

# Impact Evaluation of the U.S. Department of Education's Student Mentoring Program

Executive Summary

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The Authors

# Disclosure of Potential Conflicts of Interest<sup>1</sup>

The research team for this evaluation consists of a prime contractor, Abt Associates Inc., and three subcontractors, Branch Associates, Moore and Associates, and the Center for Resource Management. None of these organizations or their key staff has financial interests that could be affected by findings from the *Impact Evaluation of the U.S. Department of Education's Student Mentoring Program*. No one on the Technical Advisory Panel, convened to provide advice and guidance, has financial interests that could be affected by findings from the evaluation.

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<sup>1</sup> Contractors carrying out research projects for IES frequently need to obtain expert advice and technical assistance from individuals and entities whose other professional work may not be entirely independent of or separable from the particular tasks they are carrying out for the IES contractor. Contractors endeavor not to put such individuals or entities in positions in which they could bias the analysis and reporting of results, and their potential conflicts of interest are disclosed.

# Executive Summary

This report summarizes the findings from a national evaluation of mentoring programs funded under the U.S. Department of Education's (ED) Student Mentoring Program. The Office of Management and Budget (OMB) requested that the Institute of Education Sciences (IES) within ED oversee an independent evaluation of the Student Mentoring Program. In 2005, ED contracted with Abt Associates and its team of subcontractors, Branch Associates, Moore and Associates, and the Center for Resource Management, to conduct the Impact Evaluation of Student Mentoring Programs. The impact evaluation used an experimental design in which students were randomly assigned to a treatment or control group. Thirty-two purposively selected School Mentoring Programs and 2,573 students took part in the evaluation, which estimated the impact of the programs over one school year on a range of student outcomes. The evaluation also describes the characteristics of the program and the mentors, and provides information about program delivery.

## School-Based Mentoring

School-based or student mentoring programs grow out of interest in youth mentoring generally. The rationale for mentoring is that supportive adults can serve as mentors and can help students avoid high-risk activities and make more successful transitions to adulthood (Sipe, 1996; Tierney and Grossman, 2000; Rhodes, 2002). Youth mentoring programs have emerged as a means to further these goals by connecting at-risk youth with volunteer mentors from outside the family who serve as role models, provide support and guidance, expose students to new things, and provide academic assistance. School- (as opposed to community-) based mentoring programs are programs where typically teachers and other school staff target and identify academically and/or social/emotionally at-risk students whom they feel would benefit from mentoring. These programs then pair these at-risk students with volunteers who meet with them regularly at school (typically one hour per week) either during or after the school day (Portwood and Ayers, 2005).<sup>1</sup> Theoretically, school-based programs also allow mentors and students to focus on academic-related activities such as homework help, tutoring, and reading (Portwood and Ayers, 2005). However, based on prior research findings, programs have been shown to vary widely with regards to the amount of time spent on academics versus social activities (Herrera, Sipe, and McClanahan, 2000; Herrera, Grossman, Kauh, Feldman, and McMaken, 2007).

Over the past several years, school-based mentoring programs have become an increasingly popular way to provide students with mentors (Herrera et al., 2007). This may be due to, at least in part, a number of perceived advantages over community-based mentoring. For example, school-based programs tend to cost less to run per relationship than community-based mentoring programs due to more in-kind contributions from the schools and less overhead (Rhodes, 2002; Portwood and Ayers, 2005; however, see Herrera et al, 2007). However, there are also limitations to the school-based approach. The biggest difference is that school-based mentoring tends to be less intensive than community-based mentoring. For example, the school calendar generally constrains the maximum length of a match to approximately 9 months, which is less than the minimum 12 months of mentoring recommended by those in the mentoring field (e.g., Rhodes, 2002). In practice, the actual

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<sup>1</sup> While school-based mentoring is typified by mentors and students meeting on school grounds, it does not exclude mentors and students also getting together at other locations.

length of the school-based mentoring relationship may be even shorter. For example, studies have found a 2- to 3-month time lag from the beginning of the school year in getting students matched with mentors (Hansen, 2005, Herrera, et al., 2000; Karcher, 2008) so that actual mentoring takes place for a period of 5 to 6 months for approximately 6 hours a month (Herrera, et al., 2000). In addition, the school-based approach has often relied heavily on high-school and college-age mentors, which, on one hand, increases the number of students a program can serve, but also can limit the length of the mentoring relationship given the mentors' inability to commit beyond a semester or school year (Herrera et al., 2007). Furthermore, the meta-analytic review of DuBois, Holloway, Valentine, and Harris (2002) regarding the effectiveness of mentoring programs for youth suggests that school-based mentoring programs may be less effective than community-based efforts. In short, compared to community-based mentoring programs, the constraints placed upon school-based mentoring often result in more limited opportunities for students to develop enduring, trusting relationships with adult role models. In turn, school-based mentoring may not be able to provide a sufficient "dosage" of mentoring to achieve lasting positive effects on students.

Research findings on the impacts of school-based mentoring on student outcomes have been limited by weak research designs, small sample sizes, and non-objective measures. However, there is a growing body of more rigorous research that has produced a range of impact findings, generally not sustainable over time. For example, the recent experimental impact evaluation of Big Brothers Big Sisters (BBBS) school-based efforts suggests that school-based programs have the potential to improve students' academic performance, behavior in school, and school attendance (Herrera et al., 2007). These results, however, with the exception of skipping school, did not endure into the following school year. In contrast, a recent experimental evaluation of another school-based mentoring program (the *Study of Mentoring in the Learning Environment* (SMILE)) revealed small, positive effects of mentoring on students' connectedness to peers and on self-esteem and social skills, but not on academic outcomes (Karcher, 2008). Finally, two experimental studies of the Across Ages mentoring program, which has characteristics of both school- and community-based programming (Taylor, LoSciuto, Foz, and Sonkowsko, 1999; Aseltine, Dupre, and Lamlein, 2000), found that the program led to lower levels of student substance use and problem behaviors and stronger attachment of students to school and their families, which were not sustained beyond the end of the school year.

## **The Student Mentoring Program**

The U.S. Department of Education's Student Mentoring Program, authorized under the No Child Left Behind Act (NCLB) of 2002, Section 4130, is a competitive federal grant program managed by the Office of Safe and Drug Free Schools (OSDFS). It addresses the lack of supportive adults at critical junctures in the lives of students at risk by providing funds to schools and to community- and faith-based organizations to create school-based mentoring programs targeting children in grades 4–8.

The legislation authorizing the program permits program grantees to be responsible for a number of activities including identifying students for the program; recruiting, training and screening of potential mentors (including reference checks and criminal background checks) and supporting mentors through technical assistance and suggested programming. While specific mentoring activities are not mandated in the legislation, the program purpose description states that supported activities are those designed to: improve interpersonal relationships with peers, teachers, other adults and family members; increase personal responsibility and community involvement; discourage drug

and alcohol use, use of weapons and other delinquency involvement; reduce dropout rates; and improve academic achievement.

An absolute priority of the program, as stipulated by OSDFS in their grant solicitation for the program, is its focus on the academic and social needs of at-risk students. In addition to setting the absolute priority, OSFDS, in their grant solicitation, also outlined a number of strategies underlying well-designed and effective school-based mentoring programs including: screening of all potential mentors including background checks; training and support for mentors and program staff on an ongoing basis; activities for mentors and students; and established procedures for supervising and monitoring of mentoring relationships.

## Evaluation Design

This study employs a student-level random assignment design. Specifically, the current evaluation focuses on the impacts of the Student Mentoring Program on students randomly assigned to participate in the ED-funded programs compared to similar students who signed up to participate but were not assigned to participate in the programs.<sup>2</sup> Thus, the study provides experimentally-based evidence about the efficacy of school-based mentoring programs when implemented by a variety of sponsoring organizations.

The key research questions that the evaluation addresses are:

- What is the impact of ED school-based mentoring programs on students' interpersonal relationships with adults, personal responsibility, and community involvement?
- What is the impact of ED school-based mentoring programs on students' school engagement (e.g., attendance, positive attitude towards school) and academic achievement?
- What is the impact of ED school-based mentoring programs on students' high-risk or delinquent behavior?

The sampling pool for this evaluation was based on 255 mentoring programs funded by ED in either 2004 or 2005. The study collected and aggregated data from two cohorts of students: one from the 2005–2006 school year and another from the 2006–2007 school year. The original evaluation design was based on only one cohort. The sample size calculations for this design were based on the assumption that mentoring would be provided to students for an entire school year. When it became apparent after the first program year, however, that the average amount of mentoring was much shorter (i.e., between five and six months) it was decided that in order to conduct a fair test of the program, a larger sample would be needed to detect a smaller effect size. Thus, two cohorts of students were recruited to reach the necessary sample size.

To be selected for the Impact Study, each grantee had to meet three criteria:

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<sup>2</sup> The study is limited to treatment effectiveness across the 32 purposively selected programs, and thus does not generalize outside these programs.



- Be operational so that it could recruit and match students to mentors in the Fall 2005 for the first group of grantees and Fall 2006 for the second group;
- Able to over-subscribe or identify excess demand supporting experimental study needs for an un-served control group (i.e., able to provide tangible evidence of a pool of 4th through 8th grade students referred to the mentoring program) of adequate size to support study requirements; and
- Willing and able to cooperate with the data collection and logistical needs of the national evaluation, including random assignment.

## The Study Sample

A total of 32 unique grantees met the above selection criteria and agreed to participate, comprising the final purposive sample. When identifying students for the study, grantees had categorical criteria to determine eligibility, such as grade level or school location. Sites also identified appropriate students in a variety of ways, most often asking school staff (such as teachers or counselors from the participating schools) to identify and refer students in need of mentoring to the program. To obtain an adequate sample size of students from the 32 grantees, a total of 2,573 students were recruited, 1,272 of whom were randomly assigned to receive mentoring services from the program and 1,301 that were randomly assigned to not receive these services.<sup>3</sup> Students assigned to the control group were free to seek out other mentoring services in the community.

The majority of grantees participating in the Impact Study were non-profit/community-based organizations or faith-based organizations (66 percent) with an average of 6 years of experience with school-based mentoring programs. The average grantee in the Impact Study served 217 students with an annual budget of approximately \$277,000. The majority of the grantees in the Impact Study reported having their school-based mentoring programs being extremely focused on improving student academic outcomes (91 percent), increasing students' self-esteem (84 percent), providing students with general guidance (72 percent), and improving students' relationships (63 percent). The majority of students served by the Impact Study grantees were female (57 percent) and a plurality were black or African American (41 percent), and in grades 6 through 8 (44 percent).

In addition to data for the 32 Impact Study grantees, data capturing program characteristics were also collected for a random sample of 100 grantees.<sup>4</sup> The purpose of this random sample was to assess if the purposive sample used to assess program impacts was representative of the full universe of grantees funded through the Student Mentoring Program in 2004 and 2005 for some observable characteristics, as well as to provide additional descriptive information to ED.

Compared to this representative sample of randomly selected grantees, the grantees participating in the Impact Study were less likely to be non-profit/community-based organizations or faith-based organizations but more likely to be school districts, had more years of experience running school-based mentoring, had a larger annual budget, and served more students. Regarding program focus,

<sup>3</sup> Of these 32 grantees, 10 provided students in both rounds of recruitment and random assignment. In other words, 10 of the 21 grantees recruited in 2006 had previously been recruited (and were part of our sample) in 2005, leaving us with 32 unique grantees.

<sup>4</sup> A total of 12 out of the 100 randomly sampled grantees were also part of the purposive sample.

grantees in the Impact Study reported being less focused on improving students' academic outcomes and on teaching risk avoidance than the grantees in the representative sample. In addition, there were differences in the students served with grantees in the Impact Study serving more females and more Asian, Latino, and Pacific Islander students but fewer white students than the grantees in the representative sample. The Impact Study sample may also have differed from the representative sample of grantees in other ways that were not observed.

The student sample for the Impact Study had the following characteristics:

- **Gender:** The student sample was 47 percent male versus 53 percent female.
- **Age:** The average age of the sample was 11.2 years old.
- **Race/Ethnicity:** Forty-one percent of the student sample was black or African American, and 31 percent was Hispanic.
- **Poverty:** Eighty-six percent of the sample was eligible for either free or reduced price lunch.
- **Family structure:** Fifty-six percent of the student sample came from two-parent households.
- **Risk status:** Three-fifths (60 percent) of the student sample was at academic risk, defined by being below proficiency in either reading/English language arts (ELA) or math (or both) at baseline, and one-fourth of the sample (25 percent) was at risk for delinquency, defined by self-reported delinquent behaviors.
- **Prior mentoring experience:** Twenty-six percent of the sample reported receiving mentoring in the prior school year.
- **Of the baseline characteristics assessed, only one statistically significant difference between the treatment and control group was observed.** A higher proportion of students in the treatment group were eligible to receive free or reduced-price school lunches than in the control group.

## Program Delivery Findings

Both grantees and mentors were surveyed to describe various characteristics of program delivery, including training and support for mentors, characteristics of mentors, matching of students with mentors, and mentor/student relationship duration and activities. On average, grantees in the study implemented the program following the guidance provided by the legislation and program office. Also, program delivery was, by and large, consistent with findings from previous studies of school-based mentoring.

Key findings on program delivery include the following:

- **Approximately one in ten mentors reported not having undergone a reference or background check despite being required by the program as a condition of the grant.** Eleven percent of mentors reported not having had either a background or reference check conducted pre-match, despite the fact that all 32 grantees indicated requiring some form of background screening before matching mentors with students. Because only mentors and not grantees were asked this question, it is possible that some mentors were simply unaware (or had forgotten) that a background or reference check was conducted by the grantee.
- **The majority of mentors received pre-match training or orientation and had access to ongoing supports from the program.** Ninety-six percent of mentors reported receiving an average of 3.4 hours of some form of pre-match training or orientation. Forty-one percent of mentors reported that ongoing training was available after they had begun meeting regularly with their students. Ninety-four percent reported having access to some kind of ongoing supports, consistent with legislative and program guidelines.
- **The majority of students were matched with mentors of the same race and gender.** Fifty-five percent of matches in our study were between individuals who had the same racial status. Eighty-one percent of matches in our study were between students and mentors of the same gender.
- **The majority of mentors met with their students on a one-to-one basis.** Mentors, on average, also reported meeting with their students, on a weekly basis for approximately one hour per meeting. This finding is consistent with findings from other studies (Herrera et al. 2007; and Karcher, 2008).
- **Seventeen percent of the students randomly assigned to the treatment group never received mentoring from the program.** This includes 14 percent of students in the treatment group who were never matched with mentors and another 3 percent who were matched with mentors, but never actually met. However, the percentage of unmatched students in this study is within the range of past experience engaging mentors in randomized impact studies of mentoring.<sup>5</sup>
- **On average, the programs took a total of 81 days to match students and mentors, from the start of the school year.** On average, there was a lag of 37 days between the date of random assignment and the time when the student was matched. This lag between the beginning of the school year and matching students is consistent with findings from previous research (Herrera et al, 2000, Hansen, 2005, and Karcher, 2008).
- **For students who were matched and met with their mentors, the average length of the relationship was 5.8 months.** This finding, however, is consistent with previous research. For example, Herrera et al. (2007) in the impact study of the BBBS school-based mentoring program reported an average match length of 5.3 months.

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<sup>5</sup> One school-based mentoring study and one community-based mentoring study (both random assignment of students to conditions) has found that the proportion of students slated to receive mentoring services that remain unmatched with mentors was 7 and 22 percent, respectively (Herrera, et al., 2007; Tierney and Grossman, 2000).

- **Discussing relationships and future plans, and to a lesser extent, working on academics were the most frequent activities reported by mentors.** Mentors and students worked together on a range of activities. Approximately half of the mentors reported frequently discussing relationships and future plans (52 percent and 48 percent, respectively). In contrast, 43 percent reported working frequently on academics, while 21 percent reported never working on academics. The greater focus on the social needs of the students compared to academic needs has been found in some, but not all, of the previous research.<sup>6</sup>
- **Approximately 20 percent of the mentors were of high-school age (18 years or younger) and an additional 23 percent were of college-age.** However, this is still a smaller percentage than findings from previous research where the majority of mentors were of high school or college age.<sup>7</sup>

## The Treatment Contrast

- **Eighty-six percent of treatment group students reported receiving mentoring services (through any program) over the past school year compared to 35 percent of the control group students.** Treatment group students received services from ED Student Mentoring programs and control group students reported receiving mentoring either from the program or elsewhere in the community.<sup>8</sup>
- **Students in the treatment group reported receiving more intensive mentoring than students in the control group who received mentoring.** Eighty-five percent of students in the treatment group who actually received mentoring reported meeting with their mentors at least twice a month, compared to 66 percent of the mentored control group students.

## Outcome Measures

We measured a total of 17 outcomes in the domains of interpersonal relationships and personal responsibility, academic achievement and engagement, and high-risk or delinquent behavior. We based the evaluation outcome measures on the intended outcomes as stated in the legislation authorizing the program and the three research questions. Using both self-report data from the students and school records, the study estimated impacts on outcomes for treatment and control students, based on data from two time points—in the fall of the school year and at the end of the school year.

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<sup>6</sup> Less than a third of the mentors in the BBBS study (Herrera et al., 2007) reported spending a lot or most of their time on academic activities.

<sup>7</sup> For example, Herrera et al. (2007) reported that half of the mentors in the BBBS study were 18 years old or younger, with an additional 17 percent 19 to 24 years old. In Karcher's 2008 study of school-based mentoring, 70 percent of the mentors were college students.

<sup>8</sup> Three percent of students in the control group received mentoring from the grantees in the study.

## Analytic Approach

The analysis strategy utilized a fixed-effects model to estimate the average treatment effect across all programs for students assigned to receive mentoring versus students assigned to an untreated control group.<sup>9</sup> The fixed effects model was also used to examine five subgroup differences: (1) gender, (2) age (students 12 or older versus students less than 12 years old), (3) family structure (students from two-parent families versus students from other types of families), (4) presence of self-reported delinquent behaviors at baseline (theft, possession of a weapon, drug use, alcohol use, or gang activity), and (5) academic non-proficiency (in math, reading/English Language Arts (ELA), or both) at baseline. We obtained impact estimates for each of the selected subgroups using the same approach as in the main analysis. We then performed a t-test to identify any statistically significant differences in impacts between each paired set of subgroups – for example, to test whether the estimated impact of school-based student mentoring on boys was different from the impact on girls in our sample. To control for chance findings, a multiple comparisons procedure, known as the Benjamini-Hochberg (BH) correction, was employed within each outcome domain in analysis of the full sample and within each outcome domain in each of the five subgroup analyses.

Finally, given that characteristics of programs and their mentors varied considerably across sites, we wished to determine whether some sites or groups of sites could be characterized as more or less successful, and, if so, whether we could identify program characteristics associated with differences in impacts at the site level. Therefore, a series of exploratory analyses were also conducted to explore site-level differences in impacts.

## Impacts of the Student Mentoring Program

### Estimation of Overall Impacts of the Student Mentoring Program

We estimated a total of 17 impacts in three domains: (1) academic achievement and engagement; (2) interpersonal relationships and personal responsibility; and (3) high-risk or delinquent behavior.

- **The Student Mentoring Program did not lead to statistically significant impacts on students in any of the three outcome domains.** The estimated impact on the Student Mentoring Program on the outcome measures for all three domains is reported in Exhibit ES.1.
- Three of the impacts were statistically significant before accounting for multiple comparisons. However, after accounting for multiple comparisons within each of the three domains, these three impact estimates were no longer statistically significant.

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<sup>9</sup> We use the term “fixed-effects” within the dual perspectives of sampling and statistical inference. Because student mentoring programs were chosen purposively, not randomly into the study, results cannot be generalized to the full universe of programs. The fixed-effects model is therefore, appropriate, given our level of inference does not extend beyond our study sample of purposively chosen programs.

**Exhibit ES.1: Estimated Overall Impacts on Student Outcomes**

Outcome	Unadjusted Mean Outcome				Estimated Impact			
	Treatment Group		Control Group		Regression Adjusted T-C Group Difference <sup>a</sup>	p-value to Test Difference	BH-Corrected Critical Value <sup>b</sup>	Estimated Effect Size
	Mean	Standard Deviation	Mean	Standard Deviation				
<b>Interpersonal Relationships, Personal Responsibility, and Community Involvement</b>								
<b>Self-Reported Outcome (Range 1- 4)</b>								
Pro-Social Behaviors	2.79	0.81	2.80	0.80	-0.01	0.68	NA	-0.01
Percent Missing Data	≤3%		≤3%					
<b>Academic Outcomes</b>								
<b>Self-Reported Outcome (Range 1- 4)</b>								
School Efficacy and Bonding	3.06	0.80	3.03	0.85	0.04	0.08	0.02	0.07
Future Orientation	3.85	0.54	3.80	0.63	0.03*	0.04	0.01	0.08
Percent Missing Data	≤3%		≤3%					
<b>School-Reported Outcome</b>								
<b>Overall Absenteeism Rate (all absences as percent of total days enrolled)</b>	5.03	7.71	5.49	9.63	-0.46*	0.04	0.01	-0.09
Percent Missing Data	15%		18%					
<b>Grades (Range 1–5)</b>								
Math	3.19	1.70	3.23	1.67	-0.05	0.23	0.02	-0.05
Reading/ELA <sup>c</sup>	3.57	1.78	3.61	1.69	-0.04	0.40	0.03	-0.04
Science	3.52	1.87	3.55	1.86	-0.03	0.48	0.04	-0.03
Social Studies	3.53	1.92	3.56	1.83	-0.01	0.78	0.05	-0.01
Percent Missing Data	≤35%		≤33%					
<b>State Assessment Tests</b>								
Math—Percent Proficient	45.69		47.10		-1.53	0.41	0.04	0.94 <sup>d</sup>
Reading/ELA—Percent Proficient	49.40		50.76		-1.67	0.37	0.03	0.94 <sup>d</sup>
Percent Missing Data	≤25%		≤20%					
<b>Delinquent Behaviors and Participation in Harmful Activities</b>								
<b>Self-Reported Outcome (Range 1–4)</b>								
Misconduct <sup>e</sup>	3.20	0.86	3.20	0.85	0.00	0.95	0.05	0.00
Delinquency <sup>e</sup>	3.87	0.36	3.85	0.40	0.01	0.28	0.02	0.04
Percent Missing Data	≤3%		≤4%					
<b>School-Reported Outcome</b>								
<b>Truancy (unexcused absences as percent of total days enrolled)<sup>f</sup></b>	2.04	4.8	2.47	6.91	-0.45*	0.02	0.01	-0.14
<b>Misconduct</b>								
Percent committing any infraction	25.00		22.91		2.56	0.13	0.01	1.59 <sup>d</sup>
Percent committing repeated infractions (2+)	14.21		15.63		-0.98	0.48	0.04	0.93 <sup>d</sup>
<b>Delinquency</b>								
Percent committing any infraction	18.13		20.03		-1.51	0.35	0.03	0.91 <sup>d</sup>
Percent committing repeated infractions (2+)	8.64		9.13		-0.56	0.65	0.04	0.93 <sup>d</sup>
Percent Missing Data	≤22%		≤23%					
Number of students	1163		1197					

<sup>a</sup> Regression Adjusted T-C Group Difference will not necessarily be equal to the difference between the Unadjusted Mean Outcomes.

<sup>b</sup> Based on Benjamini-Hochberg test.

<sup>c</sup> ELA = English/Language Arts.

<sup>d</sup> Odds-ratio.

<sup>e</sup> Higher scores on the Self-Reported Misconduct and Delinquency scales indicate more positive outcomes.

<sup>f</sup> Based on 27 sites that reported unexcused absences and total days enrolled. Treatment Group: Missing data ≤38%; Control Group: Missing data ≤36%.

\* p-value (of estimated impact) < 0.05, two-tailed test.

+ p-value (of estimated impact < BH-Corrected Critical Value → statistically significant holding the false discovery rate under multiple testing below 0.05

Source: Impact Evaluation of the U.S. Department of Education’s Student Mentoring Program—Student Survey, Fall 2005 and Spring 2006; Fall 2006 and Spring 2007; School Records, SY 2004–2005, SY 2005–2006, SY 2006–2007.

## Estimation of Subgroup Effects

Several subgroup analyses were statistically significant after accounting for multiple comparisons.

- **The Student Mentoring Program improved academic outcomes for girls and produced mixed academic outcomes for boys.** There were several positive impacts of the program for girls. The impact on self-reported scholastic efficacy and school bonding was positive and statistically significant for girls, with treatment group girls scoring higher than control group girls. In addition, there was a statistically significant difference in impacts on the scholastic efficacy and school bonding measure by gender (effect size for girls = 0.18 versus -0.05 for boys). There was also a positive, statistically significant effect on future orientation for boys (effect size = 0.17). However, the difference in impacts between boys and girls on this measure was not statistically significant.
- **For boys, the Student Mentoring Program negatively affected self-reported pro-social behavior** Boys who were assigned to mentoring reported statistically significant lower scores on the pro-social behaviors scale compared to their control group peers. Moreover, there was a statistically significant difference in impacts on the pro-social behaviors scale by gender (effect size for girls = 0.08 versus -0.11 for boys).
- **The Student Mentoring Program led to a decrease in truancy for younger students.** Truancy (i.e., unexcused absence) showed a statistically significant improvement for younger students (below age 12) who were assigned to mentoring compared to same age peers in the control group (effect size = -0.23). However, the difference in impacts on truancy between younger and older students (aged 12 and older) was not statistically significant after accounting for multiple comparisons.

## Site-Level Characteristics and Impacts

Although we did not find that the Student Mentoring Programs had statistically significant impacts on student-level outcomes for our sample as a whole, we wished to determine whether characteristics of programs and their mentors varied across sites and, if so, whether we could identify program and mentor characteristics associated with differences in impacts at the site level. Because sites were not randomly assigned to different levels of implementation—a primary potential source of impact variation—this analysis is descriptive and exploratory, not causal, in nature.

For this analysis, it was essential to develop a parsimonious model for testing for any relationship between program and mentor characteristics (and contextual factors) and site-level impacts. Therefore, in choosing the final set of site-level covariates for inclusion in our model, we considered several factors, including their theoretical importance in influencing impacts, possessing statistically significant site-level variation, and low site-level correlations among these variables to avoid problems with multicollinearity.<sup>10</sup>

The site-level covariates in our analysis included nine factors: (1) average hours of pre-match training provided to mentors; (2) amount of ongoing mentor support (average frequency of mentor-supervisor

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<sup>10</sup> In general, we focused on proximal factors thought to have a direct influence on impacts rather than distal factors, which may be correlated with impacts, but whose influence may be indirect and/or mediated through more proximal causes.

meetings); (3) use of activities in mentor/student meetings (e.g., percent of mentors reporting almost always/most of the time either working on homework and/or academic skills with students); (4) percent of mentors aged 22 or below; (5) percent of mentor/student matches of the same race/ethnicity; (6) percent of students with self-reported delinquent behaviors at baseline; (7) percent of students scoring “not proficient” in either math or reading/ELA at baseline; (8) percent of mentor/student matches lasting 6 months or longer; and (9) average total hours of mentor/student meetings per month.<sup>11</sup>

Although we did not explicitly control for multiple comparisons because this was an exploratory analysis, it is important to note that we conducted 153 individual hypothesis tests of potential associations between the 9 covariates and the 17 outcome measures, for roughly 7 or 8 of which we would expect to reject the null hypothesis at the 0.05 level by random chance alone. In fact, we found 12 statistically significant relationships.

The following associations between site-level impacts and each of these site characteristics were statistically significant at the 95 percent confidence level, holding all other characteristics constant:<sup>12</sup>

- **The frequency of mentor/supervisor meetings was negatively associated with site-level impacts.** All other things equal, the frequency of mentor/supervisor meetings was negatively associated with site-level impacts on the Pro-social Behaviors measure from the Student Survey and on grades in math and social studies. They were also positively associated with site-level impacts on school-reported delinquency.
- **The proportion of students with self-reported delinquent behaviors at baseline had both positive and negative relationships with site-level impacts.** The proportion of students with self-reported delinquent behaviors at baseline was positively associated with site-level impacts on social studies grades and negatively associated with site-level impacts on absenteeism and truancy.

However, the proportion of students with self-reported delinquent behaviors at baseline was also positively associated with site-level impacts on repeated misconduct from student records.

- **The proportion of mentors aged 22 or younger was negatively associated with site-level impacts on math grades.**
- **The proportion of mentor/student matches of the same race/ethnicity was positively associated with site-level impacts on reading/ELA grades.**
- **Average monthly hours of mentor/student meetings had both positive and negative relationships with site-level impacts.** Average monthly hours of meeting were

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<sup>11</sup> We also included in our analyses an indicator variable for the share of the control group that received mentoring (from any source) during the outcome period to adjust for potential differential attenuation of impact estimates from site to site.

<sup>12</sup> For the purposes of reporting associations between site-level characteristics and impacts, we refer to relationships as “positive” or “negative” in the statistical sense, reflecting the direction of the coefficient. However, in some cases a positive statistical relationship denotes a negative substantive relationship or a negative statistical relationship denotes a positive substantive relationship.



positively associated with site-level impacts on student self-reported future orientation, but negatively associated with site-level impacts on grades in math and reading/ELA.