that any statistical significance entirely diminishes or that statistical significance remains but the relationship loses all practical significance (i.e., a difference in 0.03 in the number of ELL classmates for Black students versus non-Black students).

### Analytic Approach

**Baseline model.** The analysis of the effect of having ELL classmates on socioemotional outcomes begins with a baseline linear regression model, presented as follows:

$$SE_{ijkt} = \beta_0 + \beta_1 ELL_{-ijkt} + \beta_2 I_{ijkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \beta_5 S_{kt} + \varepsilon_{ijkt}, \quad (1)$$

where SE is one of five socioemotional SRS scales for student *i* in classroom *j* in school *k* in survey wave *t* as the dependent variable on the left-hand 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 and grade 1 samples, 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: ELL is the number of ELL classmates in classroom *j* in school *k* in wave *t*. Recall that the sample includes only non-ELL students, and thus this variable does not overlap between individual and peer measures. At the student level, the sets of independent variables include *I*, a vector of a student's characteristics in wave *t*, including a lagged outcome measure.

As for classroom-level covariates, independent variables described in the preceding section are delineated as follows: *C* are classroom variables (e.g., class size) for students in classroom *j* in school *k* in wave *t*, and *T* are teacher variables (e.g., gender) for students in classroom *j* in school *k* in wave *t*. There are school-level variables in vector *S*, such as school size. In addition, when assessing the full sample throughout this study (i.e., both kindergarten and grade 1 samples combined into one large data set, *N* = 18,978), the models contain controls for grade/wave, such that the analysis is conducted strictly as a within-grade/within-wave model.

The error term  $\varepsilon$  includes all unobserved determinants of the outcome. Empirically, this latter component is estimated with Huber/White/sandwich robust standard errors, adjusted for classroom clustering. 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 nonindependence of individual-level observations. As a result, all coefficient estimates are more robust, as they have been corrected for the multilevel nature of the data (Primo, Jacobsmeier, & Milyo, 2007).

**Accounting for unobserved heterogeneity.** Given the empirical specification described thus far, one estimation issue that might arise is that there are potential unobserved school factors that are correlated with both the number of ELL classmates that a student has and the individual-level socioemotional outcomes for the students in the analysis. This would bias the estimates in the baseline model. For example, highly involved parents may choose to send their children to schools where there is a great probability of interacting with a diverse group of students, in this case ELL students (Cho, 2012; Fryer & Levitt, 2004). Prior research has suggested that students oftentimes perform at higher levels as a result of being placed in schools of greater diversity (Fryer & Levitt, 2004). At the same time, highly involved parents might also be making additional investments that would boost their children's socioemotional outcomes. If it were common for all students in a school to have parents such as these, then the peer effect of having ELL classmates would be confounded by a high level of parental involvement. As a second example, principals at some schools may have invested in a greater number of policies and practices for the socioemotional outcomes of all students: these same principals might also be more likely to have greater mainstreaming policies, hypothetically speaking. In this case, one might overestimate any positive influence of having ELL 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:

$$SE_{jkt} = \beta_0 + \beta_1 ELL_{-jkt} + \beta_2 I_{jkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \delta_k + \varepsilon_{jkt}, \quad (2)$$

where  $\delta_k$  are school fixed effects for school  $k$ . Technically, the term  $\delta_k$  is a set of binary variables that indicates whether a student had attended a particular school. This set of school indicator variables leaves out one school as the reference group.

School fixed effects  $\delta_k$  control for the unobserved influences of schools by capturing systematic differences across each unique institution. By holding constant those omitted school-specific factors, such as school educational investments, organizational practices, aggregate parental involvement, and inclusion 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 allows for a focus on within-school and between-classroom differences. Consequently, note that school-level variables drop away in this model.

The use of school fixed effects is compelling in this analysis and in quasi-experimental educational research pertaining to the effects of classroom peers (e.g., Burke & Sass, 2008; Cho, 2012; Fletcher, 2010; Hanushek et al., 2003). Because the data in this study are multilevel, there is within-school variation at the classroom

level in those measures on the number of ELL classmates. Unlike this study, many empirical models have had to rely on grade averages, and thus peer variables would lack within-school variation. As a result, it would not be possible to assess the within-school spillover effect of ELL students, as there would be no variation when variables are aggregated. Analytically, under these circumstances the fixed effects would absorb variation in classroom variables, since they would be the same for every student in the school. However, given the multilevel structure of the data set employed in this study, it is possible to estimate the peer effect with much more precision.

Even with the use of school fixed effects, the models thus far have been constructed under the assumption that unobserved school variables are time-invariant. However, there is the possibility that time-varying unobserved school-level factors may be influencing the number of ELL classmates as well as socioemotional outcomes. For example, if there were an improvement in school quality over time, schools might be attracting increasingly involved principals year after year, which would potentially bias the effect of the number of mainstreamed ELL classmates that a student encounters as well as socioemotional outcomes for all students. To account for such differences over time, a final model includes school-by-year fixed effects:

$$SE_{jkt} = \beta_0 + \beta_1 ELL_{-jkt} + \beta_2 I_{jkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \delta_{kt} + \varepsilon_{jkt}, \quad (3)$$

where  $\delta_{kt}$  are school-year fixed effects for school  $k$  in year  $t$ . This final, most stringent model (which can only be run on the full sample of observations) makes it unlikely that variations in the unobserved time-varying within-school, within-year environment would bias the peer effect.

The use of school fixed effects has been supported in the literature as the appropriate modeling technique for assessing peer effects specifically on socioemotional outcomes using the ECLS-K data set (see, e.g., Neidell & Waldfogel, 2010). Hence, this is the specification upheld in this study as well. It is true that others (i.e., Fletcher, 2010) utilized student fixed effects when assessing peer effects using ECLS-K; however, because his outcome was a standardized measure of achievement based on item response theory, it was possible to exploit within-student variation over time. The focus on socioemotional scales makes it difficult to use and interpret student fixed effects. The issue is that these outcomes are teacher-rated scales as described above, so that in each wave of data collection a new teacher is rating the student on these scales. Thus, unlike the IRT scaled achievement scores as outcomes, the socioemotional scales do not have the same scaled-score properties that would allow for student fixed effects or vertical growth analyses. Hence, school fixed effects and its variants are the most appropriate models, given the nature of the outcome in this study. Additionally, there is not significant variation across time in the number of ELL classmates—the correlation between a student's kindergarten classroom count of ELL peers and first-grade count is approximately 0.50 after controlling for school.

Thus, the literature has upheld that school fixed effects are the most appropriate when assessing the effect of peers on early elementary school socioemotional outcomes in the ECLS-K data set. Like Neidell and Waldfogel (2010) and like Aizer (2008), who both use ECLS-K to study peer effects, this study also upholds that there is little evidence of within-school sorting in the ECLS-K data set when it comes to early elementary grades both in terms of students but also in terms of teachers. This is a similar conclusion that Neidell and Waldfogel (2010) find in their analysis of peer

effects on socioemotional outcomes using the ELCS-K data set, as they too exclusively rely on school fixed-effects models to evaluate these socioemotional outcomes.

## Results

### Baseline Results

Table 3 presents coefficient estimates and robust standard errors adjusted for classroom clustering for the specifications examining the effect of having ELL classmates on the five ECLS-K SRS socioemotional outcomes. These models are based on equation (1). The sample employed to produce the results in this table is the full sample, which includes all student observations (for non-ELL students), combining both kindergarten and first-grade samples into a single aggregated sample. Although not presented for the sake of clarity, the results for all coefficients presented in Table 3 are consistent when examining wave-specific results.

Importantly, when examining the top row of the results in the table, the coefficients on the number of ELL classmates are statistically significant across four of five socioemotional outcomes. Recall that negative coefficients indicate fewer problem behaviors for the first two outcomes, whereas positive coefficients imply improved social skills for the latter three outcomes. Hence, kindergarten and first-grade students in the sample who have a greater number of ELL classmates tend to have fewer externalizing behavior issues and also tend to have better social skills, including levels of self-control, approaches to learning, and interpersonal skills. Indeed, the table indicates that the size of the positive or negative difference is approximately similar in value across all significant socioemotional scales, thereby showing a consistency in the empirical model selected to be employed in these analyses.

To put the magnitude of these results into perspective, the effect of having ELL classmates ranges from approximately 10% to 50% of the gap between poverty and nonpoverty students (proxied by the NCES measure of at or below poverty). Another interpretation is to utilize standardized effect sizes. The measure of effect sizes in this study, as supported by many education empiricists in nonexperimental studies, is the standardized beta coefficient (e.g., Caldas, 1993; Gottfried, 2012; Hoxby, 2000; McEwan, 2003). The relationship between the number of ELL classmates and the socioemotional outcomes corresponds to effect sizes of approximately  $-0.02\sigma$  to  $-0.03\sigma$ . The magnitudes of these effect sizes are in line and consistent with previous nonexperimental research on classroom peer effects in elementary school, both those using ELCS-K as well as other data sets (e.g., Cho, 2012; Fletcher, 2010; Gottfried, 2011, 2012; Hoxby, 2000). In addition to demonstrating an empirical consistency with the peer effects literature, this effect size shows the effect experienced by any non-ELL student in that same classroom. Hence, while the magnitude of the effect is not exceedingly large for any individual student, there is the possibility for larger aggregate classroom effects when considering that effect pertains to all other students in the classroom (Cho, 2012). With these findings, future research is poised to determine the relationship (e.g., linear) and magnitude of these aggregate effects.

Briefly examining the control variables in Table 3 provides the following interpretations. In the direction as expected, compared to girls, boys tend to exhibit higher externalizing and internalizing behavioral problems and lower frequencies of self-control, approaches to learning, and interpersonal skills. The results across all five socioemotional

outcomes are also delineated by race, age, poverty, and health. There is less consistency across the results for the covariates pertaining to the classroom control variables, though a room of lower academic ability appears to be linked to worsened socioemotional outcomes. As for teacher characteristics, the lack of consistent significance aligns with many studies, including Argys, Rees, & Brewer (1996), Cho (2012), Fletcher (2010), Gottfried (2009, 2011, 2012), and Nye, Konstantopoulos, and Hedges (2004). Finally, like classroom characteristics, some school-level variables are significant.

### School Fixed-Effects Models

To account for unobserved school influences that may be affecting both the key variable and outcome variables, school fixed effects are next employed. Table 4 presents the coefficients and standard errors from the school fixed-effects models on both full and separate grade samples. Each entry is the result of a unique regression: it represents the coefficient and standard error on the number of ELL classmates based on the sample indicated in the column heading. With the utilization of school fixed effects, school-level variables have been dropped from the model as depicted in equation (2). However, all other control variables remain in the model.

As consistent with Table 3, the estimates pertaining to the full sample are presented in the three left-most columns. Addressing first those results, the estimates suggest a consistency in interpretation between baseline and school and school-year fixed-effects analyses: Having a greater number of ELL classmates continues to imply fewer problem behaviors (externalizing) and greater social skills (self-control, approaches to learning, and interpersonal skills) for those other students in the same classroom. This indicates, then, that the inclusion of school and school-year fixed effects, which controls for unobserved time-invariant and time-varying school-level factors, does little to alter this study's fundamental premise that a statistically significant peer effect arises from having ELL classmates in kindergarten and first grade.

Indeed, there appears to have been an underestimation of the effects of having ELL classmates in the baseline model. Between the baseline and fixed-effects models, the sizes of the coefficients have increased by between 20% to 55%. The magnitudes of the sizes of these coefficients have also increased relative to the poverty gap, now ranging from 16% to 70%. The effect sizes range from  $-0.03\sigma$  to  $-0.04\sigma$ . Thus, the fact that the coefficient estimates remain statistically significant and that the effect sizes are, on average, slightly larger across the fixed-effects approaches in the full sample suggests that there might have been some underestimation in the baseline model, but not enough to veer away from a consistent finding that a positive socioemotional effect continues to exist from having ELL classmates even after controlling for unobservable school and school-year characteristics and observable factors.

When the analyses are disaggregated by grade, the interpretation of the results is consistent with the full sample. Between the kindergarten and first-grade samples, there are some differences in the results. Hence the reliance on both full as well as disaggregated samples is critical to depict a complete interpretation of the relationship of ELL students to classmates' socioemotional outcomes. For instance, externalizing problem behaviors are lower in first grade with a higher number of ELL classmates. The three SRS social skills scales depict consistent findings between kindergarten and grade 1.

Table 3. Peer Effects of ELL Classmates on Noncognitive Outcomes: Full Sample

	Problem Behaviors		Social Skills		
	Externalizing	Internalizing	Self-Control	Approaches to Learning	Interpersonal Skills
<b>Key variable:</b>					
Number of ELL classmates	-.01*	.00	.01**	.01**	.01**
	(.00)	(.00)	(.00)	(.00)	(.00)
Effect size <sup>a</sup>	-.02	-.01	.03	.03	.03
<b>Model controls:</b>					
Student demographic information:					
Lagged outcome	.63**	.39**	.50**	.54**	.47**
	(.01)	(.01)	(.01)	(.01)	(.01)
Scaled baseline reading ability	.00**	.00**	.00**	.01**	.00**
	(.00)	(.00)	(.00)	(.00)	(.00)
Age (in months)	.00*	.00	.00**	.01**	.00**
	(.00)	(.00)	(.00)	(.00)	(.00)
Female	-.10**	-.02**	.11**	.14**	.14**
	(.01)	(.01)	(.01)	(.01)	(.01)
Black	.08**	.01	-.08**	-.08**	-.08**
	(.02)	(.01)	(.02)	(.02)	(.02)
Hispanic	-.03*	-.03*	.01	.02	.01
	(.01)	(.01)	(.01)	(.01)	(.02)
Asian	-.06**	-.07**	.06**	.09**	.03
	(.02)	(.02)	(.02)	(.02)	(.02)
Other	.00	.03	-.03	-.02	-.04*
	(.02)	(.02)	(.02)	(.02)	(.02)
At or below poverty threshold	-.05*	.01	.04	.02	.02
	(.02)	(.02)	(.03)	(.03)	(.03)
Physical health (presented here: health rating is excellent) <sup>a</sup>	-.34**	-.05	.28*	.19	.23*
	(.16)	(.09)	(.12)	(.12)	(.11)
Socioeconomic status (presented here: bottom quintile) <sup>a</sup>	.05**	.04*	-.04*	-.07**	-.06**
	(.02)	(.02)	(.02)	(.02)	(.02)
Classroom data:					
Class size	.00	.00	.00	.00	.00
	(.00)	(.00)	(.00)	(.00)	(.00)
Percent class: White	-.01	.03	-.01	-.04	-.01
	(.03)	(.03)	(.03)	(.03)	(.03)
Percent class: boys	-.05**	-.03*	.07**	.08**	.06*
	(.01)	(.02)	(.03)	(.04)	(.03)
Percent class: below reading level for grade	.12**	.12**	-.16**	-.14**	-.15**
	(.04)	(.04)	(.04)	(.04)	(.04)
Teacher data:					
White, non-Hispanic	.00	.02	.03 <sup>+</sup>	.02	.00
	(.02)	(.02)	(.02)	(.02)	(.02)
Male	.00	-.01	.04	-.01	.01
	(.04)	(.04)	(.04)	(.04)	(.05)
Years of teaching experience	.00	.00	.00	.00	.00
	(.00)	(.00)	(.00)	(.00)	(.00)
Formal training in bilingual education	.01	.00	-.01	.00	.00
	(.00)	(.00)	(.01)	(.00)	(.01)
School-level data:					
School size (presented here: 0–149 students) <sup>a</sup>	.03	-.02	.00	.04	.03
	(.02)	(.02)	(.03)	(.03)	(.04)
Percentage of school: minority	.00	.00	.00	.00	.00
	(.00)	(.00)	(.00)	(.00)	(.00)

Table 3. (Continued)

	Problem Behaviors		Social Skills		
	Externalizing	Internalizing	Self-Control	Approaches to Learning	Interpersonal Skills
Private school indicator	.03 *	.03 *	-.05 **	-.04 *	-.04 +
	(.01)	(.02)	(.02)	(.02)	(.02)
Urban	-.02	-.01	.01	.01	.03 *
	(.01)	(.01)	(.01)	(.01)	(.01)
Rural	-.01	-.02	-.02	.01	.01
	(.02)	(.02)	(.02)	(.02)	(.02)
Midwest	.02	.00	.04 *	-.04 *	-.07 **
	(.02)	(.02)	(.02)	(.02)	(.02)
West	.02	.00	-.03 +	-.04 *	-.05 **
	(.01)	(.01)	(.02)	(.02)	(.02)
South	.04 *	.02	-.03	-.05 *	-.06 **
	(.02)	(.02)	(.02)	(.02)	(.02)
N	18,980	18,980	18,980	18,980	18,980
R <sup>2</sup>	.44	.19	.31	.42	.29

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

<sup>a</sup> All models also include the following variables: 13 indicators for level of family income (scale ranges from 1 to 13), 3 additional indicators for physical health rating (very good, good, fair), 3 additional indicators of socioeconomic status (scale ranges from 1 to 5), and 3 additional indicator variables for other categories of school size (scale ranges from 1 to 5). These coefficients are available upon request. Model also includes indicators for wave/grade.

<sup>+</sup>  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

Within each analysis disaggregated by grade, the results also show a large amount of consistency in the patterns that arose when assessing the full sample between baseline and school fixed-effects models. Recall that school-year fixed effects are not possible to employ in a single year of observations. Hence, even after accounting for a wide range of observable characteristics and taking into account underlying school factors, the conclusion of the analyses continues to uphold that being in classrooms with a larger number of ELL classmates supports a greater opportunity for socio-emotional skill formation for other students in that room.

### Results by Individual Heterogeneity and by Classroom Context

Thus far, the analyses in this study have demonstrated that the number of ELL classmates positively relates to the socioemotional outcomes of other students sharing the same kindergarten or first-grade classroom. A logical extension of these findings is to determine what is useful for early elementary school policy and practice.

As a final set of analyses, the question remains as to the degree to which these peer effects might differ by individual characteristic or might be moderated by the classroom context in which these students find themselves on a daily basis. Examining these factors is important, as school administrators can utilize these findings to make changes based on the presence of ELL students in a classroom. To do so, the analyses from Table 4 are re-run on the full sample (with school fixed effects and classroom-level clustering) in Tables 5 and 6. In Table 5, the models are broken out by individual

Table 4. Peer Effects of ELL Classmates on Noncognitive Outcomes: All Samples and All Approaches

Dependent Variable	Full Sample			Kindergarten		Grade 1	
	Baseline (Estimates from Table 3)	School Fixed Effects	School-Year Fixed Effects	School Baseline	School Fixed Effects	School Baseline	School Fixed Effects
Problem behaviors:							
Externalizing behavior problems	-.01*	-.01 <sup>+</sup>	-.01*	.00	.00	-.01**	-.01 <sup>+</sup>
Internalizing behavior problems	.00	.00	.00	.00	-.01	-.01*	.00
Social skills:							
Level of self-control	.01**	.01**	.01**	.00	.01 <sup>+</sup>	.01**	.01**
Approaches to learning	.01**	.01**	.01**	.00	.02**	.01**	.01**
Interpersonal skills	.01**	.01**	.01**	.00	.01*	.01**	.01**
<i>N</i>	18,980	18,980	18,980	9,440	9,440	9,340	9,340
<i>R</i> <sup>2</sup> range	.19-.44	.28-.49	.45-.54	.33-.54	.44-.61	.10-.34	.29-.48

Note.—Robust Huber-White standard errors adjusted for clustering within classrooms are in parentheses. All regressions include a constant. Baseline regressions include all variables presented in Table 3. All school-level variables drop away from the regression with the inclusion of school fixed effects. All other variables remain in the model.

<sup>+</sup>*p* < .10.

\**p* < .05.

\*\**p* < .01.

student characteristics described in Table 1 in order to determine whether the prediction of having ELL classmates differs by ability, gender, race, and SES.

For the sake of interpretability, the results in Table 5 are presented as effect sizes, so that it is possible to compare findings between student subgroups. The results suggest that kindergarten and first-grade students with below average reading ability have lower internalizing problems and higher social skills when in classrooms with ELL classmates compared to students with above average reading ability. This is demonstrated not only by larger but also by a greater number of statistically significant effect sizes presented in the first of two columns in Table 5.

There is no evidence that the effects of having ELL classmates differs by gender. The effect sizes and degree of statistical significance are comparable between the genders. There does appear to be some evidence of a differential effect by race, although not consistently so. For example, when it comes to self-control and approaches to learning, Black and Hispanic students tend to have higher frequencies of these social skills when with ELL classmates. However, little evidence exists for differential results in the other scales. It must be recognized that previous research has suggested that the ethnic heritage of the teacher rater could have influenced these scale outcomes (DiPerna, Lei, & Reid, 2007; Galindo & Fuller, 2010).

Considered finally are measures of student SES. There is consistent evidence that kindergarten and first-grade students at a higher level of SES have fewer problem behaviors and greater social skills with ELL classmates than do students at a lower level of SES. This is evidenced by the effect sizes and levels of statistical significance

Table 5. Differences by Demographics for the Full Sample: Effect Sizes

Dependent Variable	Characteristics of Non-ELL Students in the Classroom															
	Reading Ability					Family Income										
	Below Average	Above Average	Girl	Boy	White	Black	Hispanic	Asian	\$25,000	\$25,000	Less Than Poverty	More Than Poverty	At or Below Poverty	Above Poverty	Excellent	Physical Health
Problem behaviors:																
Externalizing behavior problems	-.01	.00	-.02 <sup>+</sup>	-.02	.02 <sup>+</sup>	-.04	-.05	-.03	.00	-.02 <sup>**</sup>	-.04	-.02 <sup>**</sup>	.01	-.04 <sup>**</sup>		
Internalizing behavior problems	-.03 <sup>+</sup>	.02	-.02	-.02	.00	-.02	-.01	-.02	-.05 <sup>*</sup>	-.01	-.07 <sup>*</sup>	.01	-.03 <sup>*</sup>			
Social skills:															.00	
Level of self-control	.03 <sup>*</sup>	.01	.03 <sup>*</sup>	.04 <sup>*</sup>	.01	.05	.07 <sup>*</sup>	-.06	.01	.04 <sup>**</sup>	.06	.04 <sup>**</sup>	.00	.06 <sup>**</sup>		
Approaches to learning	.07 <sup>**</sup>	.01	.04 <sup>**</sup>	.05 <sup>**</sup>	.00	.09 <sup>**</sup>	.07 <sup>*</sup>	-.02	.07 <sup>*</sup>	.04 <sup>**</sup>	.12 <sup>**</sup>	.04 <sup>**</sup>	.03 <sup>*</sup>	.06 <sup>**</sup>		
Interpersonal skills	.03 <sup>**</sup>	.03 <sup>*</sup>	.04 <sup>*</sup>	.03 <sup>*</sup>	.01	.03	.06	.02	.02	.05 <sup>**</sup>	.09 <sup>*</sup>	.04 <sup>**</sup>	.00	.06 <sup>**</sup>		
N	9,490	9,490	9,760	9,220	12,100	2,860	2,150	750	3,590	15,390	2,370	14,950	10,480	8,500		

Note.—Robust Huber-White standard errors adjusted for clustering within classrooms are in parentheses. All regressions include a constant. All school-level variables drop away from the regression with the inclusion of school fixed effects. All other variables remain in the model.

<sup>+</sup> $p < .10$ .

<sup>\*</sup> $p < .05$ .

<sup>\*\*</sup> $p < .01$ .

Table 6. The Moderating Effects of Classroom Context: Effect Sizes

Dependent Variable	ELL Classmates ×						
	Class Size	Percent of Class: Boys	Percent of Class: Below Reading	Teacher: White Non-Hispanic	Teacher: Male	Teacher: Years of Experience	Teacher: ESL Training
Problem behaviors:							
Externalizing behavior problems	-.06	.05	-.01	.01	.00	.01	-.02
Internalizing behavior problems	-.09 <sup>+</sup>	.10 *	-.02	.02	-.02 **	.02	.01
Social skills:							
Level of self-control	.02	-.04	.02	-.01	.00	.02	.03
Approaches to learning	-.03	-.05	.01	-.02	.00	.00	.02
Interpersonal skills	.07	-.06	.01	-.01	.00	.00	.01
N	18,980	18,980	18,980	18,980	18,980	18,980	18,980

Note.—Robust Huber-White standard errors adjusted for clustering within classrooms are in parentheses. All regressions include a constant. All school-level variables drop away from the regression with the inclusion of school fixed effects. All other variables remain in the model.

<sup>+</sup> $p < .10$ .

\* $p < .05$ .

\*\* $p < .01$ .

across multiple levels of SES, including students in families with more than \$25,000 in income versus otherwise, students in families above the poverty threshold versus students in families at or below the threshold, students rated highly on physical health versus students not rated highly, and students above the bottom quintile of the NCES-rated SES composite versus students in the bottom quintile.

In Table 6, the question becomes one of a moderating effect of classroom context. A similar school fixed-effects model is employed, but now it incorporates an interaction between having ELL classmates and a series of malleable classroom or teacher contextual factors denoted by the column heading in Table 6. In other words, the specification is laid out as follows:

$$NC_{ijkt} = \beta_0 + \beta_1 ELL_{-ijkt} * F_{ijkt} + \beta_2 I_{ijkt} + \beta_3 C_{jkt} + \beta_4 T_{jkt} + \delta_k \pm \varepsilon_{ijkt}, \quad (4)$$

where  $F_{ijkt}$  represents a classroom- or teacher-level factor. Each entry represents the coefficient estimate and significance value from a unique regression (including school fixed effects).

As in Table 5, the results in Table 6 are presented as effect sizes. There is some evidence that the effect of having ELL classmates varies by class size and by the percentage of boys in the classroom. This is demonstrated by a lower frequency of internalizing problems with a lower class size and a smaller percentage of boys in the classroom. Indeed, these two effect sizes are on the larger end of the spectrum for peer-effects research, as described previously. That said, there is no evidence that a moderating effect exists for the other four scales.

Of the teacher characteristics, there is again some (but not consistent) evidence that students with ELL classmates have fewer internalizing problems with male teachers, as depicted by the statistically significant but small effect size. The results are not differentiated by teacher race or years of teacher experience. However, formal training in ESL provides significant effects: As students have a greater number of ELL classmates, they have fewer externalizing problems and greater levels of self-control

and interpersonal skills when they have teachers with more extensive training in ESL, controlling for all else including years of teaching experience.

## Discussion

The findings of this study have brought forward a new perspective on the relationship between classroom peers and student outcomes for kindergarten and first-grade students. Research on ELL students has almost exclusively focused on outcomes pertaining to those students *per se*; prior to the present study, however, almost no research had quantified the extent to which having ELL classmates may also relate to the outcomes of other students sharing the classroom. None had considered socio-emotional outcomes (i.e., problem behaviors and social skills). This study has filled this research gap by finding that having more ELL classmates is related to positive differences across widely accepted SRS socioemotional scales.

In the end, this study has provided support for the first of two mechanisms described in the introduction of this article. Classmates' decreased problem behaviors and improved social skills may be related to the fact that ELL peers may induce beneficial changes to the classroom environment, both directly and indirectly. Directly, being in a classroom with ELL classmates may provide opportunities for other students to strengthen their approaches to learning, self-control, and interpersonal skills by having the unique opportunity to learn about the value of diversity, to learn from students with unique needs and hence to learn patience, and to accept the presence of students with individual differences (Williams & Downing, 1998)—in this case from different cultures and backgrounds.

Indirectly, there may be changes in classroom resources with the presence of ELL students, such as additional supports and services that can positively promote the socioemotional skill formation of others in the classroom. General education classrooms that include students with additional needs have potentially gained resources that they otherwise would not have received (Hanushek et al., 2002). With an increase in these additional classroom resources, such as a teacher's aide, teachers have a greater capacity to increase their monitoring and time for one-on-one teacher-to-student interactions, thereby improving the socioemotional outcomes of other students in that classroom (Cipani, 1995; Kontos & Wilcox-Herzog, 1997; Tauber, 2007). That is, there is an increased opportunity for more child-to-teacher interactions, which have been previously linked to reduced problem behaviors and increased interpersonal relations (Newcomb et al., 1993; Parker & Asher, 1987).

Given the positive peer relationships from having ELL classmates, this study further explored specific individual and contextual factors that might further improve socioemotional outcomes for other students in the classroom. Doing so provided insight into successful compositional strategies that policy-makers and practitioners could consider. For instance, the results presented in Table 6 underscored the importance of teacher training. While teacher race, gender, and years of experience did not provide any significant moderating effects, formal teacher training in ESL did. The greater number of courses that a teacher had taken in ESL was related to a positive increase on several of the socioemotional outcomes for non-ELL students in the classroom. This finding bolsters prior research, which supports placing a greater emphasis on ELL issues into formal teacher training (Goodwin, 2002; Meskill, 2005).

Doing so has implications not strictly for ELL students but also for other kindergarten and first-grade students in the classroom.

Hence there are several concluding educational policy and school practice implications. First, the analyses here have demonstrated that in addition to a multitude of previously established significant academic classmate peer effects, there is also a relationship with a range of socioemotional outcomes. Therefore, with the findings in this study, researchers, policy-makers, and practitioners can guide further questions about how to improve the classroom context not solely by focusing all efforts on improving academic achievement. Rather, having more ELL classmates significantly predicts—in a positive direction—socioemotional outcomes that are highly correlated with concurrent and future schooling and life attainment during a critical period of early school also correlated with concurrent and future outcomes (Pianta & Walsh, 1996). Hence, while the importance of improved achievement outcomes has been emphasized particularly in a political educational climate of accountability, it is also important to recognize the influence of the classroom context beyond test scores.

A second implication underscores the importance of relying on contextual information so that research findings can inform policy and practice. A final analytical step proved to be significant: there were differential, moderating effects of having ELL classmates based on various factors. And, importantly, there were many factors that proved not to be statistically significant. Knowing which significant contextual factors elicit even greater positive outcomes can support more efficient schooling practice. Hence, researchers and practitioners can incorporate these differences in understanding how one set of classmates may be linked to the outcomes of other students. It is often the case in research on classroom peer effects that the classroom contextual factors are ignored. This study proves they are necessary to consider.

Finally, the intentional focus on early elementary school students has proven to be significant. By disaggregating the analysis by kindergarten and first-grade samples, this study has also shown that the relationships are present across multiple years of early education; the ramifications of developmental competencies from this time can be felt throughout schooling and adulthood. With the robust estimates of the effects of ELL classmates presented in this study, elementary schools can utilize this information to design classroom practices unique to their respective environments in conjunction with federal and state ELL mainstreaming policies. This can be accomplished early in schooling rather than delaying and only taking action to improve socioemotional development when these students are in middle or high school, when the critical time period that strengthens the potential for future schooling and life successes may have passed.

### **Further Inquiry**

This study was the first to examine the relationship between the presence of ELL classmates and others' socioemotional outcomes. That being said, however, the scales utilized were teacher-rated, and as such, there may have been some degree of subjectivity in the ratings (see, e.g., DiPerna et al., 2007; Galindo & Fuller, 2010). Because all socioemotional scales may have some traces of this subjectivity, whether they are teacher- or parent-rated or based on subject-provided survey responses, results pertaining to socioemotional development may always contain some degree

of bias that does exist in more objective measures like standardized or IRT test scores. Hence, to continue exploring the effects of ELL classmates on nonachievement measures, future research could explore other nonachievement child developmental outcomes that may have slightly more objectivity. For instance, it may be possible that there are effects of ELL classmates on school-related health outcomes, such as the diagnosis of attention deficit disorders.

Second, there are many advantages to evaluating kindergartners and first graders by utilizing a large-scale NCES data set. That being said, data collection for these large data sets relies on tracking and surveying students, families, and school personnel; hence, they often contain missing data due to attrition from the sample or low response rates for certain questions or for entire individuals. These missing data and observations in turn limit the ability to make nationally representative conclusions. On the other hand, a school district or state-level data set might contain full information on entire cohorts of students, thereby allowing for the evaluation of differential results and interpretations when it is possible to follow complete samples of students. A research extension, thus, is that the methods employed in this study could be implemented on detailed district data to assess how the effects remain the same or differ based on these additional sources of data.

Third, the methodology in this study is quantitative and can thus be relied upon to draw conclusions based on trends and patterns. With an appropriately vertically scaled outcome (although a challenge to find with socioemotional scales), the use of other quasi-experimental methods or experimental techniques could derive a greater sense of causality between ELL classmates and student outcomes. With experimental work, for instance, direct evidence can be obtained, and stronger causal associations may be warranted. A follow-on study may also employ a qualitative approach as a way to derive more detail on how the peer-effects mechanisms described in this study are actualized in the classroom. Understanding the effect of ELL classmates from both investigative designs would allow for a more in-depth documentation of how students influence the outcomes of their peers.

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