Evaluation of LINC's Caring Communities Sites

21st Century Community Learning Center Programs

Cohort 6, Year 5

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LINC's Caring Communities Sites: 21st Century Community Learning Center Programs Cohort 6, Year 5

Introduction

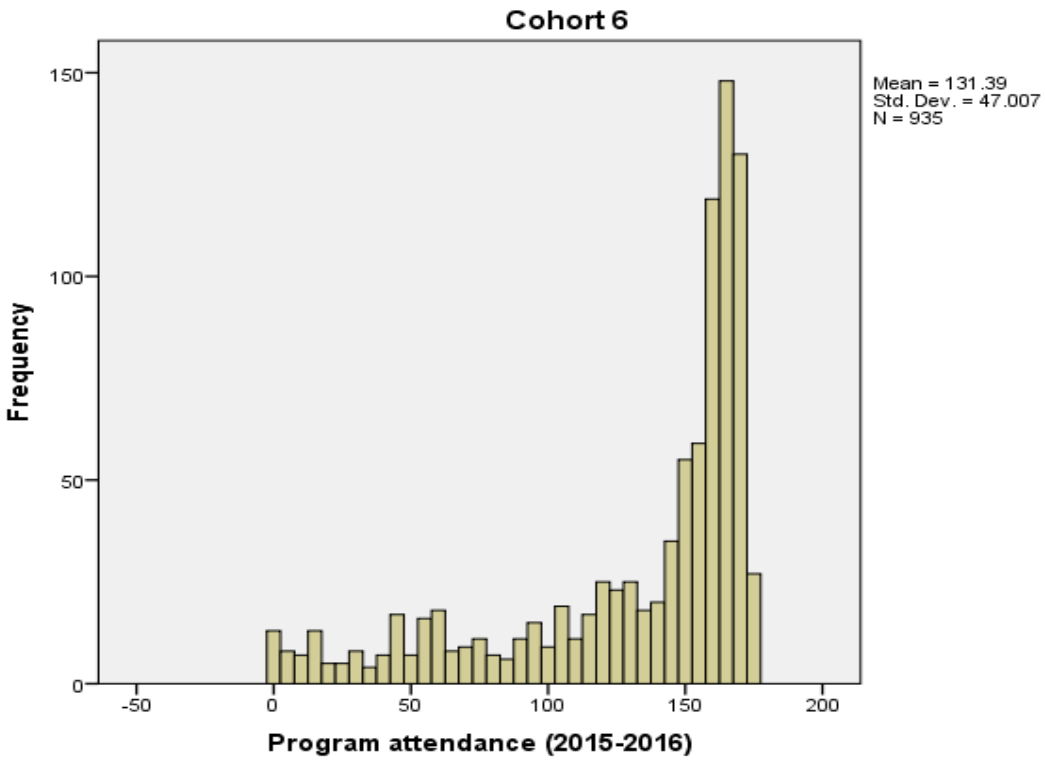
This report summarizes the findings from Georgia State University's evaluation of LINC Caring Community sites funded as 21st Century Community Learning Centers (21C). This report includes findings from six LINC sites in Hickman Mills and the Kansas City Public Schools which comprise Cohort 6 and were in their fifth year of 21C funding during the 2015-2016 school year.

The data sources for the evaluation for this year consist of de-identified data provided by the program. LINC staff rated **student engagement in after-school program activities**. School teachers also rated **improvements in students' school behavior.** Last, **academic grades in math, reading and science** were examined for students. Outcome analyses tested the **effects of students' participation in the LINC 21C program** on change in school behavior and academic achievement over the school year, using program attendance data and engagement ratings. We use the Harvard Family Research Project's three-part model of program participation, in which **participation consists of program enrollment, program attendance, and engagement in program activities**. In order for after-school programs to have beneficial effects on student achievement, students should not just be enrolled but attend regularly and also be engaged in program activities.

Participation in after-school programs, and its effects on student behavior and achievement should also be enhanced by the quality of an after-school program (e.g., Mahoney et al., 2007). The quality of LINC 21CCLC program sites was independently assessed by trained evaluators using the Weikart Center for Youth Program Quality's Program quality Assessment (PQA) tool. The PQA is a well-validated assessment, which scores programs based on safe environment, supportive environment, interaction, and engagement on a scale from 1 to 5. Scores of 5 represents widely available and frequent best practices. Overall PQA ratings ranged from 3.65 to 4.3 across sites, representing above-average quality scores.

LINC Program Attendance

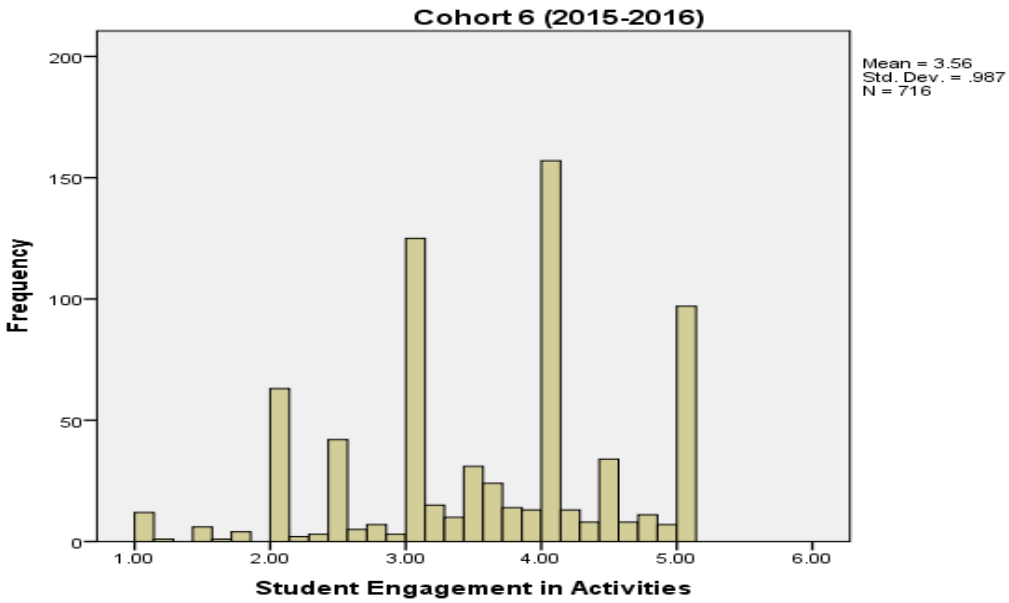
Daily program attendance data were available for 935 students enrolled in the Cohort 6 sites. The average days attended for the 2015-2016 school year was 131 days (SD = 47), although there was a wide range from 0 day to 175 days. As indicated in the Figure on the next page, overall program attendance was high. One percent of students (11 students) enrolled but never attended.



Student Engagement in Program Activities

During the spring semester LINC staff rated students' engagement during a range of after-school activities. Engagement entails enjoyment of, interest in, and sustained attention and effort focused on an activity. Staff members indicated how often (*never = 1, on occasion = 2, some of the time = 3, most of the time = 4, all of the time = 5*) each student pays attention, seems interested in the subject, is on task, and seems to have fun. Student engagement represents each student's average rating during academic and youth development activities. Higher scores indicate a student was more engaged in academic and youth development activities during the LINC after-school program. Engagement data were available for 716 students.

As shown in the figure on the next page, the overall level of student engagement in academic and youth development activities, as rated by program staff, was moderately. The average engagement score was 3.56 (*SD* = .99) out of 5. This average engagement rating was slightly lower than assessed in last year's evaluation, in which the average engagement score was 3.90 *(SD* =1.05).



Factors Predicting Program Participation

The two facets of participation – program attendance and engagement in program activities – were not correlated with each other ($r = .05$, $p < .16$). This finding stands in contrast to last year's evaluation results, in which students rated as more engaged in program activities had higher attendance. Program engagement was positively associated with academic achievement in the fall and spring, except for fall grades for math. The magnitude of the associations ranged from $r = .16$ to .25, $p < .001$. Program attendance was not correlated with academic achievement.

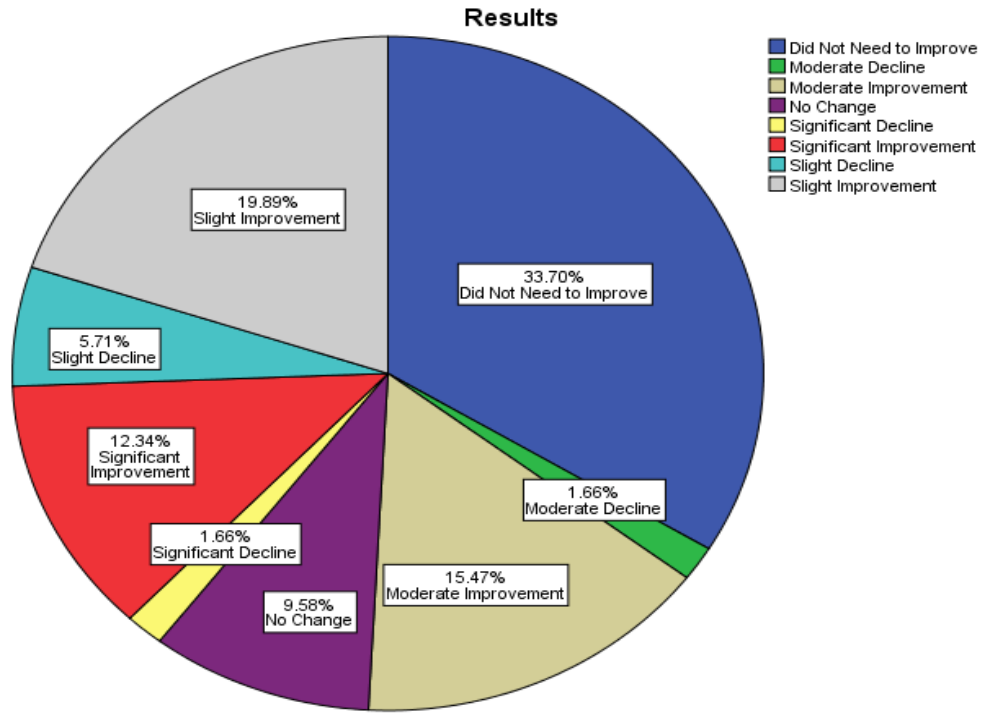
Multivariate analyses tested for factors that may predict students' levels of program participation. Separate multiple regression models were run in which program attendance and student engagement were regressed on the following predictor variables: Gender, grade level, first quarter academic grades, and whether or not teachers rated students as needing improvement at the start of the school year as part of their overall behavioral assessment. Analyses also statistically controlled for program site. Detailed results tables are included in Appendix A.

Although program attendance varied by site, first quarter math grade was the only significant predictor of students' program attendance. Students with higher fall math grades attended the LINC program more frequently over the school year.

Staff ratings of students' engagement in program activities also varied by site. Girls, younger students, and students whose teachers rated as not needing improvement were rated as more highly engaged in program activities in the spring semester.

Teacher Ratings of Improvement in School Behavior

Teacher ratings of changes in student behavior on the DESE Teacher Survey were provided for approximately 479 students who attended the 21CCLC program at least 30 days. For the DESE survey, teachers report on changes over the school year in 10 dimensions of student behavior – academic performance, class attendance, class attentiveness, behaving well in class, gets along with other students, arrives motivated to learn, turns in homework on time, completes homework satisfactorily, participation in class, and volunteering for additional activities – as well as an overall assessment of student behavior. Teachers indicate whether functioning was acceptable at the start of the school year so that the student *did not need to* improve; if level of functioning at the start of the school year was not at an acceptable level, teachers rate change over the school across the following response categories: *significant decline, moderate decline, slight decline, no change, slight improvement, moderate improvement, significant improvement*. The figure below shows the teacher ratings for their overall assessment of student behavior. In terms of overall behavior, 34% of students were rated as *did not need to improve* (compared to 33% in last year's evaluation) and 48% were rated as having either *slight, moderate or significant improvement* (compared to 40% in last year's evaluation). In summary, according to teacher ratings, most of the LINC students who needed to improve in school did improve.

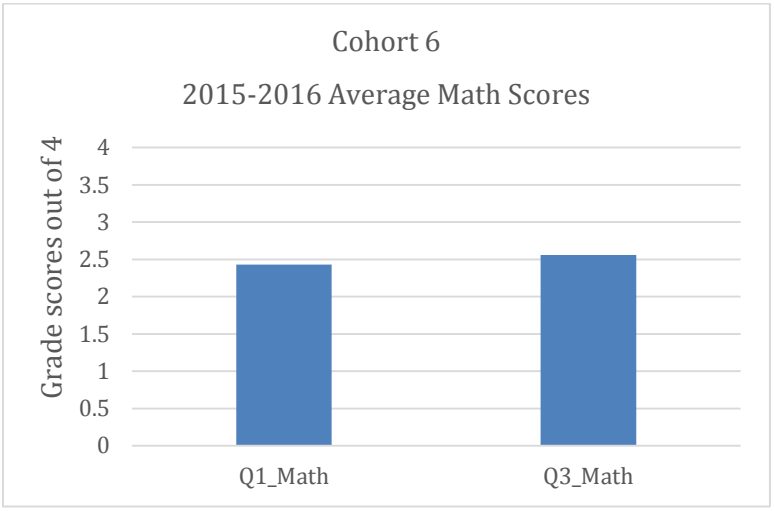


Students' Academic Performance in Math, Reading and Science

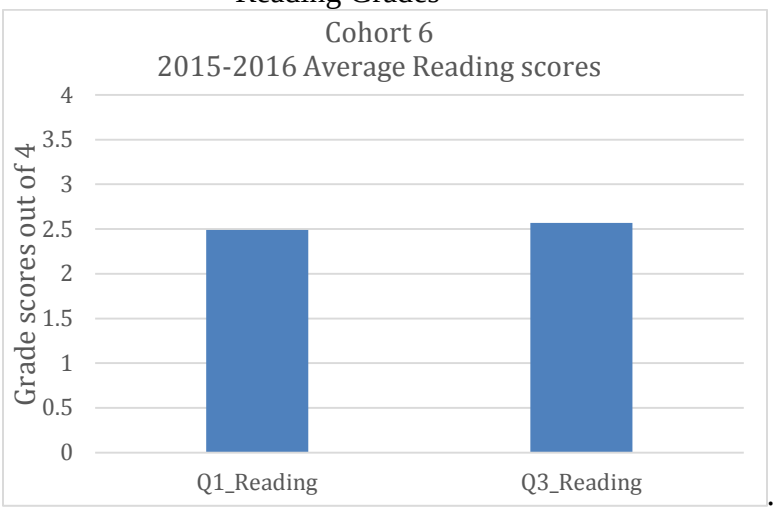
Academic grades in math, reading, and science were taken from the Fall and Spring marking periods. All sites used similar grading metrics of grade A to F. These were converted using the standard 4.0 GPA scale where A = 4.00, A- = 3.70, B+ = 3.30, B = 3.00, B- = 2.70, C+ = 2.30, C = 2.00, C- = 1.70, D = 1.00 and F = 0.00. Math grades from both marking periods were available for 536 students; reading grades from both marking periods were available for 540 students, and science grades from both marking periods were available for 544 students.

Results from paired sample t-tests indicated that there were slight but statistically significant mean increases in math ($t = 3.48$, $df = 535$, $p \leq .001$) and reading grades ($t = 2.24$, $df = 539$, $p \leq .05$) from fall to spring, although there was no change in science grades ($t = -1.27$, $df = 543$, $p = .20$). (In comparison, last year's evaluation found in all three grades from fall to spring). Bar charts in the Figures below show the average Math, Reading, and Science grades from first quarter to third quarter marking periods.

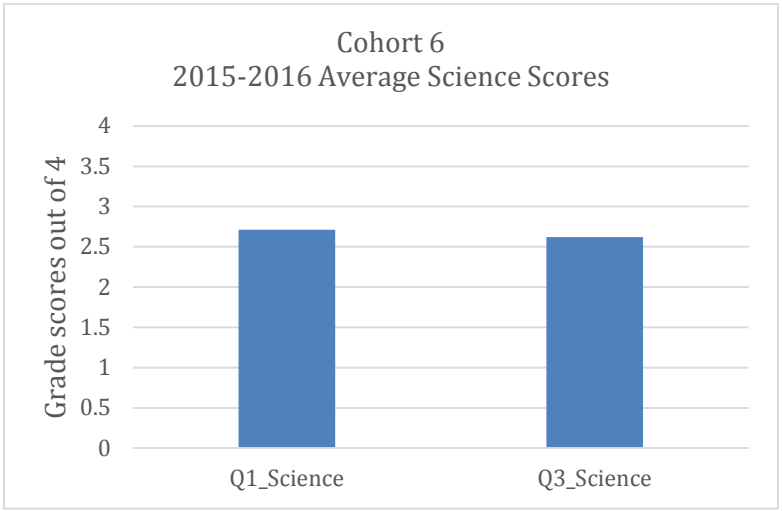
Math Grades



Reading Grades



Science Grades



Effects of Program Participation on School Behavior and Academic Achievement

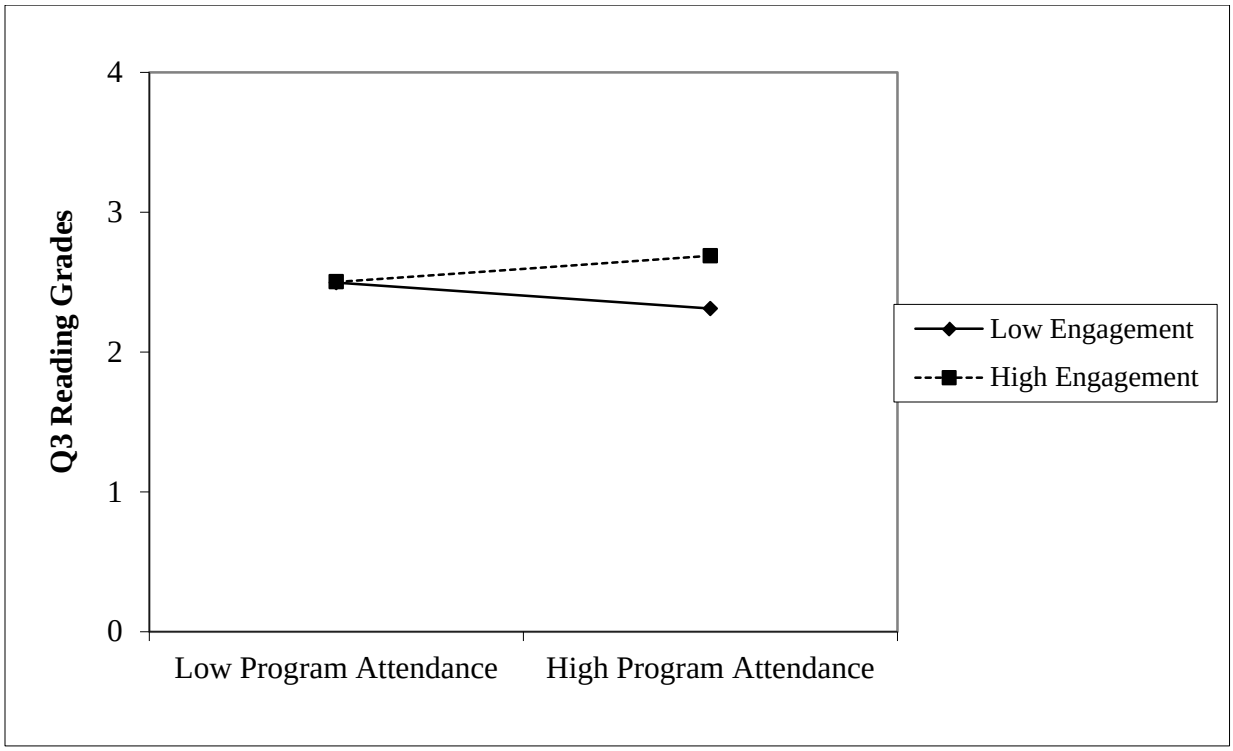
A primary goal of the evaluation is to assess the impact of participation in LINC's 21C before-and-after school program on students' academic achievement and social competence in school. We used the Harvard Family Project's three-part model of program participation to inform this part of the evaluation. In this model, participation consists of program enrollment, program attendance, and engagement in program activities. In order for after-school programs to benefit student achievement, students should not just be enrolled but attend regularly and also be engaged in program activities. In addition to being linked directly to student outcomes, engagement in after-school programs may also enhance the effects of program attendance on

outcomes. Thus, engagement in after-school activities may operate interactively with attendance to promote students' school success.

Academic Grades. To examine the effects of daily program attendance and staff-ratings of students' engagement in program activities on academic achievement, a series of multiple regression models were conducted in which math, reading and science grades from the 3rd marking period were regressed on the additive and interactive effects of engagement and attendance, controlling for site, gender, grade-level, and grades from the first marking period. Analyses also statistically controlled for program site. Analyses were conducted on a sample of between 398 and 412 students who had available data from staff engagement ratings, school records, and program records.

Detailed results tables are presented in Appendix B. There were no effects of program attendance on academic achievement over the school year. There was a positive main effect of engagement on increased science grades at the end of the school year. Also, girls performed better in math over the school year.

There was an interactive effect of attendance and engagement ratings on reading grades at the end of the school year. This interaction is probed in the figure below. Students' engagement in program activities moderated the effect of program attendance on reading grades, such that there was a positive effect of program attendance on increased achievement for students rated as highly engaged.



Teachers' Overall Assessment of Student Behavior. To examine the effects of daily program attendance and staff-ratings of students' engagement in program activities on teachers' ratings of improvement over the school year, an improvement rating variable was constructed based on the 11 teacher ratings (10 domains plus overall behavioral assessment). For each item, students who were not rated as *did not need to improve* were assigned a score of 1 (*significant decline*) to 7 (*significant improvement*), and their scores were averaged across the 11 items. Thus, scores on the composite improvement rating reflect the average improvement across all domains that a given student was deemed as not functioning at an acceptable level at the start of the school year. Students who received ratings of *did not need to improve* across all 11 domains were excluded from the analyses. Analyses are based on the subsample of 203 students (compared to 270 students last year) who were assessed by their teachers as needing to improve in at least one domain at the start of the school year.

Detailed results tables are presented in Appendix C. The composite improvement rating was regressed on the additive and interactive effects of engagement and attendance, controlling for site, gender, grade-level, and grades from the first marking period. Analyses also statistically controlled for program site. Students who were rated as more engaged in LINC program activities were rated by their school teachers as showing greater improvement in their class behaviors. However, no effect of program attendance on teacher ratings of improvement was detected.

Summary and Conclusions

Overall, the students enrolled in the LINC program improved their academic performance in math and reading over the school year. Teacher ratings of overall classroom behavior also indicated that most LINC students who needed to improve did.

Overall, students attended the LINC program regularly and were rated as being moderate to highly engaged in program activities. Girls and younger students were rated as being more highly engaged.

Analyses that tested whether greater participation in the LINC program – in terms of frequency of attendance and engagement in activities – was associated with school performance detected several effects of program participation on academic grades or teachers' ratings of improvement over the school year. Students rated as more engaged LINC performed better in science and were rated by teachers has improving more in class over the school year. There was an interaction effect detected between program attendance and engagement in program activities predicting reading grades showing that students who attended the program regularly did better in reading at school if they were also highly engaged in program activities at LINC.

Several notable weaknesses limit the conclusions from the evaluation. First, a relatively small proportion of students enrolled in the LINC program had complete data from all sources – program records, school records, staff ratings, and teacher ratings. Thus, it is not clear how generalizable findings are to the larger population of students enrolled in LINC 21C programs.

Second, due to the scope of the evaluation and the age range of the students in the program, assessment of students' engagement in after-school activities relied exclusively on staff report. More comprehensive evaluations of engagement would rely on student report and possibly observational ratings. Additionally, given the lack of an experimental design, the direction of effects linking student participation with school outcomes cannot be isolated, limiting causal inferences based on the results.

Although observational ratings of program quality indicated that sites were of above average quality, there was also variability in PQA scores across the six sites. The number of sites in Cohort 6 is not sufficiently large to systematically examine the effects of site quality and other site-level characteristics on student participation, achievement and behavior. The next steps of the evaluation are to pool 21CCLC sites across cohorts to systematically examine effects of site-level characteristics, like program quality, on youth outcomes.

Appendices

A1. Regression Model Predicting Program Attendance

Between-Subjects Factors

		N
Site	Burke Elementary	65
	Foreign Language Academy	86
	Hickman Mills Freshman Center	6
	Ingels Elementary	71
	James Elementary	38
	Rogers Elementary	56

Parameter Estimates

Dependent Variable: Program Attendance

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	138.448	8.493	16.302	.000	121.738	155.159	.462
[Site=Burke Elementary]	11.711	5.430	2.157	.032	1.028	22.395	.015
[Site=Foreign Language Academy]	-3.309	4.975	-.665	.507	-13.098	6.481	.001
[Site=Hickman Mills Freshman Center]	-13.281	13.124	-1.012	.312	-39.105	12.542	.003
[Site=Ingels Elementary]	13.474	5.286	2.549	.011	3.073	23.875	.021
[Site=James Elementary]	18.203	5.906	3.082	.002	6.583	29.823	.030
[Site=Rogers Elementary]	0[a]	.	.	.	.	.	.
Q1 math	**3.664**	**1.622**	**2.259**	**.025**	**.473**	**6.855**	**.016**
Q1 reading	-1.613	1.751	-.921	.358	-5.058	1.832	.003
Q1 science	.842	1.457	.578	.564	-2.025	3.709	.001
Female	1.941	3.010	.645	.519	-3.981	7.863	.001
Grade level	-.833	1.184	-.704	.482	-3.164	1.497	.002
Needs improvement	-1.474	3.545	-.416	.678	-8.449	5.502	.001

a. This parameter is set to zero because it is redundant.

Note: Statistically significant effects of interest are **bolded**.

A2. Regression Model Predicting Staff-ratings of Student Engagement in After-school Activities

Between-Subjects Factors

		N
Site	Burke Elementary	62
	Foreign Language Academy	85
	Ingels Elementary	11
	James Elementary	37
	Rogers Elementary	51

Parameter Estimates

Dependent Variable: Staff-rated Engagement

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	3.477	.335	10.386	.000	2.818	4.137	.315
[Site=Burke Elementary]	-.300	.196	-1.526	.128	-.687	.087	.010
[Site=Foreign Language Academy]	-.007	.179	-.038	.970	-.360	.347	.000
[Site=Ingels Elementary]	.768	.337	2.280	.024	.104	1.432	.022
[Site=James Elementary]	.066	.211	.311	.756	-.351	.482	.000
[Site=Rogers Elementary]	0[a]	.	.	.	.	.	.
Q1 math	.009	.064	.140	.889	-.118	.136	.000
Q1 reading	.091	.069	1.321	.188	-.045	.227	.007
Q1 science	.095	.060	1.590	.113	-.023	.214	.011
Female	**.238**	**.117**	**2.034**	**.043**	**.007**	**.469**	**.017**
Grade level	**-.100**	**.049**	**-2.056**	**.041**	**-.196**	**-.004**	**.018**
Needs improvement	**-.332**	**.142**	**-2.336**	**.020**	**-.611**	**-.052**	**.023**

a. This parameter is set to zero because it is redundant.

Note: Statistically significant effects of interest are **bolded**.

B1. Regression Model Predicting Q3 Math Grades

Between-Subjects Factors

		N
Site	Burke Elementary	167
	Foreign Language Academy	115
	Ingels Elementary	13
	James Elementary	55
	Rogers Elementary	61

Parameter Estimates

Dependent Variable: Q3 Math

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	.752	.212	3.547	.000	.335	1.169	.030
[Site=Burke Elementary]	.675	.139	4.858	.000	.402	.949	.056
[Site=Foreign Language Academy]	.644	.140	4.593	.000	.368	.919	.050
[Site=Ingels Elementary]	-.036	.277	-.131	.896	-.581	.508	.000
[Site=James Elementary]	.807	.168	4.809	.000	.477	1.137	.055
[Site=Rogers Elementary]	0[a]	.	.	.	.	.	.
Female	**.182**	**.088**	**2.064**	**.040**	**.009**	**.355**	**.011**
Grade level	-.037	.031	-1.189	.235	-.098	.024	.004
Q1 math	.545	.036	15.079	.000	.474	.616	.362
Staff-rated engagement	.044	.051	.863	.389	-.056	.144	.002
Program attendance	.002	.001	1.568	.118	-.001	.005	.006
Attendance x engagement	.002	.001	1.524	.128	-.001	.004	.006

a. This parameter is set to zero because it is redundant.

Note: Statistically significant effects of interest are **bolded**.

B2. Regression Model Predicting Q3 Reading Grades

Between-Subjects Factors

		N
Site	Burke Elementary	168
	Foreign Language Academy	115
	Ingels Elementary	13
	James Elementary	55
	Rogers Elementary	61

Parameter Estimates

Dependent Variable: Q3 Reading

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	.715	.218	3.285	.001	.287	1.143	.026
[Site=Burke Elementary]	.355	.137	2.596	.010	.086	.624	.017
[Site=Foreign Language Academy]	.554	.138	4.020	.000	.283	.825	.039
[Site=Ingels Elementary]	.002	.281	.006	.995	-.551	.555	.000
[Site=James Elementary]	.800	.164	4.886	.000	.478	1.122	.056
[Site=Rogers Elementary]	0[a]	.	.	.	.	.	.
Female	-.025	.087	-.285	.776	-.196	.146	.000
Grade level	.009	.030	.302	.763	-.050	.068	.000
Q1 reading	.583	.041	14.105	.000	.502	.665	.332
Staff-rated engagement	.097	.050	1.921	.055	-.002	.196	.009
Program attendance	.000	.001	-.197	.844	-.003	.002	.000
Attendance x engagement	**.002**	**.001**	**2.039**	**.042**	**.000**	**.005**	**.010**

a. This parameter is set to zero because it is redundant.

Note: Statistically significant effects of interest are **bolded**.

B3. Regression Model Predicting Q3 Science Grades

Between-Subjects Factors

		N
Site	Burke Elementary	164
	Foreign Language Academy	106
	Ingels Elementary	13
	James Elementary	55
	Rogers Elementary	60

Parameter Estimates

Dependent Variable: Q3 Science

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	1.817	.232	7.822	.000	1.360	2.274	.137
[Site=Burke Elementary]	-.226	.148	-1.521	.129	-.517	.066	.006
[Site=Foreign Language Academy]	.466	.158	2.956	.003	.156	.776	.022
[Site=Ingels Elementary]	-1.622	.307	-5.276	.000	-2.227	-1.018	.067
[Site=James Elementary]	.030	.181	.165	.869	-.325	.385	.000
[Site=Rogers Elementary]	0[a]	.	.	.	.	.	.
Female	.101	.097	1.042	.298	-.090	.292	.003
Grade level	-.046	.033	-1.360	.175	-.111	.020	.005
Q1 Science	.369	.042	8.706	.000	.286	.453	.164
Staff-rated engagement	**.126**	**.056**	**2.245**	**.025**	**.016**	**.237**	**.013**
Program attendance	.002	.001	1.154	.249	-.001	.005	.003
Attendance x engagement	.000	.001	.347	.729	-.002	.003	.000

a. This parameter is set to zero because it is redundant.

Note: Statistically significant effects of interest are **bolded**.

C1. Regression Model Predicting Composite Teacher Ratings of School Behavior Improvement

Between-Subjects Factors

		N
Site	Burke Elementary	58
	Foreign Language Academy	70
	Ingels Elementary	10
	James Elementary	36
	Rogers Elementary	29

Parameter Estimates

Dependent Variable: Composite Teacher Improvement Rating

					95% Confidence Interval		
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound	Partial Eta Squared
Intercept	5.290	.475	11.140	.000	4.354	6.227	.395
[Site=Burke Elementary]	-.890	.295	-3.014	.003	-1.473	-.308	.046
[Site=Foreign Language Academy]	-.879	.274	-3.204	.002	-1.421	-.338	.051
[Site=Ingels Elementary]	-1.072	.482	-2.222	.027	-2.024	-.121	.025
[Site=James Elementary]	-.154	.294	-.523	.601	-.735	.427	.001
[Site=Rogers Elementary]	0[a]	.	.	.	.	.	.
Female	.073	.167	.438	.662	-.256	.403	.001
Grade level	.116	.071	1.646	.101	-.023	.255	.014
Q1 math	.022	.085	.258	.797	-.146	.190	.000
Q1 reading	.112	.095	1.177	.241	-.076	.300	.007
Q1 science	-.069	.081	-.847	.398	-.228	.091	.004
Staff-rated engagement	**.385**	**.101**	**3.816**	**.000**	**.186**	**.585**	**.071**
Program attendance	-.001	.003	-.486	.627	-.007	.004	.001
Attendance x engagement	.001	.003	.221	.826	-.005	.006	.000

a. This parameter is set to zero because it is redundant.

Note: Statistically significant effects of interest are **bolded**.