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Small High Schools on a Larger Scale:
The Impact of School Conversions in Chicago

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This study examines 4 years of small school reform in Chicago, focusing on schools formed by converting large traditional high schools into small autonomous ones. Analyzing systemwide survey and outcome data, the authors assess the assumptions embedded in the reform's theory of change. They find that these schools are characterized by more collegial and committed teacher contexts and more academically and personally supportive student contexts. There is some evidence of decreased dropout rates and increased graduation rates for the first cohort of students but not for the second cohort. The authors do not find stronger instruction, nor do they find student achievement has improved. They discuss implications for reformers and policy makers who are interested in small schools in particular and high school reform in general.

Keywords: *small schools, high school reform, evaluation*

Rᴇsᴇᴀʀᴄʜᴇʀs, policy makers, school leaders, and concerned citizens are increasingly recognizing that high schools in the United States are in need of major reform—or as some have put it, in need of being reinvented (Gates, 2005; Harvey & Housman, 2004). Many students do not persist to graduation, and among those who do graduate, overall academic achievement is low. The United States ranks 16 out of the top 21 Organization for Economic Co-Operation and Development nations with respect to high school graduation rates (Kirsch, Braun, Yamamoto, & Sum, 2007). In fact, analysis by Greene and Winters (2005) indicates that for public school students, the

national graduation rate for the class of 2002 was 71%. Furthermore, only 34% of students who entered ninth grade in public schools left with regular diplomas and the qualifications to attend a 4-year college. Additional research shows that high schools are not preparing students for college, work, and life (American Diploma Project, 2004).

The problem is severe in large urban high schools, which disproportionately serve students of low socioeconomic status and students of color. According to Greene and Winters (2005), of students who were enrolled as ninth graders and scheduled to graduate in 2002, only 52% of Latino students and 56% of African

281

American students ultimately earned regular diplomas. In addition, the percentage of students who had graduated with the abilities and the qualifications to even apply to a 4-year institution was only 40% for White students, 23% for African American students, and 20% for Latino students. As Daniels, Bizar, and Zemelman (2001) wrote, "America's high schools are failing all of our kids some of the time and some of our kids all the time" (p. 22).

Chicago's public schools reflect these trends. Only 54% of the 2000–2001 ninth-grade cohort graduated from high school in 4 years (Allensworth, 2005). In addition, 11th graders in Illinois scored higher than 11th graders in Chicago on the 2004 Prairie State Achievement Exam (PSAE). In fact, among those who stayed in school until the end of their junior year, 57% of Illinois students met standards in reading, compared with 36% in Chicago, and 53% of all students in Illinois met standards in math, compared with 28% in Chicago (Ponisciak, 2005). This lack of academic skill has consequences: Using the most comprehensive college data available, Allensworth (2006) found that only 8% of students who begin high school in the Chicago Public Schools (CPS) earn a baccalaureate degree by their mid-20s. Using similar data, Roderick, Nagaoka, and Allensworth (2006) estimated that only about 3% of male African American and Latino students do so.

Small High Schools

Reform focused on smaller, more personal schools has been advanced by educators such as Meier (1995) and researchers such as Newmann and Wehlage (1995) and by foundation funding. Most notably, as of December 2006, the Bill and Melinda Gates Foundation (2006) had committed over $3.5 billion to education in the United States, with a strong focus on high school reform and with much of it centered on improving schools through the creation and replication of small high schools. Energized by these efforts, the city of Chicago and numerous other urban districts are emphasizing the creation of small schools as a key part of their high school improvement strategies.

For the past 4 years, we have been studying the implementation and impact of the Chicago High School Redesign Initiative (CHSRI), which opened 23 small high schools between fall 2002 and fall 2005.[1] A major goal of this work has been to assess whether students who attend these newly created small high schools demonstrate improved academic performance (as measured by standardized test scores in reading and math) and lower dropout rates and higher graduation rates when compared with similar students who attend other schools in the district. In an effort to understand the potential differences in these outcomes, we assessed the contexts for teachers and students that small schools aim to create, and we considered the relationship of such contexts to desired outcomes. Specifically, we assessed two assumptions that are embedded in the reform's theory of change: first, that small schools lead to more supportive and personalized contexts for students and, second, that they lead to contexts for teachers that spur improved instruction. As Quint (2006) has written, "*structural changes to improve personalization* and *instructional improvement* are the twin pillars of high school reform" (p. ES-10; italics in original). As detailed in our discussion of the theory of change, reformers assume that changed instruction and personally supportive contexts are essential means of fostering improved outcomes. By bringing data to bear on these assumptions, evaluation and analysis of small school reform in Chicago can deepen our collective understanding of these dynamics as they relate to small school reform in particular and to high school reform in general.

We begin by reviewing pertinent research on small high schools and why they may hold promise for improving high school outcomes. Drawing on this review, we describe the theory of change underlying CHSRI. We then detail the method associated with our quantitative inquiry, the key findings, and the potential implications.

Prior Research on the Impact of Small Schools

Are Small Schools Associated With Improved Outcomes?

Prior research on small high schools provides significant reason for interest in this reform strategy but leaves many important questions unanswered. Several studies have found that

small elementary and secondary schools are associated with improved student achievement (Cotton, 1996; Darling-Hammond, Ancess, & Ort, 2002; Haller, Monk, & Tien, 1993; Holland, 2002; Howley, 1989; Lee, 2002). There is also evidence that small schools promote more equitable access to academically demanding courses (Bryk, Lee, & Holland, 1993), more equitable gains in achievement (Darling-Hammond et al., 2002; Lee & Smith, 1995), and lower dropout rates (Darling-Hammond et al., 2002; Holland, 2002; Pittman & Haughwout, 1987). Numerous studies have also found that smaller schools are associated with personally supportive and trusting contexts for students (American Institutes for Research & SRI International, 2004; Kahne, Sporte, & Easton, 2005; Shear et al., 2005).

Not all findings regarding the impact of small schools are positive, however. Wasley et al. (2000), as well as Hess and Cytrynbaum (2002), studied small schools in Chicago and found enhanced engagement but no consistent impact on student achievement. Similarly, preliminary results from the national evaluation of the Gates small schools initiative are mixed. Rhodes et al. (2005) found evidence of a positive school climate, especially in terms of increased personalization for students and increased common focus for teachers; they also found continuing shortcomings related to instruction 2 and 3 years into the reform—particularly as it relates to mathematics instruction. In addition, Mitchell et al. (2005) collected, as part of their 2004 evaluation, teacher assignments and student work from 16 schools. Among the data collected from small schools, they found some evidence of more rigorous teacher assignments and higher-quality student work in English and language arts; however, they found that student work in mathematics was actually of lower quality in small schools than in the schools with which they were compared. The national study (Rhodes et al., 2005) also compared improvement trends of the test scores of small schools in three districts with those of the remaining schools in those districts. The results were mixed (some higher, some lower, and some flat) and therefore inconclusive.

Finally, studies from the research firm MDRC examined three major high school reform models that involved small learning communities—with one using random assignment and the other two using comparative interrupted time-series designs. Overall, these smaller communities were associated with increased feelings of connectedness among the students and their sense that they were known and cared for. It also appears that small learning communities played a role in increasing attendance and decreasing dropout rates. At the same time, these studies did not find that a structural emphasis on size necessarily led to improved academic performance (Kemple, 2004; Kemple, Herlihy, & Smith, 2005; Quint, 2006; Quint, Bloom, Black, & Stephens, 2005).

In some cases, the academic shortcomings of small schools may stem from their being too small. Lee and Smith (1997) found that the optimal school size in terms of academic outcomes fell between 600 and 900 students, yet many small school advocates suggest that sizes ranging from 150 to 300 are ideal (Big Picture, 2007; Small School Workshop, 2007).

Characteristics Associated With Successful Small Schools

Just as the evidence regarding outcomes in small schools is mixed, so is the evidence regarding which small school components are most essential or most highly related to improved outcomes. Some scholars have sought to identify these factors, indicating that the beneficial value of small schools depends on the degree to which they promote factors such as personalization, interactive and authentic instruction, and challenging curriculum, while avoiding inequitable divisions in students' opportunities to learn (Darling-Hammond et al., 2002; Lee, 2002). Unfortunately, promoting these characteristics appears to be quite difficult. Research on small learning communities and instructional practices in several cities has found that changes in teachers' professional environment are more common than changes in curriculum and instruction (Lee & Ready, 2007; Stevens, 2006; Supovitz & Christman, 2003).

Adding to the uncertainty is the question of scale. Many current reform efforts, including Chicago's, go far beyond launching a few distinctive small schools; instead, these initiatives aim to promote small schools on a large

283

scale (or at least a larger scale). This more expansive reform strategy is worthy of attention. To date, many small schools have been launched in a relatively idiosyncratic way. Their leaders may have had particular insights and visions; special connections; or a great deal of charisma, resources, drive, and so on. For example, several of the small high schools that existed in Chicago before CHSRI raised hundreds of thousands of dollars in addition to the funds provided by the district. Even if these smaller schools outperform other high schools serving similar students, it does not mean that efforts to launch small schools on a large scale will be as effective. In short, although much has been written about small high schools and although many in the foundation community and some in the reform community believe that this strategy can improve the life chances of high school students, the research supporting these beliefs is limited.

Small School Reform in Chicago

Our study was designed to deepen understanding of these issues. In it, we examined the districtwide effort in the CPS to promote small school reform on a larger scale through the conversion of already-existing neighborhood schools into several small schools. As such, we hoped to understand the extent to which small schools are associated with outcomes that differ from those in larger schools serving similar students. We therefore examined whether small schools create improved instructional opportunities for students, as well as more academically and personally supportive contexts—two priorities that are the focus of reformers' efforts.

The desirability of this policy direction cannot be determined by outcomes in a single city, of course, but because of the size of the intervention in Chicago and the quality of data that we have on it, Chicago's experience can meaningfully inform the broader dialogue among reformers, researchers, and policy makers. Indeed, studies of small schools often compare trends in the small schools' performance with trends for the district overall, or they compare the performance of students in small schools with the performance of students at that school before its breakup.[2] Because we have access to extensive school-level and individual-level

demographic and achievement data, we are able to (a) control for school-level and individual-level demographic and academic factors to a significantly greater degree than most other researchers and (b) do longitudinal and panel data analysis when assessing the efficacy of the CHSRI reform. In addition, our student and teacher survey data from the entire district enable us to (a) provide quantitative assessments of contexts, as well as outcomes, at an appropriate time in the reform's early history and as a result, (b) look carefully at the degree to which varied components of the reform's theory of change were realized.

Chicago provides a valuable setting for considering the challenges and possibilities of small school reform. It is the third-largest district in the United States, serving some 427,000 students, over 85% of whom come from low-income families (CPS, n.d.). As of September 2005, there were slightly more than 106,000 students in Grades 9 through 12 attending 107 high schools, including roughly 30 small schools and charter schools. As mentioned, CPS students underperform the rest of the state on measures of academic achievement, including standardized test scores and graduation rates.

The creation of small high schools is one significant response to the unacceptably low outcomes associated with Chicago's high schools. Although Chicago has a history of small school creation, we focused on the largest and most recent effort to develop small high schools—CHSRI. In partnership with CPS, the effort was launched by the Bill and Melinda Gates Foundation and local funders. It began in September 2001 with a $12 million grant from the foundation, matched by $6 million from foundations in Chicago. By fall 2005, CHSRI had opened 23 new small schools.

Our study focused on the first phase of this initiative, the goal of which was to convert up to five large high schools into 15 to 20 autonomous small schools over 5 years. CHSRI published a formal request for proposals in 2001 (available from authors), indicating that large high schools would be selected on such criteria as having a history of small school activity, being a neighborhood school with high-need factors (poverty and low academic achievement), submitting a high-quality proposal with a governance plan,

284

and demonstrating support from all stakeholders of the school community. Teachers and other interested parties were invited to apply for foundation funds and the right to convert a large school into a group of autonomous small schools. These schools would share the building but not administrative staff or discretionary funds. The CHSRI board and CPS administrators selected three large underperforming high schools and from the individual proposals from these schools, selected five small high schools to open in the fall of 2002. An additional four schools in the same buildings opened in 2003, and a final set of three schools opened in 2004. The schools remained neighborhood schools, and participating teachers for these 12 small schools came largely from the teaching force that was already at the three large schools. Indeed, teachers knew that they needed to join one of the small schools by the time the school's conversion was complete or else apply for a job at another school in the district, without guarantee of finding a comparable position.

Although not a focus in this study, CHSRI received in April 2003 a second grant of almost $8 million from the Gates Foundation to open 12 new small high schools over 5 years, as opposed to converting large existing schools into smaller ones (CPS, Office of Small Schools, n.d.). In that year, CHSRI helped fund and support the creation of two new small schools as part of the Big Picture network. In 2004, CHSRI opened two new schools; in 2005, the initiative opened an additional seven new schools; and a final school was slated to open in fall 2007.

CHSRI's Theory of Change

Like many current evaluative studies of educational interventions, ours is based on a theory-driven strategy (Chen, 1990; Connell, Kubisch, Schorr, & Weiss, 1995; Weiss, 1995). Rather than focus only on whether the intervention promotes improved student outcomes, this strategy examines the assumptions that the architects of the initiative made regarding why or how the reform would achieve improved outcomes. Indeed, small school reform efforts likely alter structures and practices related to many aspects of students' social and academic experience. As with the size of the school, those structures and

practices are consequential. Our focus on the theory of action as embedded in this reform enabled us to examine the assumptions regarding the way that the reform influences a range of factors that shape students and teachers' experiences and outcomes. For instance, as we detail below, proponents of this small school reform assume that small schools are a good way to create collegial environments of committed teachers, which in turn prompt instructional innovations and student learning.

An outcome-driven study might focus solely on whether students in small schools learn more than do similar students who do not attend small schools. In contrast, a study that employs a theory-of-change approach might examine whether teachers who work in small schools do in fact experience more collegial settings and teach differently than do those in larger schools serving similar students. Such a study might also examine student learning outcomes. The hope would be that by focusing on central assumptions regarding why and how a given reform promotes desired results, researchers would gain an understanding of why a reform succeeded or failed, what assumptions might be in need of revision, and what modifications might be necessary to the reform strategy or its implementation.

Therefore, an early priority in our study of CHSRI was to map out the reform's theory of change. We conducted interviews with key stakeholders: funders, district leaders, reform staff, teachers, and principals. We also examined written documents associated with the reform agenda, such as the request for proposals to create small schools and the district statements regarding the initiative. Finally, we looked at the broader literature on small schools, as well as statements by the Gates Foundation, which local actors drew on to explain what they were hoping to accomplish and how they were going to do it. We then drafted a memo outlining a theory of change, shared it with key stakeholders, and made minor revisions. Although this theory has undergone modest revision since then to reflect clarifications and revised thinking on the reform, it has stayed largely the same and has served as an organizing framework for our analysis.

Below, we describe this theory. This framework portrays the mechanisms through which
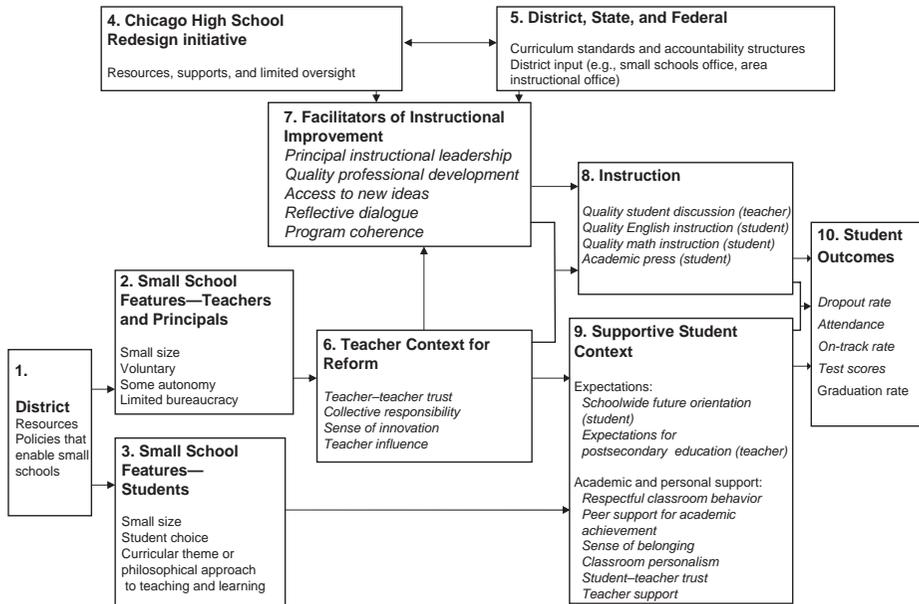
285

FIGURE 1.   *Theory of action.*

Note. Terms in italics are the focus of this article, as measured through student and teacher surveys and administrative records (see Boxes 6–10).

various features of small school reform are thought to promote desired contexts for students and teachers. It also details how these contexts—in the presence of district, state, and federal influence—can promote curricular change and desired outcomes (see Figure 1).

As outlined in Figure 1, the theory suggests that improved student outcomes result from numerous factors both inside and outside the small school. First, reformers assume that if a district (Box 1) provides appropriate resources and policies, then they can create small voluntary schools in which teachers and principals experience limit bureaucratic regulation (Box 2). Doing so would in turn help to create a desirable teacher context for reform (Box 6) characterized by trust, collective responsibility, and teacher influence.

Of course, there is no guarantee that a given small school will take advantage of its small size to develop trust, collegiality, and a sense of collective responsibility. But small school advocates in Chicago and elsewhere argue that this reform makes the creation of such a context more likely (e.g., Meier, 1995). Indeed, studies of the relation between school size and organizational properties back these contentions. As Bryk et al. (1993) explain, "the coordination of work in larger schools typically imposes demands for more formal modes of communication and encourages increased work specialization and a greater bureaucratization of school life" (p. 299). The broader literature on organizations comes to similar conclusions. For instance, larger organizations are often associated with increased formalization, bureaucratization, and worker alienation (Aiken & Hage, 1966; Blau & Schoenherr, 1971).

Proponents of this reform do not view the teacher context described in Box 6 as being desirable in and of itself. Rather, they view the context as being desirable because they expect it to spur instructional improvement activities (Box 7) and to help ensure that such activities lead to meaningful changes in instructional practice (Box 8). When interviewed about the theory of change, one stakeholder put it this way:

> It's not just [that] it's a good environment for teachers and they like each other. It's also an environment where they embrace the responsibility for looking at their craft in a more serious way and really trying to improve upon instruction and instructional delivery.

Clearly, the creation of a context conducive to instructional improvement activities is also shaped by the provision of resources and supports from the CHSRI staff and the district leadership

286

(Boxes 4 and 5). Proponents of small school reform in Chicago want those groups to balance their need to provide support, direction, and accountability systems with their need to protect the small schools' autonomy and flexibility—given that autonomy and flexibility are core components of the rationale for small schools (for a discussion of varied districts efforts to strike this balance, see Raywid & Schmerler, 2003).

Reform advocates also believe that small school reform enables the creation of school communities in which all students are held to high expectations and receive personal and academic support. In large part, this hope rests on the assumption that smaller environments spur more personal relationships between students and teachers. As Fine (1998) has written, "small may be a necessary condition for a nonselective high school to excel. . . . Small is necessary if students are to feel attached to each other and to faculty" (p. 4, as cited in Husbands & Beese, 2001).

In line with findings from research (e.g., Wehlage, Rutter, & Smith 1989), reformers believe that both the teachers' commitment to the school community and the students' sense of support and belonging would be enhanced by the fact that both the teachers and the students chose to be part of the school and thus share a common interest in a curricular theme or instructional focus (Box 3). Indeed, a requirement of the application process in Chicago involves articulating such a theme or focus. These more personal relationships, this knowledge of students' needs and interests, and this shared sense of community, when combined with the ability to keep track of all students, are expected to help teachers provide greater academic and personal support while holding all students to higher expectations (Box 9). Clearly, one can argue that this personalized supportive context is a valued end (e.g., Noddings, 1992). In the current policy context, however, it is most often advanced as a method that when combined with high-quality instruction, makes desired student outcomes more likely (Box 10).

Although our broad study examines the full range of assumptions described above, this article concentrates on those aspects of the theory of change that we can assess quantitatively. Drawing on survey data from the Consortium on Chicago School Research and on administrative data from CPS, this article examines the contexts and outcomes identified in Boxes 6–10; specifically, it compares those of CHSRI schools with those of otherwise similar schools serving similar populations. Qualitative work carried out as part of this project examines the components of Boxes 1–5, but we do not detail that research here (see Sporte, Correa, & Kahne, 2003; Sporte, Kahne, & Correa, 2004; Stevens, 2006; Stevens & Kahne, 2005).

Method

Sample and Data

All our data come from two sources: The first is the Consortium on Chicago School Research's biannual survey administered in April and May 2005 to all students in Grades 6–12, all teachers, and all principals in CPS. The second source comprises the administrative records of CPS and test data from the 2002–2003 academic year to the 2005–2006 academic year.

In this study, we focus primarily on 11th-grade students and the teachers in their schools. We have two reasons for analyzing 11th-grade student data. First, one of our key outcome measures—standardized test scores—is based on the PSAE, which is given only to 11th graders. In addition, it seems plausible that some of the benefits of small schools (or, possibly, their costs) may take several years to develop—for example, strong social bonds resulting from multiple years in a small school community.

Because of this focus on 11th-grade students, our analytic sample includes only schools that were created from the conversion of large neighborhood schools into small autonomous ones. Although 50 students attending two nonconversion CHSRI schools had reached 11th grade by 2005, we did not include these schools in this study, instead choosing to focus on conversion schools that served the majority of 11th graders in the CHSRI. In addition, the conversion process took place over several years; as such, there were some students who remained in the original large school until they graduated. We removed from the analysis data from these students and the host schools that were in the process of closing down to make way for full conversion.

In the first year of the reform, there were 3 CHSRI schools serving 11th graders. The following

287

year there were 5, then 9, and finally, in 2005–2006, there were 11 CHSRI conversion schools serving 11th graders.[3] We compared these schools to the rest of CPS nonalternative high schools, except as noted above. The number of non-CHSRI schools varies, from the low 50s to the high 70s, depending on the outcome and year. The number of students and teachers also varies depending on whether we are analyzing student outcomes or measures that come from surveys.

Student and School Characteristics

Students in Chicago's public schools are, to an overwhelming degree, students of color, and they predominantly come from disadvantaged backgrounds. As noted in the introduction, students in Chicago, on average, have low levels of achievement and attainment, as indicated by test scores and graduation rates, respectively. CHSRI schools were selected to improve these outcomes by serving students in high-poverty neighborhoods. The three high schools where the conversions took place, resulting in the creation of 12 schools, were among the lowest performing in the city. To provide background context for the schools in this study, we show the characteristics of first-time ninth graders in these conversion schools in fall 2004, when all 12 conversion schools had opened, comparing them to CPS overall. We compare this data to data on nonselective high schools in Chicago and to all high schools in Chicago (see Table 1).

Selection Effects

In any new initiative where participation is voluntary, there is the possibility of selection effects, with the more motivated students choosing the new format—or, possibly, the weakest students doing so (i.e., students who have not succeeded under the old structure). In the case of these conversion schools, we do not believe that this occurred in a way that biases our results. We say as much because the schools were all neighborhood schools and were required to admit all students from the neighborhood regardless of student or parent interest in any one of the small schools. Indeed, in our qualitative work we often heard from students who were unable to name the school's curricular theme or who claimed to have been assigned to a school, although there were

also some students who expressed interest in a particular small school (Sporte et al., 2003; Sporte et al., 2004). Second, as noted earlier, these were some of the lowest-performing schools in city and so did not generally have desired reputations (see Table 1). Although some teachers and administrators in some of the new small schools hoped to attract motivated and academically stronger students, we did not see quantitative indications that this occurred. Incoming achievement and the percentage of students who were attending from outside the catchment area, for example, remained stable.

Another source of bias could be the fact that stronger and more motivated teachers chose to be part of the new small school, thereby enhancing teacher contexts for reform. To some extent, this occurred in the first year of the initiative. Although almost all teachers in all the first-cohort schools came from within the host schools, they are still considered the early adopters, the ones most enthusiastic about being part of a small school (Sporte et al., 2003), which could have led to some bias among the schools making up a host campus during the first year of the initiative. However, our fieldwork indicates that in the second and third years of the initiative, teachers came almost solely from the original host school and instead of being motivated to join a small school, chose to participate in the new small schools only to avoid changing schools altogether (Sporte et al., 2004). Thus, given that both cohorts of the schools that we studied hired teachers over at least 3 years and because the bulk of the teachers were teaching at converted school before the conversion to the small schools, we think the selection bias related to teachers was likely not great.

In short, we did not see qualitative or quantitative evidence that significant selection effects occurred, and we do not suspect that they resulted in a sizable bias one way or the other. It is worth noting, however, that our sample does not include any "new start" schools—that is, schools created to be freestanding and not the result of a conversion of a neighborhood school. Selection into these schools may well have occurred both for students and for teachers (because these schools recruited all their teachers and students). For this reason, we did not include them in our sample, although there were two such schools that had juniors in the 2003–2004 cohort.

TABLE 1

Performance and Demographic Characteristics of First-Time Ninth-Grade Students, 2004–2005

Characteristic	CHSRI schools	All CPS nonselective high schools	All CPS high schools[a]
Eighth grade reading scores: first time ninth graders[b]	225	240	246
Racial composition (%)			
African American	90.6	53.0	50.9
Latino	8.6	36.8	35.9
White	0.4	7.3	9.2
Receiving special education services (%)	26.7	18.2	17.0
Old for grade (%)	37.4	25.9	23.7
Two or more moves in the 3 years before high school (%)	21.1	13.7	12.9

a. This includes the selective enrollment high schools.

b. From the Iowa Tests of Basic Skills. The ITBS national average for eighth graders in reading is 250; for seventh grade, 239; for sixth grade, 227.

Outcome Variables

To explore student and teacher contexts, we analyzed different measures developed over the past 15 years, although a few of our indicators have been used in only the past two survey administrations. All, however, were developed through an ongoing process that integrated research on effective schools, earlier research in Chicago, research at the Center for School Restructuring at the University of Wisconsin, and continuing input from local stakeholders (for a discussion of these measures and their relationship to outcomes in Chicago's elementary schools, see Sebring, Allensworth, Bryk, Easton, & Luppescu, 2006). As noted, we selected measures from the Consortium on Chicago School Research survey that aligned with the initiative's theory of change. All told, we use 20 survey measures, comprising 130 items. These measures were developed using Rasch scaling (Wright & Masters, 1982). The Rasch approach permits the creation of a latent variable that is conceptually and empirically cohesive, such as collective responsibility or academic press. With items that relate to the same characteristic, a scale was constructed reflecting the relative difficulty of each item (i.e., the likelihood that respondents will agree with a given item). The scales were evaluated using the person reliability statistic (the ratio of adjusted standard deviation to the root mean square error computed over the persons), which is approximately equivalent to Cronbach's alpha. Tables A1 and A2 describe these 20 measures and provide their reliabilities.[4] Details on the sample size of each analysis can be found in Tables 2 and 3, which is where we report our findings.

Because our student outcome indicators rely on record data from the district, we have data on a number of such indicators. We chose to focus on test scores and dropout/graduation rates because these are the most commonly cited measures of schooling outcomes. In addition, because recent work at the Consortium on Chicago School Research has pointed out the importance of absences on students' academic attainment (Allensworth & Easton, 2007), we examined student absences for each year of the reform (see Table A3 for a description of these indicators). Details on the size of these analytic samples can be found in Table 4, where we report our findings.

Analytic Method

This study combines three analyses: First, it looks at school contexts, as reported by surveys of students who were juniors (eleventh graders) in the spring of 2005 and by teachers in those schools. At this point, there were nine CHSRI schools serving juniors. Next, it examines single-year outcomes— days absent and achievement scores from the PSAE—for juniors in the nine conversion schools that served them during the

289

TABLE 2
Estimated Coefficients and Effect Sizes: Teacher Measures as Outcomes

	Box 6				Box 7				Box 8	Box 9
Sample/Statistic	COLL RESP	TCHR INFL	SENS INNO	TCHR-TRST	PRIN LSHP	PROG COHR	QUAL PRDV	REFL DIAL	STUD DISC	EXPN POST
CHSRI respondents (*n*)[a]	149	149	149	149	148	148	147	149	129	149
Non-CHSRI respondents (*n*)[b]	2,447	2,462	2,450	2,462	2,439	2,563	2,563	2,461	1,965	2,412
Estimated CHSRI coefficient	0.486*	0.871***	0.529*	0.209	−0.272	0.184	−0.038	0.081	0.108	0.938***
SE	0.197	0.251	0.234	0.172	0.371	0.135	0.260	0.168	0.265	0.208
SD	1.716	1.432	1.894	1.292	2.341	1.366	1.610	1.229	1.513	1.739
Effect size	0.283	0.608	0.280	0.162	−0.116	0.135	−0.024	0.068	0.071	0.539

Note. Box 6 = teacher context for reform; Box 7 = facilitators of instructional improvement; Box 8 = instruction; Box 9 = supportive student context; COLL RESP = collective responsibility; TCHR INFL = teacher influence; SENS INNO = sense of innovation; TCHR-TRST = teacher–teacher trust; PRIN LSHP = principal instructional leadership; PROG COHR = program coherence; QUAL PRDV = quality professional development; REFL DIAL = reflective dialogue; STUD DISC = student discussion; EXPN POST = expectations for postsecondary education; CHSRI = Chicago High School Redesign Initiative.

a. *n* = 8 schools.

b. *n* = 46 schools (except PROG COHR: *n* = 47 schools).

*p < .05. ***p < .001.

TABLE 3
Estimated Coefficients and Effect Sizes: Student Measures as Outcomes

Sample/Statistic	Box 8						Box 9			
	QUAL ENGL	QUAL MATH	ACAD PRES	FUTR ORNT	SENS BLNG	CLSS BEHV	PEER SUPP	ACAD PERS	STUD TRST	TCHR SUPP
CHSRI respondents (n)[a]	208	213	166	222	223	166	220	166	225	225
Non-CHSRI respondents (n)[b]	7,075	7,164	6,059	7,946	7,197	6,002	7,873	6,036	8,049	8,011
Estimated CHSRI Coefficient	−0.036	0.009	0.187†	0.326	0.523*	0.115	0.559**	0.523*	0.304*	0.805***
SE	0.168	0.160	0.111	0.211	0.249	0.088	0.092	0.249	0.126	0.126
SD	1.211	1.191	1.400	1.584	1.154	0.359	1.564	1.983	0.994	1.525
Effect size	−0.030	0.008	0.134	0.206	0.355	0.320	0.357	0.264	0.306	0.528

Note. Box 8 = instruction; Box 9 = supportive student context; QUAL ENGL = quality English instruction; QUAL MATH = quality math instruction; ACAD PRES = academic press; FUTR ORNT = schoolwide future orientation; SENS BLNG = sense of belonging; CLSS BEHV = respectful classroom behavior; PEER SUPP = peer support for academic achievement; ACAD PERS = academic personalism; STUD TRST = student–teacher trust; TCHR SUPP = teacher support; CHSRI = Chicago High School Redesign Initiative.

a. n = 8 schools.

b. n = 57 schools.

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

291

TABLE 4

Student Outcomes: Number of Days Absent and Prairie State Achievement Exam Reading Scores

	No. of juniors (schools)		Outcome measurement		
Outcome: Year	CHSRI	Non-CHSRI	CHSRI	Non-CHSRI[a]	Difference (*p*)
Days absent					
2002–2003	202 (3)	16,906 (64)	15.6	23.0	7.4 (.00)
2003–2004	271 (5)	16,819 (64)	20.1	19.2	–0.9 (.66)
2004–2005	441 (9)	16,648 (69)	24.7	26.6	1.9 (.51)
2005–2006	664 (11)	16,940 (70)	22.1	26.9	4.8 (.01)
Reading scores					
2002–2003	201 (3)	15,222 (69)	142.9	143.9	–1.0 (.42)
2003–2004	286 (5)	15,194 (69)	144.3	143.8	0.5 (.47)
2004–2005	460 (9)	16,958 (72)	145.0	144.6	0.4 (.50)
2005–2006	734 (11)	17,146 (76)	143.6	142.9	0.7 (.07)

a. Number does not include charter schools, because such data are not available.

2004–2005 academic year. To place those outcomes into context, we looked at those measurements for successive waves of juniors from the 2002–2003 school year, when three schools had juniors, to the 2005–2006 school year, when 11 of the 12 conversion schools served 11-grade students. Finally, the study examined two successive cohorts of first-year students, tracking them to their junior year, to estimate 3-year dropout rates. The first cohort of students, who attended the first five conversion schools, could have reached junior status by the spring of 2005; the second cohort of students, coming from those five schools plus four more conversion schools, could have reached junior status by the spring of 2006. We were able to track the 4-year graduation rate for the first cohort students in the first set of conversion schools.

We believe that student and teacher survey responses are shaped by a number of individual and group experiences. In particular, students and teachers at the same school experience the same environment, which may be independently related to the outcome of interest. As such, we are interested in the relationship between (a) the learning opportunities and personal and academic supports that students within CHSRI schools receive and (b) their attitudes and outcomes. Using only a school-level regression or only a student-level regression would have combined the variability in outcomes that are due to within-school differences between students (or teachers) and the between-school differences that may be due to any CHSRI

effect; therefore, we used hierarchical modeling (Raudenbush & Bryk, 2002) to explore the significance of individual and group characteristics.

Models for student and teacher contexts using survey data. In these analyses of student and teacher surveys, we take into account the fact that our outcome is a measure itself and is therefore subject to measurement error. We used a three-level hierarchical linear model, where Level 1 is a measurement model, Level 2 is the individual student level (or individual teacher level), and Level 3 is the school. The first level represents variation among the item scores within each student or teacher. Ordinarily, errors at Level 1 in a hierarchical model have a constant variance, but in this case, each person's measure can have a different amount of measurement error. To correct for this heteroscedasticity, we multiplied each side of the equation by the inverse of each person's standard error. The Level 2 outcome then becomes each student's (or each teacher's) individual measure score adjusted for measurement error (Raudenbush & Bryk, 2002).

For Level 2 of the student measure analyses, we controlled for eighth-grade academic achievement, race, gender, socioeconomic status and concentration of poverty in the census block where the student lives, special education status, age relative to grade, and the number of years that a student had been in the current school. At the individual level in the teacher survey analysis, we controlled for race, gender, education

292

level, years of experience, and whether the individual entered the profession through alternative certification. For student and teacher analyses, at Level 3 (the school level), we included not only a variable to indicate whether the school was a CHSRI school but also a set of indicators comprising the aggregate incoming achievement level of the student body, the aggregate socioeconomic status of the student body, and the racial composition of the school (all indicator variables are listed in Table A4). All the individual student- and teacher-level coefficients were grand-mean centered and fixed, whereas the intercept was not fixed. At the school level, the CHSRI variable was uncentered, whereas the other indicators were all grand-mean centered.

In this article, we report results for a sample that includes schools that had at least a 40% response rate. Doing so allows us to include all the CHSRI schools that responded to the survey, which between students and teachers was a total of eight schools out of a possible nine. We ran additional analyses, first using all schools that responded and then using all schools that responded at the 50% level. The results are stable across all analyses.

Models with 11th-grade absences and test scores as outcomes. When examining whether 11th-grade students' absences and test scores at CHSRI schools are different from students' absences and test scores at non-CHSRI schools, we used two-level hierarchical modeling. For the student level, we controlled for previous performance in eighth grade, the social status in the census block where the student lives, the concentration of poverty in his or her block, gender, race, special education status, and age relative to grade. These slopes were not allowed to vary randomly at the school level. At Level 1, there are four dummy variables indicating the year that the data represent. These four separate year variables are a function of school characteristics for that year, and they are allowed to vary randomly at Level 2.

At Level 2, the school characteristics include an indicator of whether the school was a CHSRI school, the average incoming achievement level of all current students, the achievement level squared, and the school's average student socioeconomic status. We center all the variables on CHSRI students and CHSRI schools;

therefore, the means for each year are the means for schools similar to CHSRI schools with similar students.

Models for cumulative dropout rates. We calculate dropout rates slightly differently than we do absences and test scores. Rather than be interested in whether a given student dropped out in his or her junior year, we are interested in the cumulative dropout rate of the cohort of students that began as ninth graders in CHSRI and non-CHSRI schools. Two such cohorts (2002–2003 and 2003–2004) enrolled ninth graders who had time to reach their junior year. Schools opening in 2002–2003 enrolled ninth graders who had time to graduate, so we also compare the graduation rates of CHSRI and non-CHSRI schools for this cohort.

The models for dropout and graduation rates form a two-level hierarchical linear model adjusting for individual students' characteristics and school-level characteristics. At Level 1, we control for the same set of variables as for the single-year analyses. We also include variables related to students' mobility in elementary school and whether they attended a CPS school immediately before becoming a ninth grader. These slopes were not allowed to vary randomly at the school level. As was the case with the single-year analyses, at Level 1, there are a set of dummy variables indicating the cohort year that the data represent. These cohort-year variables are a function of school characteristics for that year, and they are allowed to vary randomly at Level 2 (see Table A4 for variable descriptions).

The school characteristics include an indicator of whether the school was a CHSRI school, the average incoming achievement level of all students, the achievement level squared, and the school's average student socioeconomic status. Because we center all the variables on CHSRI students and CHSRI schools, the means for each year are the means for schools similar to CHSRI schools with similar students.

Results

As noted at the outset, our quantitative analysis enables us to assess how small schools compare to schools that serve similar students for the measures associated with Boxes 6–10 of our

293

theory of change. In the section that follows, we summarize those findings. We concentrate on the statistical significance of being a CHSRI school and on the CHSRI effect size, which we determined by dividing the coefficient of the CHSRI indicator by the square root of the sum of the Level 2 and Level 3 variances of the unconditional model for the appropriate measure (Thompson, 2002). Instead of just providing the size of the coefficient, this approach takes into account differences in variability across measures. Significance and effect size are tabulated in Table 2 for teacher measure outcomes and in Table 3 for student measure outcomes. Coefficients and standard errors for all indicators and for all models can be found in Tables B1–B4.

Boxes 6–9: Contexts for Students and Teachers

Box 6. The context for teachers at CHSRI schools appears to be more desirable than the context at other CPS that serve similar students. Once we controlled for the demographic qualities of teachers and the aggregate student characteristics of their schools, we found that CHSRI teachers had higher scores on all indicators of the teacher context for reform (Box 6) when compared to those of similar teachers at other schools. All but one of these differences was statistically significant, with effect sizes ranging from 0.16 to 0.61. Specifically, teachers at CHSRI schools reported higher levels of teacher–teacher trust (effect size = 0.16), a higher sense of collective responsibility (effect size = 0.28), and a greater level of commitment to innovation and engagement with professional learning (effect size = 0.28). Finally, teachers at CHSRI schools reported greater levels of teacher influence, a finding that is consonant with one of the founding principles of the initiative— that it be a teacher-led reform. The difference between CHSRI and non-CHSRI had an effect size of 0.61 (see Table 2).

Box 7. Teachers and principals in CHSRI schools do not engage more heavily in practices that facilitate instructional improvement than do staff at other CPS schools serving similar students. Although CHSRI teachers were more likely to report working in a supportive context (Box 6),

we did not see evidence that this context was translating into practices that facilitate instructional improvement. On measures associated with instructional improvement activities, none were significant, and their effect sizes were relatively small (see Table 2).

Box 8. Generally speaking, juniors at CHSRI schools did not report having an instructional experience significantly different from that of their non-CHSRI peers, nor did teachers at CHSRI schools report levels of student discussion significantly different from those of teachers at non-CHSRI schools. No statistically significant differences were observed between CHSRI and similar non-CHSRI schools when it came to the quality of discussion and instruction in English and math. The one exception to this pattern concerns the measure of academic press. CHSRI juniors were more likely than their non-CHSRI peers to report academic press, and the difference was marginally statistically significant. Even in this instance, however, the effect size was comparatively small (0.13; see Tables 2 and 3).

Box 9. CHSRI schools provide students with higher expectations and more academic and social support than do other Chicago high schools. On five of six measures of personalized academic and social support, reports from students at CHSRI schools were significantly more positive than were those from non-CHSRI schools that had similar students. When compared to their peers at other similar schools, students at CHSRI schools reported a stronger sense of belonging and more peer support for academic achievement, classroom personalism, student–teacher trust, and teacher support. The effect sizes ranged from 0.21 to 0.36. On one measure, respectful classroom behavior, the difference between CHSRI schools and other CPS was not statistically significant. However, this measure's small standard deviation meant there was a slight CHSRI effect (0.32). Teachers at CHSRI schools reported a significantly higher level of higher expectations for postsecondary education (effect size = 0.53), whereas CHSRI students reported a stronger sense of a schoolwide future orientation (effect size = 0.20; see Tables 2 and 3).

294

Box 10: Student Outcomes

Absences. Juniors in CHSRI schools were generally absent fewer days than were similar students in otherwise similar schools. This difference ranged from 1.0 day more absent in 2003–2004 to 7.4 days less in 2002–2003. For the academic years of 2002–2003 and 2005–2006, this difference was statistically significant ($p = .00$); for 2003–2004 and 2004–2005, the difference did not reach statistical significance.[5] (Table 4 displays days absent for CHSRI students and for similar students at similar non-CHSRI schools and the statistical significance of the differences between them.)

Achievement. Achievement among 11th graders, as measured on the statewide standardized achievement tests in math and reading (the PSAE), was no different for students attending CHSRI high schools than for similar students at otherwise similar schools in all but one of the years for which we have data. In 2005–2006, there was a marginally significant difference for the reading test ($p = .07$). However, the size of the difference was less than a point.

In the 2002–2003 academic year, three of the CHSRI schools offered 11th grade, so students who took the PSAE test in that year had the opportunity of being at the CHSRI school for 1 year. By the 2004–2005 academic year, although nine CHSRI schools had 11th graders, some of them had been in existence for 3 years, some for 2 years, and some for 1 year. As such, the length of time that students could have attended a CHSRI school at the time of the PSAE differed, depending on which school they attended. Given these added complexities, we tried different ways to incorporate these factors into our analysis. The conclusions of all the analyses are the same: There are no differences in terms of 11th-grade achievement between CHSRI students and students at other CPS schools.[6] (Table 4 gives the PSAE reading scores for CHSRI juniors and for similar students at similar non-CHSRI schools and provides the statistical significance of the difference.)

Dropout and graduation. CHSRI schools may have lower dropout rates and higher graduation rates than otherwise similar schools serving similar students. We studied the cumulative dropout rates by following cohorts of students starting in their ninth-grade year. As illustrated in Figure 2, although the dropout rate for CHSRI students tends to be lower than that for similar students in otherwise similar schools, the difference appears to become larger (and gain in statistical significance) by the end of the junior year. For the 2002–2003 cohort, the dropout rates of CHSRI juniors was 7.0 percentage points lower than for otherwise similar students; this difference was marginally significant ($p = .07$). For the 2003–2004 cohort, the dropout rates of CHSRI juniors were 1.5 percentage points lower, and the difference was not statistically significant ($p = .46$).[7]

Only the 2002–2003 cohort of students have been in small schools for 4 years. Their graduation rate was 51%, compared to 44% for otherwise similar students. This difference was statistically marginally significant ($p = .09$).

Discussion

When discussing the findings, caution is clearly in order. Hall and Hord (2006), for example, find that educational change generally takes 3 to 5 years to fully implement. In a study of federal reform, Berman and McLaughlin (1978) found that "any significant innovation or new project in school districts takes about two years to 'get off the ground,' another two years to be fully implemented, and one or two years more to produce a stable effect on student outcomes" (p. 35). We have been able to study small school reform in Chicago for only 4 years. Many of the schools that we are studying are just getting started—only five schools have been open for 4 years; as such, we can provide only an early assessment of the potential of this small school initiative. Indeed, a reform as complex as CHSRI requires time to take shape, and we think that it is vitally important that the longer-term consequences of this reform be studied.

Policy cycles are such that a given reform may only be "hot" for a few years; however, the time needed for a reform to take root is often substantially longer. Judgments regarding a reform's impact should embrace this longer
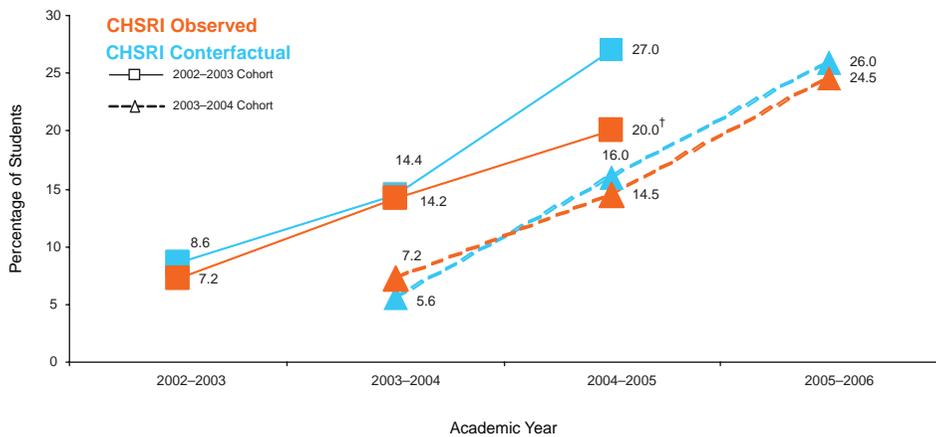
FIGURE 2. *Three-year cumulative dropout rates, two cohorts.*
Note. CHSRI = Chicago High School Redesign Initiative.
†$p < .10$.

time frame. Greater clarity regarding our findings on dropout and graduation rates, for example, is much needed and may be meaningfully enhanced by studies that can draw on 2 or 3 more years of data. At the same time, given the importance of small school reform in particular and high school reform in general, it makes sense take a systematic look at what we have found so far. Policy makers, funders, and educational leaders are understandably interested in emerging findings and trends regarding the theory of change and the overall impact of the reform. These early findings can help those implementing small high schools to identify issues and questions that deserve greater attention as the reform and the studies of it develop.

Evidence Regarding the Theory of Change

The reformers assumed that small schools would create a more desirable context for teachers—one characterized by such features as trust and collective responsibility. We saw strong evidence that this was the case. The theory presumed that these contexts would create a fertile ground that when combined with other aspects of small school reform, would increase academic and social support for students (Box 9) and would improve instruction (Box 8). Furthermore, reformers assumed that creating a more supportive context for students would in turn facilitate realization of desired outcomes (related to attendance, graduation, and

achievement) and that supports for instructional improvement for teachers would thus spur desired outcomes (related to academic performance, as well as attendance and graduation). We now discuss the degree to which our data indicate that small school reform promoted each of these pathways to improved outcomes.

Small schools appear to prompt a pathway to personalized support and improved attendance and, perhaps, graduation. As noted in the findings, students in small schools reported a more supportive context. Consistent with the theory's assumptions, 11th graders had better attendance in all 4 years of the reform, and the differences were statistically significant in 2 of the 4 years. The first cohort of these schools also had lower dropout rates and better 4-year graduation rates than did similar students attending schools with similar student populations; this difference was marginally significant for the 2002–2003 cohort ($p = .07$). This cohort's 4-year graduation rate was also better than that for similar students at non-CHSRI schools; this difference was also marginally significant ($p = .09$). Results for the second cohort of students were less positive. The dropout rate for students in the 2003–2004 cohort was only slightly better (1.5 percentage points) than that of the comparison schools, and the difference was not statistically significant.

Of course, the inability to find statistically significant differences may be due in part to

296

the small number of CHSRI high schools. It is therefore worth noting that some related studies provide support for the relationships hypothesized in the theory of change. Specifically, a separate analysis (Stevens, 2008) found a statistically significant relationship between measures of academic and personal support for first-time ninth graders and their likelihood of being on track to graduate at the end of their first year in high school. This other analysis also employed a hierarchical linear model, controlling for the same student-level demographics and school characteristics as the survey analyses in this article. Being on track to graduate at the end of ninth grade has been shown to be a strong predictor of graduating (Allensworth & Easton, 2005, 2007). Thus, we have (a) clear evidence that small schools promote more academically and socially supportive settings and (b) plausible but much less definitive evidence that small schools foster improved attendance and graduation rates, perhaps because they are supportive. As noted, studying this outcome over the next several years should greatly enhance our confidence regarding the impact of Chicago's small high schools on students' likelihood of dropping out.

We see no compelling evidence that small schools are fostering a pathway toward curricular change, instructional improvement, or improved academic outcomes. The theory presumes that small schools foster an improved context for reform among teachers (Box 6), which when combined with supports from CHSRI staff (Box 4) and the district (Box 5), would spur instructional improvement activity (Box 7). These improvement efforts would then strengthen the quality of instruction, which would improve test scores. Although working in a small school did appear to encourage a greater sense of teacher collegiality, influence, collective responsibility, and related contextual features that might enable instructional reform activity (see Box 6), practices thought to facilitate instructional reform (Box 7) were not more prevalent in CHSRI schools than in other schools. We saw evidence that instruction was not different for similar students in CHSRI and non-CHSRI settings (Box 8). Given that we did not see a CHSRI effect on instruction, it is not

surprising that we failed to find evidence that attending a small school promotes higher test scores. In fact, in a separate analysis (Sporte, forthcoming), we found that our measures of quality math and English instruction (controlling for demographics) were related to PSAE scores; so, the fact that measures of math and English instruction were the same in CHSRI schools as in other schools serving similar students is consistent with our finding of a lack of CHSRI effect on test scores.

Unfortunately, our quantitative analysis does not enable us to pinpoint the factors that are constraining instructional reform efforts. Despite the relatively desirable teacher context for reform that we found in CHSRI schools, it is not clear why we did not see better results on our measures of facilitators for instructional improvement. One possibility, of course, is that the ties between Box 6 (context for reform) and Box 7 (instructional reform activities) are not that strong or they are heavily dependent on other factors, such as Boxes 4 and 5 (external inputs). It may be that whether teachers have access to new ideas, quality professional development, and experience program coherence, for example, depends more on the actions of the principal and those outside the school (such as CHSRI, CPS, and the state) than on the teachers' context (Box 6). Consistent with this perspective, a recent synthesis of MDRC studies (Quint, 2006) found that teachers in small schools reported that they lacked both the skills and the time to create their own curriculum and to integrate curricular themes of small schools into their teaching. Indeed, most teacher meetings in the small learning communities of study did not focus on instruction but rather on "discipline issues, individual students' personal or academic problems, or planned small learning community field trips or parties" (p. ES-7). This finding aligns with that of Supovitz and Christman (2003) discussed earlier.

Our qualitative work in Chicago comes to similar conclusions. District leaders, small school reform staff, principals, and teachers (even teachers who are part of supportive and trusting communities) were often distracted from pursuing sustained and systematic instructional reform efforts because of pressures associated with the implementation of new schools and the multiple demands placed on those working in them. For

example, teachers and principals struggled to secure basic supports such as furniture, books, telephones, and e-mail. Discretionary money was promised but not always distributed in a timely manner, and some schools reported being understaffed all year (Sporte et al., 2003).

Understandably, these kinds of implementation struggles were more pronounced at the start of this initiative. But in later years, given the pressures of raising test scores quickly and dealing with the other significant challenges of teaching in a big city public school, it was difficult for teacher to focus on bringing about instructional change. As one teacher put it, "I think we get focused on the day-to-day survival" (see Stevens, 2006). As a result, absent strong instructional leadership from the principal, teachers were more likely to discuss an idiosyncratic problem or a deadline-dependent task than they were to focus in a sustained and fundamental way on altering their instructional practices.

Meaningful instructional reform is possible. Like others who have studied instructional leadership (Newmann, Smith, Allensworth, & Bryk, 2001; Sebring & Bryk, 2000), we find that the role that principals play (or do not play) is often the key (Stevens, 2006). Principals and other leaders can mobilize teacher communities to collectively and coherently improve classroom practice, and they can help teachers to focus and coordinate their improvement efforts. Indeed, we found that in schools where principal leadership was strong—especially when it was combined with teacher influence and a supportive context for students—students' performance was superior to that achieved in otherwise similar schools serving similar students (Stevens, forthcoming). Quint's findings (2006) from case studies of small schools were similar. She found that "when administrators issued guidelines specifying that meetings were to focus on instruction—and when they sat in on these meeting—discussions centered instead on pedagogical concerns" (p. ES-7).

Of course, aspects of the broader school context also influence the ways that teachers and principals focus their efforts. For example, our qualitative work indicates that accountability structures that encourage schools to articulate their academic goals in terms of test scores and basic academic skills did not lead schools to identify and implement strategies for reaching such goals. One principal described his goal as being "[to] increase our reading score by 10% and our attendance by 95%," but he did not couple this priority with a description of how he would change instruction to reach this goal. When strategies were identified, they often consisted of packaged programs linked to test preparation (Sporte et al., 2004; Stevens, 2006; Stevens & Kahne, 2005).

In short, our qualitative and quantitative findings indicate that our theory of change is underspecified. Those who hope to foster instructional improvement must do more than create small schools of committed, empowered, and collegial teachers. Indeed, this breakdown in the theory of change raises a host of important questions. Chief among them is the question, what should actors do or not do? Specifically, what should the district do or those implementing the reform (CHSRI)? Furthermore, can schools reform from within? Or are outside supports and pressures (from Boxes 4 and 5, e.g.) needed to foster forms of school leadership and successful efforts to bring about instructional change? And are these outside pressures the problem rather than the solution? For example, are there ways in which broader, systemwide goals and supports for instruction crowd out and distract from pursuit of meaningful school-based reform efforts? Specifically, do pressures to implement test preparation programs distract from reform? Does attending to other district/CHSRI initiatives do so?

It is quite possible, of course, that both scenarios have merit. It may also be a matter of time. The challenges associated with the implementation of small schools may limit the time and attention given to meaningful change in classroom practice. Issues such as these deserve careful attention in future studies of this and related reform. Of great importance, for example, are studies that provide a fine-grained examination of instructional reform efforts and the factors in the school and the broader district and community that shape their implementation and impact.[8]

In an effort to target instructional change with better direction, district leaders in Chicago are coordinating their efforts with the CHSRI staff to help schools focus on implementing instructional reform efforts. It is not clear whether these efforts

will enable teachers to build on teachers' sense of collegiality, commitment, and trust to foster instructional change. Our continuing qualitative inquiry into instructional reforms will examine these efforts and so help to inform our understanding of ways to best support instructional leadership. We will explore the efforts of CHSRI staff (Box 4) and the district (Box 5) to shape the leadership exercised by principals and the schools' more general focus on instruction and instructional change.

Implications for Small School and High School Reform

Given the newness of the reform and the small size of our samples, it is clearly too soon to make broad claims about the efficacy of small school conversions in Chicago. These findings do, however, provide some reasons for cautious optimism about the reform, and they also highlight some issues in need of attention. First, as noted, we see indications that small school conversions (as promised) provide a more personalized and supportive school context for students. We also see spotty evidence that they may promote improved attendance and lower dropout rates. Of course, it would be premature to declare that small school conversions can lower dropout rates (results here look promising for the first cohort but much less so for the second). Given the extent to which dropping out of high school undermines the life opportunities of young people today, it seems important to study this outcome for a few more years to gain clarity regarding the impact of small school conversions on dropout rates.

This study also raises some important concerns about the small school strategy as it relates to the need for instructional improvement. We saw evidence that smaller schools enable the creation of contexts for teachers (ones characterized by greater trust, commitment, and sense of influence, e.g.) but that these contexts do not appear to be fostering more systematic efforts at instructional

improvement, different instructional practices, and improved performance on standardized tests. This kind of context may be desirable, but it is clearly not sufficient. As the initiative continues to develop, we shall see whether these relatively better school contexts persist and whether schools in partnership with CHSRI staff and district leaders can foster instructional change and improved academic outcomes.

These findings may also provide insights into the challenges and possibilities of high school reform in general. Specifically, findings from this study (and from related work noted in the discussion) indicate that the provision of more personal and supportive settings may make a meaningful difference when it comes to preventing dropouts. Small schools may be one effective way to promote such settings—but if the key lies in supportive and personalized settings, then small schools need not be the only way that this goal is pursued. Given (a) the large number of students who are dropping out in cities such as Chicago, (b) the fact that small schools can be created for only a small percentage of students (at least in the short term), and (c) the recognition that small schools are not the only way to provide academically and socially supportive settings, reformers should pursue other ways to promote more supportive contexts.

That the creation of contexts characterized by teacher–teacher trust, a sense of collective responsibility, openness to innovation, and a sense of teacher influence did not appear to foster instructional change has implications that speak to the broader challenges of high school reform and improvement. This finding reinforces what others studies of instructional change have found—that changing high school instruction requires an infusion of expertise; leadership that focuses attention on the necessity of instructional reform; and time for teachers to plan, learn, and reflect. A theory of change that lacks explicit attention to these supports for instructional change is likely to disappoint.

TABLE A1

Teacher Measures: Description and Reliability

Measure (reliability)	Description
Collective responsibility (.92)	Teachers' assessment of the strength of their shared commitment to improve the school so that all students learn. Questions ask teachers how many colleagues feel responsible for students' academic and social development, set high standards for professional practice, and take responsibility for school improvement.
Commitment to innovation (.89)	Teachers' perceptions of whether they continually learn and seek new ideas, have a can-do attitude, and are encouraged to try new ideas in their teaching.
Expectations for postsecondary education (.82)	Teachers' reports of the degree to which they expect that most students at their school will go to college. Questions ask whether teachers believe that it is part of their job to prepare students to succeed in college and whether they spend time out of class helping students plan for college.
Principal instructional leadership (.86)	Teachers' perception of their principals as instructional leaders with respect to the teaching and learning standards, communication of a clear vision for the school, and tracking of academic progress.
Program coherence (.74)	The degree to which teachers believe that the programs at their schools are coordinated with one another and with the school's mission. Questions ask teachers whether instructional materials are consistent within and across grades and if there is sustained attention to quality program implementation.
Quality professional development (.81)	Teachers' assessment of the degree to which professional development has influenced their teaching, helped them understand students better, and provided them with opportunities to work with colleagues and teachers from other schools.
Quality student discussion (.72)	Teachers' reports of how well students interact with one another in classroom discussions. Questions ask whether students build off one another's ideas, show respect, provide constructive feedback, and use data and text references to support their ideas.
Reflective dialogue (.77)	Teachers' assessment of how often teachers talk with one another about instruction and student learning. Questions ask teachers about their discussion of curriculum and instruction, the school's goals, and the best ways to help students learn and to manage classroom behavior.
Teacher influence (.84)	Measures the extent of teachers' involvement in school decision making. It assesses teachers' influence on the selection of instructional materials, setting of school policy, in-service program planning, spending of discretionary funds, and hiring of professional staff.
Teacher–teacher trust (.82)	The extent to which teachers believe that they have mutual respect for one another, for those who lead school improvement efforts, and for those who are experts at their craft. Questions also ask teachers whether they feel comfortable discussing their feelings and worries and whether they really care about one another.

Note. All *N*s > 3,100.

TABLE A2
Student Measures: Description and Reliability

Measure (reliability)	Description
Academic press (.76)	Students' views of their teachers' efforts to push students to higher levels of academic performance. Students also report on the degree to which they find their classes to be challenging.
Classroom personalism (.74)	The degree to which students perceive that their teachers give individual attention to and are concerned about students' academic performance.
Quality English instruction (.86)	Student reports of the frequency with which students are made to practice higher-order English activities, such as writing papers of three or more pages, rewriting in response to comments, discussing connections between a reading and real-life people, and understanding how authors are influenced and what tools they use to convey meaning.
Quality math instruction (.76)	Student reports of the frequency that students are made to practice higher-order math activities, such as writing problems for other students to solve, applying math to situations outside the classroom, and explaining to the class how they solved a problem.
Peer support for academic achievement (.84)	The norms among students with regard to their peers' support of academic work. Questions ask whether students talk about what they did in class, whether they help one another with homework and test preparation, and whether their friends think that it is important to attend class.
Respectful classroom behavior (.74)	Students' assessment of their peers' classroom behavior with regard to how they treat one another, how often they disrupt class, if they have respect for one another, and if they help one another learn.
Schoolwide future orientation (.83)	Student reports of the degree to which (a) teachers work hard to make sure that all students are learning, are staying in school, are planning for their futures and (b) all students are encouraged to go to college.
Sense of belonging (.81)	Student reports of how personally connected students feel to the school. Students rate the degree to which the people at school feel like family, whether people at school care if students come to school, and whether students participate in activities at the school.
Student–teacher trust (.78)	Students' perceptions about the quality of their relationships with teachers. Questions ask students if teachers care about them, keep promises, listen to their ideas, and try to be fair.
Teacher support (.80)	Students' reports of teachers' being there to help with personal matters. Students were asked whether there is a teacher whom they can talk to about personal problems, one who gives extra help with schoolwork, and one who cares about how the student is doing.

Note. All Ns > 7,150.

301

TABLE A3

Student Outcome Indicators

Outcome	Definition
Absences	Average number of days students were absent from their classes during one academic year. Those who dropped out of school during the year are not included in the sample.
Dropout rate	The proportion of students who began as first-time ninth graders at a Chicago Public School, who did not transfer out of the district, who did not graduate, and who were listed as inactive.
Graduation rate	Percentage of students who joined high school 4 years earlier and graduated on time. Given that the reform has been in place for only 4 years, at this point it is possible to analyze 4-year graduation rates for only the first five schools to open.
Achievement test scores	Scores of the 11 graders on the Prairie State Achievement Exam in mathematics and English. This test is given to high school juniors during the spring of their junior year, and it incorporates the ACT as part of the composite score.

TABLE A4

Predictor Variables and Where They Were Used

Individual-level predictor descriptions

Teacher survey measure analysis

Gender was indicated by a dummy variable.

Race/ethnicity was indicated by a set of dummies. *Other* includes *biracial/multiethnic* and *other*. *White, non-Hispanic* is the omitted category.

Education level was indicated by a set of dummy variables. *Bachelor's degree* includes those who said that their highest level of formal education was a bachelor's degree, and *doctoral degree* includes those who indicated that their highest level of formal education was a doctorate. The omitted category included those with a master's degree or a master's degree plus 15 credits or more.

Teaching experience was indicated by a set of dummy variables. The omitted category included teachers who indicated that they had 11–15 or 15+ years of teaching experience.

Teachers who entered teaching through an alternative certification program were indicated by a dummy variable, distinguishing them from those who entered the profession through other programs.

All analyses of students: surveys and outcomes

Gender was indicated by a dummy variable.

Race/ethnicity was indicated by a set of dummies. African American students were the omitted category.

Socioeconomic status included two variables: social status and concentration of poverty. Both were based on data from the 2000 U.S. census regarding information on the census block group in which students lived. Students' home addresses were used to link each student to a particular block group within the city, which could then be linked to census data on the economic conditions of the student's neighborhood. Four indicators were used to construct these variables: log of the percentage of families above the poverty line, log of the percentage of men employed in the block group, the average level of education among adults who were older than 21, and log of the percentage of men in the block group employed as managers or executives. The first two of these were reversed-coded and combined into the variable called *concentration of poverty*, and the other two indicators were combined into the variable called *social status.*

The census data allow for a more accurate indicator of students' economic status than does a simple determination of whether the student qualifies for free or reduced-cost lunch. The majority of students in Chicago Public Schools qualify for free or reduced-cost lunch, and there is wide variation in the economic status of students who qualify as "low income." Furthermore, by the time that students reach high school age, proportionately more parents fail to apply for free and reduced-cost lunch, and different schools treat this phenomenon differently.

(continued)

302

TABLE A4 (continued)

Individual-level predictor descriptions

Administrative records determined whether a student was receiving special education services.

Students' elementary achievement was based on students' reading scores on the Iowa Tests of Basic Skills, which they took in eighth grade. The analyses of student outcomes include linear and quadratic terms for this variable.

Analyses of student surveys only

A dummy variable indicated whether a student was old for grade. This variable was used to show whether a student was older than what would be expected based on school system guidelines. Roughly 20% of juniors in our sample were old for grade.

Length of time in current high school was hypothesized to be a characteristic that played an important role in student attitudes toward school. We used a system of three dummy variables to capture this characteristic. The omitted category included students who had been at the school for a year. Almost three quarters (73%) of juniors in our sample had been at their school for 3 years, whereas 9%, 6%, and 8% had been there for less than 1 year, for 1 year, and for 2 years, respectively.

Student outcome analyses only

If students were missing values on their eighth-grade achievement, they were given values at the sample mean and assigned a dummy variable

Academic year was captured by a set of three dummy variables representing the 4 years of this study.

School-level predictor descriptions

All analyses

Whether a school is a Chicago High School Redesign Initiative school was indicated with the dummy variable *CHSRI*.

For the analyses of survey measures, school-level achievement was computed by averaging the eighth-grade Iowa Tests of Basic Skills reading score of all current members of a school's student body, adjusting for cohort effects. For the analyses of student outcomes, this variable was computed by averaging the eighth-grade Iowa Tests of Basic Skills reading score of first-time 9th- or 11th-grade students at the school, depending on the outcome analyzed. The analyses of student outcomes included linear and quadratic terms for this variable.

A description of how school-level socioeconomic status was created at the individual level can be found above. The school-level indicator was an average of the social statuses of all the students in the school based on the census blocks in which they lived.

Survey analyses only

A description of how school-level concentration of poverty was created at the individual level can be found above. The school-level indicator was an average of the concentration of poverty of all students in the school based on the census blocks in which they lived.

Racial composition of the school: A dummy variable was included for schools whose student body was at least 70% African American.

Appendix B: Estimated Coefficients and Standard Errors, All Models

TABLE B1

Estimated Coefficients (Standard Errors) for Teacher Measures as Outcomes

Variable	Box 6					Box 7			Box 8	Box 9
	COLL RESP	TCHR INFL	SENS INNO	TCHR TRST	PRIN LSHP	PROG COHR	QUAL PRDV	REFL DIAL	STUD DISC	EXPN POST
Intercept	4.743**	5.316**	4.745**	4.998**	5.792**	4.592**	5.427**	6.099**	7.146**	4.793**
	(0.074)	(0.076)	(0.090)	(0.064)	(0.138)	(0.071)	(0.074)	(0.054)	(0.075)	(0.092)
CHSRI	0.486*	0.871**	0.530*	0.209	−0.272	0.184	−0.038	0.083	0.108	0.938**
	(0.197)	(0.251)	(0.234)	(0.172)	(0.371)	(0.135)	(0.260)	(0.168)	(0.265)	(0.208)
Eighth-grade Achievement (*M*)[a]	0.149	0.199	0.251	0.005	−0.050	0.075	−0.051	−0.029	0.398**	1.098**
	(0.108)	(0.120)	(0.156)	(0.077)	(0.236)	(0.109)	(0.117)	(0.062)	(0.081)	(0.119)
Social status (*M*)	0.034	−0.163	−0.046	0.028	−0.173	−0.190*	−0.115	0.015	−0.148	−0.026
	(0.080)	(0.105)	(0.117)	(0.079)	(0.193)	(0.090)	(0.119)	(0.077)	(0.090)	(0.122)
Concentration of poverty (*M*)	0.064	−0.117	−0.006	0.030	−0.171	−0.222†	0.010	0.091	−0.033	0.380†
	(0.162)	(0.148)	(0.207)	(0.126)	(0.249)	(0.128)	(0.113)	(0.090)	(0.152)	(0.199)
Student body: African American > 70%	−0.086	0.167	0.161	0.116	0.800	0.524*	0.161	−0.133	−0.202	0.033
	(0.297)	(0.326)	(0.420)	(0.254)	(0.516)	(0.257)	(0.279)	(0.198)	(0.305)	(0.422)
Female	−0.139†	−0.185**	−0.167†	−0.206**	−0.168†	−0.096	0.008	−0.003	0.416**	0.013
	(0.072)	(0.055)	(0.090)	(0.064)	(0.091)	(0.064)	(0.065)	(0.053)	(0.107)	(0.059)
Latino	−0.138	0.053	0.062	−0.240†	0.455*	0.252†	0.156	−0.153	0.433†	0.201†
	(0.161)	(0.111)	(0.153)	(0.136)	(0.199)	(0.135)	(0.137)	(0.116)	(0.224)	(0.122)
African American	−0.135	0.197*	0.055	−0.366**	0.437**	0.439**	0.516**	−0.008	0.647**	0.233*
	(0.091)	(0.095)	(0.109)	(0.088)	(0.155)	(0.083)	(0.098)	(0.081)	(0.145)	(0.093)
Asian	0.707**	0.327*	0.808**	0.275†	0.848**	0.656**	0.769**	0.206	0.684**	0.792**
	(0.206)	(0.146)	(0.236)	(0.153)	(0.246)	(0.183)	(0.170)	(0.136)	(0.245)	(0.244)
Other	−0.338†	−0.227	−0.242	−0.480**	0.021	0.039	−0.032	0.016	0.469*	0.243†
	(0.191)	(0.145)	(0.218)	(0.124)	(0.232)	(0.152)	(0.175)	(0.152)	(0.196)	(0.144)

(continued)

TABLE B1 (continued)

Variable	Box 6					Box 7			Box 8	Box 9
	COLL RESP	TCHR INFL	SENS INNO	TCHR TRST	PRIN LSHP	PROG COHR	QUAL PRDV	REFL DIAL	STUD DISC	EXPN POST
Bachelor's degree	0.073	-0.018	0.125	0.010	0.086	0.008	0.020	0.080	0.050	-0.034
	(0.074)	(0.074)	(0.096)	(0.061)	(0.085)	(0.057)	(0.071)	(0.067)	(0.110)	(0.067)
Doctoral degree	0.025	-0.242	-0.172	-0.060	-0.062	-0.114	-0.045	0.208	-0.562	0.013
	(0.220)	(0.188)	(0.254)	(0.207)	(0.262)	(0.215)	(0.214)	(0.178)	(0.386)	(0.174)
< 3 yrs experience	-0.504**	-0.140	-0.728**	-0.315**	-0.697**	-0.193*	-0.309**	0.094	-0.585**	-0.598**
	(0.106)	(0.104)	(0.119)	(0.080)	(0.156)	(0.084)	(0.104)	(0.084)	(0.156)	(0.083)
4–10 yrs experience	-0.515**	-0.151†	-0.625**	-0.298**	-0.469**	-0.267**	-0.329**	0.011	-0.373**	-0.209**
	(0.078)	(0.080)	(0.100)	(0.071)	(0.131)	(0.062)	(0.095)	(0.075)	(0.134)	(0.076)
Alternative certification	-0.055	0.062	-0.143	-0.016	-0.202	-0.045	0.058	-0.076	0.142	-0.123
	(0.102)	(0.090)	(0.104)	(0.070)	(0.135)	(0.076)	(0.096)	(0.087)	(0.144)	(0.107)
SD	1.716	1.432	1.894	1.292	2.341	1.366	1.610	1.229	1.513	1.739
Effect size	0.283	0.608	0.280	0.162	-0.116	0.135	-0.024	0.068	0.071	0.539

Note. Box 6 = teacher context for reform; Box 7 = facilitators of instructional improvement; Box 8 = instruction; Box 9 = supportive student context; COLL RESP = collective responsibility; TCHR INFL = teacher influence; SENS INNO = sense of innovation; TCHR TRST = teacher–teacher trust; PRIN LSHP = principal instructional leadership; PROG COHR = program coherence; QUAL PRDV = quality professional development; REFL DIAL = reflective dialogue; STUD DISC = student discussion; EXPN POST = expectations for postsecondary education; CHSRI = Chicago High School Redesign Initiative.

a. *M* = school mean for this variable.

†*p* < .10. **p* < .05. ***p* < .01.

305

TABLE B2

Estimated Coefficients (Standard Errors) for Student Measures as Outcomes

	Box 8			Box 9						
Variable	QUAL ENGL	QUAL MATH	ACAD PRES	FUTR ORNT	SENS BLNG	CLSS BEHV	ACAD PERS	PEER SUPP	STUD-TRST	TCHR SUPP
Intercept	5.562**	5.949**	5.354**	4.834**	4.557**	5.657**	4.888**	5.225**	3.620**	4.890**
	(0.042)	(0.042)	(0.045)	(0.075)	(0.043)	(0.019)	(0.079)	(0.044)	(0.055)	(0.054)
CHSRI	-0.036	0.009	0.187†	0.326	0.410**	0.115	0.523*	0.559**	0.304*	0.805**
	(0.168)	(0.160)	(0.111)	(0.211)	(0.115)	(0.088)	(0.249)	(0.092)	(0.126)	(0.126)
Eighth-grade achievement (*M*)[a]	0.134*	0.093	0.157*	0.446**	0.190**	0.098**	0.119	0.247**	0.129	0.175†
	(0.055)	(0.073)	(0.073)	(0.098)	(0.060)	(0.026)	(0.112)	(0.059)	(0.079)	(0.090)
Social status (*M*)	-0.051	0.087†	0.031	-0.065	-0.070	-0.055*	0.004	0.067	0.017	-0.021
	(0.050)	(0.046)	(0.057)	(0.091)	(0.044)	(0.025)	(0.087)	(0.047)	(0.066)	(0.059)
Concentration of poverty (*M*)	0.088	0.267**	0.121	0.247†	0.010	-0.069†	0.115	0.162*	0.071	0.090
	(0.062)	(0.076)	(0.078)	(0.126)	(0.076)	(0.037)	(0.135)	(0.083)	(0.093)	(0.094)
Student body: African American > 70%	0.087	-0.053	0.010	-0.167	0.113	0.081	0.201	0.004	-0.077	0.043
	(0.111)	(0.153)	(0.145)	(0.212)	(0.120)	(0.063)	(0.225)	(0.155)	(0.138)	(0.164)
Eighth-grade achievement: Reading	0.093**	-0.018	-0.021	-0.092**	0.054*	0.082**	0.043	-0.067*	-0.042†	0.207**
	(0.019)	(0.028)	(0.036)	(0.034)	(0.026)	(0.014)	(0.050)	(0.026)	(0.022)	(0.029)
Female	0.099*	-0.047	0.171**	0.058	0.053†	0.075**	0.182*	0.668**	0.080*	0.385**
	(0.039)	(0.042)	(0.058)	(0.052)	(0.031)	(0.019)	(0.086)	(0.051)	(0.039)	(0.056)
Latino	-0.165**	-0.048	-0.032	0.225**	-0.044	0.069*	-0.174	-0.083	0.162*	-0.133
	(0.058)	(0.071)	(0.094)	(0.081)	(0.057)	(0.032)	(0.115)	(0.072)	(0.068)	(0.081)
Asian	-0.145*	0.154†	0.060	0.517**	0.061	0.213**	-0.010	0.378**	0.404**	-0.096
	(0.070)	(0.093)	(0.087)	(0.115)	(0.064)	(0.028)	(0.135)	(0.067)	(0.114)	(0.087)
White	-0.271**	-0.006	-0.275**	0.068	-0.101	0.030	-0.239	-0.109	0.167†	-0.169
	(0.059)	(0.092)	(0.097)	(0.095)	(0.075)	(0.043)	(0.215)	(0.097)	(0.096)	(0.112)
Social status	0.034	0.003	-0.005	0.020	0.024	0.014	-0.002	0.006	-0.036*	0.012
	(0.023)	(0.024)	(0.031)	(0.026)	(0.018)	(0.014)	(0.041)	(0.024)	(0.018)	(0.028)

(continued)

TABLE B2 (continued)

Variable	Box 8			Box 9						
	QUAL ENGL	QUAL MATH	ACAD PRES	FUTR ORNT	SENS BLNG	CLSS BEHV	ACAD PERS	PEER SUPP	STUD-TRST	TCHR SUPP
Concentration of poverty	0.023	0.001	0.009	−0.011	0.003	0.012	0.047	0.047	0.002	0.022
	(0.022)	(0.020)	(0.036)	(0.027)	(0.027)	(0.011)	(0.032)	(0.029)	(0.018)	(0.033)
Special education	−0.091	−0.014	0.022	0.189*	−0.014	−0.088*	0.213†	−0.090	0.074	−0.007
	(0.069)	(0.071)	(0.084)	(0.080)	(0.062)	(0.042)	(0.121)	(0.067)	(0.051)	(0.060)
Old for grade	−0.003	−0.017	0.076	0.044	−0.154**	−0.009	−0.065	−0.052	0.093*	−0.149**
	(0.044)	(0.047)	(0.058)	(0.055)	(0.042)	(0.023)	(0.098)	(0.057)	(0.041)	(0.055)
Been school < 1 yr	−0.201	−0.064	0.237	−0.124	0.041	−0.042	−0.659**	−0.132	−0.169	−0.065
	(0.220)	(0.216)	(0.276)	(0.240)	(0.152)	(0.107)	(0.222)	(0.188)	(0.157)	(0.225)
Been school 2 yrs	−0.163	0.044	−0.069	−0.208	0.164	0.003	−0.410*	0.091	−0.157*	−0.056
	(0.105)	(0.110)	(0.136)	(0.134)	(0.128)	(0.062)	(0.186)	(0.130)	(0.071)	(0.119)
Been school 3 yrs	−0.081	−0.056	0.021	−0.060	0.270*	0.071	−0.317*	0.205*	−0.040	0.082
	(0.092)	(0.101)	(0.147)	(0.118)	(0.121)	(0.055)	(0.153)	(0.100)	(0.079)	(0.090)
Been school 3+ yrs	−0.101	−0.219	−0.377†	−0.229	0.146	0.139†	−0.323	0.048	−0.171	−0.012
	(0.107)	(0.145)	(0.219)	(0.152)	(0.131)	(0.072)	(0.250)	(0.154)	(0.117)	(0.140)
SD	1.211	1.191	1.400	1.584	1.154	0.359	1.983	1.564	0.994	1.525
Effect size	−0.030	0.008	0.134	0.206	0.355	0.320	0.264	0.357	0.306	0.528

Note. Box 8 = instruction; Box 9 = supportive student context; QUAL ENGL = quality English instruction; QUAL MATH = quality math instruction; ACAD PRES = academic press; FUTR ORNT = schoolwide future orientation; SENS BLNG = sense of belonging; CLSS BEHV = respectful classroom behavior; ACAD PERS = academic personalism; PEER SUPP = peer support for academic achievement; STUD-TRST = student–teacher trust; TCHR SUPP = teacher support; CHSRI = Chicago High School Redesign Initiative.

a. M = school mean for this variable.

†$p < .10.$ *$p < .05.$ **$p < .01$

307

TABLE B3

Estimated Coefficients (Standard Errors) for Days Absent and Prairie State Achievement Exam Scores

		Scores	
Variable	Absences	Reading	Math
Eighth-grade achievement: Reading	−0.001[**] (0.000)	0.150[**] (0.004)	0.171[**] (0.003)
Eighth-grade achievement: Reading (squared)	0.000[**] (0.000)	0.000 (0.000)	0.000 (0.000)
Social status	−0.003 (0.008)	0.996[**] (0.021)	1.290[**] (0.030)
Concentration of poverty	0.038[**] (0.007)	0.029[**] (0.004)	0.012[*] (0.005)
Female	−0.026[*] (0.012)	0.194[*] (0.075)	0.158[*] (0.071)
White	−0.092[**] (0.034)	−0.102[†] (0.057)	−0.189[**] (0.057)
Asian	−0.526[**] (0.052)	0.740[**] (0.113)	−1.284[**] (0.082)
Latino	−0.066[**] (0.023)	2.326[**] (0.350)	3.413[**] (0.312)
Special education	0.078[**] (0.017)	0.892[**] (0.330)	3.462[**] (0.363)
No economic data	−0.054 (0.072)	0.433[*] (0.175)	1.544[**] (0.188)
Missing achievement data	−0.156[**] (0.016)	−6.165[**] (0.211)	−4.063[**] (0.184)
Old for grade	0.329[**] (0.015)	0.705 (0.620)	0.243 (0.498)
2002–2003			
Intercept	3.018[**] (0.049)	143.30[**] (0.239)	137.45[**] (0.220)
CHSRI	−0.385[**] (0.106)	−1.034 (1.283)	−1.235 (1.130)
Eighth-grade achievement (M)[a]	0.008[*] (0.003)	0.051[**] (0.014)	0.039[**] (0.015)
Eighth-grade achievement (M, squared)(0.000)	0.000[**] (0.000)	0.001[**] (0.000)	0.000
Social status (M)	0.127 (0.079)	0.996[**] (0.317)	0.434 (0.383)
2003–2004			
Intercept	3.092[**] (0.047)	142.47[**] (0.246)	137.48[**] (0.243)
CHSRI	0.048 (0.110)	0.480 (0.667)	−0.865 (0.530)
Eighth-grade achievement (M)	0.001 (0.003)	0.051[**] (0.018)	0.071[**] (0.018)
Eighth-grade achievement (M, squared)	0.000[**] (0.000)	0.001[*] (0.000)	0.000 (0.000)
Social status (M)	0.188[*] (0.074)	0.680[†] (0.369)	−0.301 (0.356)

(continued)

308

TABLE B3 (continued)

Variable	Absences	Scores	
		Reading	Math
2004–2005			
Intercept	3.225**	143.75**	135.95**
	(0.044)	(0.251)	(0.230)
CHSRI	–0.075	0.325	–0.444
	(0.113)	(0.476)	(0.475)
Eighth-grade achievement (*M*)	–0.002	0.075**	0.063**
	(0.002)	(0.016)	(0.020)
Eighth-grade achievement	0.000**	0.001[†]	0.001[†]
(*M*, squared)	(0.000)	(0.000)	(0.000)
Social status (*M*)	0.213**	0.553[†]	–0.346
	(0.068)	(0.302)	(0.446)
2005–2006			
Intercept	3.243**	142.48**	136.67**
	(0.040)	(0.274)	(0.260)
CHSRI	–0.197**	0.705[†]	0.681
	(0.069)	(0.390)	(0.555)
Eighth-grade achievement (*M*)	–0.002	0.084**	0.074**
	(0.002)	(0.018)	(0.019)
Eighth-grade achievement	0.000**	0.001*	0.000
(*M*, squared)	(0.000)	(0.000)	(0.000)
Social status (*M*)	0.260**	0.270	–0.812[†]
	(0.069)	(0.363)	(0.472)

Note. CHSRI = Chicago High School Redesign Initiative.

a. *M* = school mean for this variable.

[†]$p < .10$. *$p < .05$. **$p < .01$.

TABLE B4

Estimated Coefficients (Standard Errors) for Dropout and Graduation

Variable	Dropout			Graduation
	1-Year	2-Year	3-Year	
Eighth-grade achievement:	–0.006**	–0.005**	–0.005**	0.008**
Reading	(0.001)	(0.001)	(0.001)	(0.001)
Eighth-grade achievement:	0.000	0.000†	0.000*	0.000*
Reading (squared)	(0.000)	(0.000)	(0.000)	(0.000)
Social status	–0.036	0.016	–0.004	0.023
	(0.037)	(0.035)	(0.036)	(0.035)
Concentration of poverty	0.035	0.093**	0.075*	–0.087**
	(0.044)	(0.028)	(0.032)	(0.029)
Male	0.128**	0.255**	0.395**	–0.653**
	(0.035)	(0.036)	(0.033)	(0.040)
White	0.362**	0.370**	0.279**	0.101
	(0.121)	(0.104)	(0.105)	(0.116)
Asian	–0.660**	–0.540**	–0.758**	1.174**
	(0.200)	(0.128)	(0.127)	(0.147)
American Indian	0.388	0.576	0.569†	0.044
	(0.372)	(0.360)	(0.321)	(0.269)
Latino	0.065	0.066	0.005	0.081
	(0.104)	(0.073)	(0.071)	(0.066)
Special education	–0.028	0.031	0.067	–0.122†
	(0.052)	(0.055)	(0.051)	(0.070)
No economic data	0.105	0.259	0.155	–0.286
	(0.472)	(0.312)	(0.259)	(0.232)
No test score	0.327**	0.147†	–0.140†	–0.011
	(0.086)	(0.088)	(0.077)	(0.105)
Young: Began high school	–0.341*	–0.320*	–0.452**	0.348**
	(0.150)	(0.123)	(0.108)	(0.107)
Months old: Began high school	0.104**	0.111**	0.104**	–0.063**
	(0.004)	(0.004)	(0.004)	(0.005)
Slightly old: Began high school	0.029	0.137**	0.080*	–0.148**
	(0.045)	(0.034)	(0.031)	(0.036)
Moved one time	0.304**	0.242**	0.218**	–0.069†
	(0.040)	(0.032)	(0.036)	(0.041)
Moved two times	0.689**	0.615**	0.682**	–0.481**
	(0.061)	(0.045)	(0.053)	(0.059)
Moved three or more times	1.228**	1.061**	0.888**	–0.897**
	(0.084)	(0.067)	(0.068)	(0.100)
From private elementary school	–0.116	–0.226	0.031	0.372*
	(0.137)	(0.154)	(0.133)	(0.184)
Returning to Chicago	0.503**	0.437**	0.647**	–0.172
Public Schools	(0.098)	(0.107)	(0.081)	(0.172)
Other public	–0.066	–0.068	0.174	0.308†
elementary school	(0.180)	(0.160)	(0.161)	(0.161)

(continued)

310

TABLE B4 (continued)

| Variable | Dropout | | | Graduation |
	1-Year	2-Year	3-Year	
Cohort: 2002–2003				
Intercept	–2.792**	–1.875**	–1.046**	–0.241**
	(0.098)	(0.093)	(0.065)	(0.064)
CHSRI	–0.203	–0.019	–0.433†	0.315†
	(0.314)	(0.226)	(0.234)	(0.186)
Eighth-grade achievement (M)[a]	–0.031**	–0.030**	–0.029**	0.027**
	(0.009)	(0.007)	(0.005)	(0.005)
Eighth-grade achievement	0.000	0.000	0.000	0.000
(M, squared)	(0.000)	(0.000)	(0.000)	(0.000)
Social status (M)	0.200	0.335*	0.358*	–0.282*
	(0.213)	(0.158)	(0.148)	(0.128)
Cohort: 2003–2004				
Intercept	–3.238**	–1.815**	–1.155**	
	(0.127)	(0.072)	(0.066)	
CHSRI	0.264	–0.129	–0.093	
	(0.232)	(0.148)	(0.124)	
Eighth-grade achievement (M)	–0.011	–0.030**	–0.019**	
	(0.010)	(0.007)	(0.006)	
Eighth-grade achievement	0.000†	0.000	0.000†	
(M, squared)	(0.000)	(0.000)	(0.000)	
Social status (M)	0.241	0.419**	0.175	
	(0.190)	(0.136)	(0.124)	
Cohort: 2004–2005				
Intercept	–3.107**	–2.097**		
	(0.118)	(0.075)		
CHSRI	–0.015	0.038		
	(0.225)	(0.132)		
Eighth-grade achievement (M)	–0.031**	–0.022**		
	(0.010)	(0.007)		
Eighth-grade achievement	0.000	0.000†		
(M, squared)	(0.000)	(0.000)		
Social status (M)	0.149	0.213		
	(0.225)	(0.178)		
Cohort: 2005–2006				
Intercept	–3.364**			
	(0.180)			
CHSRI	0.157			
	(0.310)			
Eighth-grade achievement (M)	–0.021			
	(0.017)			
Eighth-grade achievement	0.000			
(M, squared)	(0.000)			
Social status (M)	0.190			
	(0.241)			

Note. CHSRI = Chicago High School Redesign Initiative.

a. M = school mean for this variable.

†$p < .10.$ *$p < .05.$ **$p < .01.$

311

Notes

[1]Twenty-two of these schools serve high school grades; an additional school opened with 7th graders and will grow to include 12th graders.

[2]See, for example, Rhodes et al. (2005). Like them, we also looked at the before- and after-conversion descriptive statistics. Our work indicates that whereas first-time ninth graders at the converted small schools were, in general, demographically similar to ninth graders in the large schools from which the schools were created, they were absent fewer days and more likely to be on track to graduate at the end of their ninth-grade year than were ninth graders from the year immediately before the conversion. However, given that no school transformed completely in 1 year, this difference could be attributed to the fact that the more able students from the school's catchment area chose a new small school.

[3]One conversion school opened in 2004, and it did not have 11th-grade students at the time of this study.

[4]Additional information can be found on the Consortium on Chicago School Research Web site, at http://ccsr.uchicago.edu.

[5]As noted in the Method section, we describe a series of single-year outcomes for absences and test scores and a cohort analysis when discussing cumulative dropout rates and graduation rates.

[6]We report only on test scores as a measure of academic achievement. However, we analyzed students' grade point averages because of their importance in predicting college success (Roderick, Nagaoka, & Allensworth, 2006). In this analysis, we found no sizable difference between the grade point averages of students attending Chicago High School Redesign Initiative schools and those of similar students at similar schools. There was a small statistically significant difference in 2002–2003 and a marginally significant difference in 2005–2006, but in each case, this difference was extremely small (0.1 of a grade point). In other years, the differences were not statistically significant.

[7]We focus here on the 2002–2003 and 2003–2004 cohorts because they provide the cleanest test of this reform. They are the cohorts with schools that had been open at least 3 years and so had juniors (or seniors) who had experienced the reform from ninth grade on. In addition, the first cohort comprised only conversion schools, and we removed the relatively few students in the second cohort who came from the newly started Big Picture schools, to minimize the potential for confounding the possibly different impacts of the two different redesign strategies.

[8]These studies would require continued data collection through interviews and attendance at teacher meetings, and they would require an understanding of the impact of district-level actions, an analysis of the practices that principals and others enact to support instructional change, and of course, an examination of actual classroom practices. Clearly, if we hope to foster improved learning outcomes, we will need to develop and test theories of action that go beyond those explicated in the small school reform model put forward by the Chicago High School Redesign Initiative and by many proponents of small schools.

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312

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313

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315