



## The stability of elementary school contexts from kindergarten to third grade☆



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### ABSTRACT

The nature and measurement of school contexts have been the foci of interest in community, developmental, and school psychology for decades. In this paper, we tested the stability of six elementary school-context factors over time, using a nationally representative and longitudinal sample of schools from the Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (ECLS-K), and systems theories as a conceptual framework. Confirmatory factor analyses and tests of measurement equivalence revealed that six latent factors fit the data equally well across kindergarten, first grade, and third grade: school strain, school safety practices, school academic performance, school instructional resources, positive school climate, and school violence and crime. The factors were highly stable across the early elementary school years, with standardized stability coefficients ranging from .87 to .99 between kindergarten and first grade and from .71 to .98 between the first and third grades. Equivalence in the two sets of stability coefficients was also found across time. Both the magnitude and equivalence of the stability coefficients were robust to the inclusion of five key exogenous school characteristics as covariates in the model. Results suggest that elementary school contexts are remarkably stable over time and shed light on methodological considerations regarding the treatment of school-level measures in analyses that examine links between school context and children's academic and developmental trajectories.

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## 1. Introduction

The evidence base is clear that schools matter for children's development (Bowen & Bowen, 1999; Chen, 2007; Gershoff & Benner, 2013; Roeser, Eccles, & Sameroff, 2000). A variety of studies has documented links between variation in school characteristics and change in children's academic and developmental outcomes (e.g., Aikens & Barbarin, 2008; Cook, Herman, Phillips, & Settersten, 2002). Few studies, however, have examined whether and to what extent school contexts themselves change. Research on school-level inputs that predict children's academic achievement has generally assumed that school contexts remain stable over time (e.g., Schmitt, Sacco, Ramey, Ramey, & Chan, 1999; Temple & Reynolds, 1999), although little is known about whether this is true. In light of heightened policy attention over the last decade to school accountability under the federal No Child Left Behind (NCLB) Act, the need to understand whether and to what extent schools reflect stable developmental contexts for children is now greater

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than ever. Indeed, the Obama administration has called for a stronger emphasis on understanding and tracking school climate under NCLB (Klein, 2010).

The purpose of this paper was to examine the temporal stability of a multidimensional model of school context across the early elementary school years. We first established six latent school-context factors, based on long-standing literature on the features of schools that are linked to children's academic performance and social-emotional adjustment. We used three waves of administrator surveys collected as part of the Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (ECLS-K), a nationally representative sample of schools and children within those schools. We then tested the measurement equivalence and stability of these factors over time. Finally, we examined whether exogenous school characteristics and methodological covariates influenced the temporal stability of school context.

### 1.2. A theoretical framework for understanding contextual influences on child development

The last several decades of research on children have emphasized the need to consider contexts generally and school contexts specifically as influences on child development (Duncan & Raudenbush, 1999; Roeser et al., 2000). This work has been driven by the idea that the proximal and social processes that unfold within the immediate contexts in which children reside represent the primary mechanisms through which these environments influence children (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006; Tseng & Seidman, 2007). Systems theories, such as Bronfenbrenner's ecological systems theory and Tseng and Seidman's systems framework, provide a conceptual backdrop for the study of school context and its stability over time.

Bronfenbrenner's ecological theory posits that contexts play a powerful role in shaping human development (Bronfenbrenner, 1979). Central to the theory is the notion that human development unfolds through proximal processes—the reciprocal interactions between an individual and the people, objects, and symbols in the individual's immediate environment. These proximal processes vary as a function of characteristics of the individual, the environment, and the time periods in which the processes occur. Bronfenbrenner further posits that a stable, consistent, and predictable environment is optimal for human development (Bronfenbrenner & Morris, 2006).

Tseng and Seidman (2007) propose a systems framework for understanding youths' social settings as intervention targets that is also centered around social interactions. The authors highlight two other dimensions that are central to these settings—resources (i.e., human, economic, physical) and the organization of resources (i.e., the allocation of resources). While all three of these dimensions (social interactions, resources, and the organization of resources) are dynamic and transactional, the resources and their organization are thought to influence the social interactions within a setting, which, in turn, affect individual- and setting-level outcomes. Taken together, these theoretical perspectives highlight several key dimensions of contexts that warrant consideration when examining contextual influences on human development: resources, the organization of those resources, the social and relational interactions that occur within the context, and the degree to which these contextual dimensions change over time.

### 1.3. Key aspects of school context

Across disparate research areas in education science, school contexts have been described along numerous dimensions, including school resources (such as the ratio of teachers to students), student body composition (such as the percentage of students above grade level in reading), school climate, and the extent to which the school and its surrounding neighborhood are safe versus violent or chaotic. Each of these dimensions of school context has been found to be a key predictor of children's social-emotional development and academic success. We briefly review this prior research below.

One of the biggest debates in the field of education science concerns the association between school resources and expenditures and student achievement. One body of evidence suggests that there is no association between school expenditures or resources (defined as the teacher-pupil ratio, teachers' education and experience, teachers' salaries, per-pupil expenditures, administrative inputs, and facilities) and individual student achievement (Hanushek, 1989, 1994, 1997). But other evidence, based on the same data and different analytic techniques, indicates that school resources do in fact matter for student achievement (Greenwald, Hedges, & Laine, 1996; Hedges, Laine, & Greenwald, 1994). More recent research supports the notion that resources, including school expenditures, teacher education, and learning support services, are positively related to student achievement (Cohen, Raudenbush, & Ball, 2003; Darling-Hammond, 2000; Han & Bridgall, 2009).

The composition of the student body is another feature of schools that has been found to be associated with student achievement. Results favor a heterogeneous mix in terms of academic achievement and socioeconomic status (SES) (Aikens & Barbarin, 2008; Dar & Resh, 1986; Hooper & Hannafin, 1991; Rutter & Maughan, 2002). Other studies, however, have found no association between heterogeneous student groupings and student achievement (Betts & Shkolnik, 2000; Slavin, 1990).

A separate body of literature has examined links between school climate and student outcomes. Climate has been described as the "personality" or "character" of school life (Anderson, 1982; Cohen, McCabe, Michelli, & Pickeral, 2009), including the norms, beliefs, and expectations held by teachers, students, and other school staff (Brookover et al., 1978), as well as interpersonal relationships within the school (Haynes, Emmons, & Ben-Avie, 1997). Dimensions of school climate have been linked to both students' academic performance and social-emotional well-being (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Hoy, Tarter, & Hoy, 2006).

Finally, the extent to which schools and the surrounding neighborhoods are dangerous and chaotic is another dimension of school context that has garnered attention. The incidence of school crime and student reports of poor school and neighborhood safety have been shown to be related to lower school attendance rates and lower academic achievement among elementary-, middle-, and high-school students (Aikens & Barbarin, 2008; Bowen & Bowen, 1999; Chen, 2007; Sampson, Morenoff, & Gannon-Rowley, 2002).

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