Abstract Title Page
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Title: School Climate in Urban Elementary Schools: Its Role in Predicting Low-Income Children's Transition from Early Educational RCT to Kindergarten

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Abstract Body

Limit 5 pages single spaced.

Background / Context:

Description of prior research and its intellectual context.

Past research on school-level factors that predict children's development has focused largely on associations between a limited number of characteristics, such as school size and school resources, and children's academic achievement (e.g., Greenwald, Hedges, & Laine, 1996; Lee & Smith, 1997). Few studies take a more comprehensive look at the measurement of school climate or examine its relationship to children's social-emotional competence. Studies that aim to link features of schools with student outcomes typically necessitate a multilevel approach because students are nested in schools (Rumberger & Palardy, 2004). There are numerous methodological challenges involved in studying school effects on student outcomes, including the threats of selection bias and model misspecification, the need for a large sample size (especially at the school level), and the reliable measurement of school-level constructs of interest. Under ideal circumstances, studies of school effectiveness involve experimental or quasi-experimental designs that allow for causal inference. However, in the case of long-term follow-ups of children enrolled in randomized controlled trials (RCTs), education scientists typically do not have the luxury of random assignment to post-intervention treatments.

In other analyses based on the current study, the Chicago School Readiness Project (CSRP), we use propensity score matching, a quasi-experimental approach, to examine long-term effects of participation in a preschool intervention program on children's academic and behavioral outcomes after accounting for the quality of schools that they attended subsequently (Zhai & Raver, 2010). The benefit of methods such as these is that they allow for stronger internal validity. However, they do so to the exclusion of an in-depth characterization of the constructs at hand. In contrast, structural equation modeling (SEM) allows for the nuanced but parsimonious description of constructs of interest, such as school quality, using a latent-variable framework. The emphasis in SEM is on measurement, sometimes at the expense of internal validity.

A substantial body of literature suggests that low-income children are at greater risk for emotional and behavioral problems than their higher-income peers (Duncan, Brooks-Gunn, & Klebanov, 1994). Children spend most of their waking hours in school, yet little is known about whether and how school contexts support or constrain low-income children's social-emotional development. Furthermore, most research on school climate has focused on middle- and high-school students. Far less is known about the role of school climate in the development of elementary-school children (Rumberger & Palardy, 2004). Finally, the research base on schools and children's social-emotional development is quite thin; most research in this area has focused on achievement outcomes. Unlike many other studies of early elementary school, our study includes reliable measures of children's social-emotional competence. In the current paper, we capitalize on these strengths and the measurement capabilities of SEM to develop a new, multidimensional model of school climate, which we use to predict low-income children's social-emotional development during the transition to kindergarten. We use follow-up data from a cluster-randomized controlled trial of a classroom-based intervention in Head Start classrooms.

Purpose / Objective / Research Question / Focus of Study:
Description of the focus of the research.

The purposes of this study were to: (1) Identify a multidimensional model of school climate and (2) use it to predict low-income children's social-emotional outcomes during the transition to kindergarten.

Setting:
Description of the research location.

The research setting consisted of kindergarten classrooms located in the Chicago public schools (CPS).

Population / Participants / Subjects:
Description of the participants in the study: who, how many, key features or characteristics.

The original CSRP sample consisted of 602 children enrolled in 35 classrooms nested within 18 Head Start sites that were randomly assigned to either an intervention program designed to support young children's self-regulation or to a control group (see Raver et al., 2009). Enrolled children initially ranged from 3 to 5 years of age.

The sample used in the current analysis consisted of 200 children nested in kindergarten classrooms in 82 public schools. Children ranged from 4 to 6 years of age. Twenty percent were Hispanic and 74% were African American (see Table 1). The vast majority were from low-income households.

Intervention / Program / Practice:
Description of the intervention, program or practice, including details of administration and duration.

Children were enrolled in CPS schools in fall of the kindergarten year. Most of these schools served grades pre-K to 8. School size ranged from 98 students to 5,452 students and the percentage of low-income students in the school ranged from 9% to 100% (see Table 1).

Research Design:
Description of research design (e.g., qualitative case study, quasi-experimental design, secondary analysis, analytic essay, randomized field trial).

We use multilevel factor analysis and a wide array of school-climate variables to develop a new, multidimensional model of school climate. Then, we use the resulting latent school-context factors and multilevel SEM to predict low-income children's social-emotional development during the transition to kindergarten. We use auto-lagged models in which we control for children's social-emotional competence in Head Start in order to account for baseline levels of social-emotional competence and capture change in children's development between preschool and kindergarten.

Data Collection and Analysis:
Description of the methods for collecting and analyzing data.

Teachers reported on conflict and closeness in the teacher-child relationship using the Student-Teacher Relationship Scale (STRS) (Pianta, 2001) and on children's social competence using the Social Competence and Behavior Evaluation Scale—Short Form (SCBE-30) (LaFreniere & Dumas, 1995) in spring of the Head Start year and winter of the kindergarten year. Information on school characteristics, including student demographics and the percentage of students who met or exceeded state reading and math standards, were drawn from the Illinois State Report Card and a CPS report. A survey administered to CPS students assessed student perceptions of school climate, including school safety, student support, and social-emotional learning services. Parents reported on child and family demographic characteristics.

In preliminary analyses, we used 2-level auto-lagged hierarchical linear models (HLM) to predict children's conflict and closeness with the teacher and social competence from the following set of school characteristics: school size, student mobility rate, percentage of low-income students in the school, percentage of students in the school with an Individualized Education Plan (IEP), and percentage of students in the school who met/exceeded state reading and math standards. We included child-level controls for children's conflict and closeness with the teacher and social competence in Head Start, as well as child and family characteristics.

Multilevel factor analysis (Muthen, 1991) will be used to identify a multidimensional model of school climate using the full set of school-level variables, and multilevel SEM will be used to predict teacher-child conflict and closeness and children's social competence in kindergarten from these latent school factors, controlling for children's social-emotional competence in Head Start and child and family characteristics. The reduced-form equation will be as follows:

Social-emotional functioning at kindergarten for child *i* in school *j* = B_{0ij} + B_{1ij}*(Child's race/ethnicity) + B_{2ij}*(Child is male) + B_{3ij}*(Child's age) + B_{4ij}*(Child's social-emotional functioning in Head Start) + B_{5ij}*(Family income-to-needs ratio) + B_{6j}*(Latent school-climate factors) + u_j + e_{ij}

Findings / Results:
Description of the main findings with specific details.

Descriptive statistics revealed substantial variation in children's social-emotional functioning and school characteristics at kindergarten (see Table 1). Preliminary results from 2-level unconditional HLM models suggest that a small but significant portion of the variance in children's social-emotional functioning was attributable to between-school differences (ICCs ranged from 0.09 to 0.25). Additional 2-level HLM analyses in which children's conflict with the teacher, closeness with the teacher, and social competence in kindergarten were predicted from a set of school characteristics and child-level controls indicated that a large school size was associated with a small but significant increase in teacher-child conflict ($B = 0.003$, $p < .05$) and a small but significant decrease in children's social competence ($B = -0.004$, $p < .01$) between preschool and kindergarten (see Table 2). In contrast, a large percentage of children with an IEP was associated with a marginally significant decrease in teacher-child conflict and a marginally significant increase in children's social competence. The inclusion of controls for children's

social-emotional functioning in Head Start makes these models rigorous and conservatively specified, allowing for greater precision in our estimates.

Conclusions:

Description of conclusions, recommendations, and limitations based on findings.

School characteristics appear to be related to low-income children's social-emotional competence during the transition to kindergarten. Specifically, children in larger schools show somewhat lower levels of social-emotional competence than those in smaller schools, and there is some evidence that children in schools with a larger percentage of students with an IEP show higher levels of social-emotional competence than those in schools with fewer such students. Taken together, these results suggest that a sense of community in the school and the extent to which individual students' needs are being met matter for children's social-emotional development.

There are several limitations to this study. First, it is correlational in nature, so we cannot draw any causal inferences about the effects of school climate on children's development. In order to reduce the threat of selection bias, however, we controlled for children's social-emotional competence in Head Start and child and family characteristics in all models. Second, the results presented here reflect school climate in a sample of urban elementary schools and cannot necessarily be generalized to middle schools, high schools, or elementary schools in more rural areas. Furthermore, the children in our sample were mostly racial/ethnic minorities from low-income families, so our results may not be generalizable to other children. Finally, the baseline measures of children's social-emotional competence were collected less than a year before the outcome measures, making it harder to obtain large effects.

The presentation will include results of our school-climate factor analysis and multilevel SEM analyses in which we predict children's social-emotional development in kindergarten from a set of school-climate factors. The discussion will highlight the importance of a multidimensional approach to the measurement of school climate.

Appendices

Not included in page count.

Appendix A. References

References are to be in APA version 6 format.

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Zhai, F., & Raver, C. C. (2010, November). *Long-term effects of a cluster-randomized controlled trial: After adjusting for impacts of post-intervention treatments.* Paper presented at the 32nd Annual APPAM Research Conference, Boston, MA.

Appendix B. Tables and Figures
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Table 1

Descriptive Statistics for Variables Used in HLM Analyses

Variable	*M*	*SD*	Range
Outcome variables (all measured at kindergarten)			
Conflict with the teacher (STRS composite)	12.62	6.81	7-33
Closeness with the teacher (STRS composite)	32.96	5.77	16-40
Social competence (SCBE composite)	29.34	12.83	0-50
Child and family characteristics (n = 200)			
Child's race/ethnicity			
White/non-Hispanic	0.04	0.19	0-1
African American	0.74	0.44	0-1
Hispanic	0.20	0.40	0-1
Bi-racial	0.03	0.16	0-1
Child is male	0.52	0.50	0-1
Child's age at kindergarten (years)	4.61	0.67	4-6
Conflict with the teacher (STRS composite) in Head Start	11.73	5.17	7-28
Closeness with the teacher (STRS composite) in Head Start	33.15	5.92	12-40
Social competence (SCBE composite) in Head Start	29.46	9.84	1-49
Family income-to-needs ratio at kindergarten	0.69	0.58	0-3.45
School characteristics (all measured at kindergarten; n = 82)			
School size (total enrollment)	765.11	641.27	98-5,452
Student mobility rate	24.83	15.36	2.2-84.4
Percentage of low-income students in the school	90.38	14.43	8.9-100
Percentage of students in the school with an Individualized Education Plan (IEP)	12.36	4.30	5-30.6
Percentage of students in the school who met/exceeded state reading and math standards	59.73	15.72	32.8-97.7

Table 2

Parameter Coefficients (and Standard Errors) from HLM Analyses Examining Child- and School-Level Predictors of Children's Social-Emotional Functioning in Kindergarten

Variable	Conflict with the teacher		Closeness with the teacher		Social competence	
Child and family characteristics						
Child's race/ethnicity (Hispanic is omitted category)						
White/non-Hispanic	0.52	(1.56)	2.43†	(1.26)	0.68	(4.42)
African American	3.13*	(1.36)	-0.81	(1.66)	-2.65	(3.21)
Bi-racial	-6.65*	(2.80)	-1.79	(2.13)	2.73	(3.07)
Child is male	0.36	(0.92)	-1.86†	(1.11)	-3.42	(2.66)
Child's age at kindergarten (years)	-0.81	(0.76)	-0.24	(0.85)	1.49	(1.63)
Conflict with the teacher in Head Start	0.45***	(0.09)				
Closeness with the teacher in Head Start			0.16*	(0.08)		
Social competence in Head Start					0.19*	(0.10)
Family income-to-needs ratio at kindergarten	-1.42	(0.88)	1.48†	(0.82)	3.17†	(1.65)
School characteristics						
School size (total enrollment)	0.00*	(0.00)	-0.00	(0.00)	-0.00**	(0.00)
Student mobility rate	0.02	(0.04)	0.00	(0.05)	0.08	(0.10)
% of low-income students in the school	-0.06	(0.05)	-0.01	(0.05)	-0.02	(0.10)
% of students in the school with an Individualized Education Plan (IEP)	-0.22†	(0.13)	0.08	(0.15)	0.53†	(0.30)
% of students in the school who met/exceeded state reading and math standards	0.00	(0.06)	-0.01	(0.04)	0.01	(0.10)
Constant	16.17†	(8.60)	29.94**	(8.55)	13.08	(16.23)

Note. Level-1 equation: Social-emotional functioning at kindergarten = B0 + B1*(Child's race/ethnicity) + B2*(Child is male) + B3*(Child's age) + B4*(Child's social-emotional functioning in Head Start) + B5*(Family income-to-needs ratio) + R. Level-2 equation: B0 = G00 + G01*(School size) + G02*(Student mobility rate) + G03*(% low-income students in school) + G04*(% students in school with IEP) + G05*(% students in school who met/exceeded state reading/math standards) + U0.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.