FINAL IMPACT EVALUATION REPORT

EVALUATION OF PEER GROUP CONNECTION-MIDDLE SCHOOL

U.S. DEPARTMENT OF EDUCATION

EDUCATION INNOVATION AND RESEARCH

DECEMBER 2023

prg

EXECUTIVE SUMMARY

The Center for Supportive Schools (CSS) received a U.S. Department of Education, Education Innovation and Research (EIR) early-phase grant in 2017 to implement and evaluate an innovative cross-age peer mentoring program, Peer Group Connection-Middle School (PGC-MS), which aims to improve student retention and achievement in middle school. As part of the five-year grant, CSS contracted with The Policy & Research Group (PRG) to evaluate the implementation and impact of the PGC-MS program on sixth-grade student outcomes. The purpose of this report is to present summative implementation and impact evaluation findings from the project.

PGC-MS is a school-based middle school transition and cross-age peer mentoring program for sixth-grade students that is designed to improve social and emotional learning skills (e.g., communication skills, collaboration skills, self-awareness, and self-acceptance), enhance student engagement, and improve school-related outcomes (e.g., discipline infractions, progressing in school, and staying in school). The PGC-MS program leverages existing resources, such as school staff, parents, and student leaders, to create a supportive environment for new middle school students that encourages them to develop self-awareness and self-acceptance, build positive connections with their peers, make healthy decisions, and attend school. By offering additional support to sixth-grade students and opportunities to interact with peers in small group settings, the program seeks to mitigate problems that often are associated with the transition into middle school, such as declines in academic performance, motivation, attitudes toward school and self-esteem; and increased discipline problems.

PRG conducted a rigorous impact and implementation evaluation of the PGC-MS program's effect on sixth-grade student outcomes. The impact study utilized an individual-level randomized controlled trial (RCT) where half of eligible sixth-grade students were randomly assigned to be offered the PGC-MS program (treatment) or a classes-as-usual control condition. Confirmatory outcomes used to assess impact were the number of days attended (staying in school) and the number of classes passed during the sixth-grade year. We estimate program impact within an intent-to-treat (ITT) framework where students are analyzed in their randomly assigned study condition (PGC-MS treatment or class-as-usual control), regardless of their actual exposure to the PGC-MS treatment. Impact estimates were calculated using a regression equation that models the outcome of interest as a function of treatment status, and a series of covariates, including the baseline measure of the outcome variable. The implementation study (described in Appendix C) aimed to explore the extent to which the PGC-MS model was implemented as intended at each study site during the three implementation school years (2018–19, 2019–20, and 2021–22) and the amount of programming students assigned to the PGC-MS condition received.

KEY FINDINGS

IMPLEMENTATION OF PGC-MS

There was considerable variation in the implementation of PGC-MS across schools and cohorts. Key deviations from the planned implementation of PGC-MS included schools not meeting the minimum recommended threshold of sessions held during the school year and not implementing all the *core* sessions recommended by the program developers. In this section, we present key findings from the implementation of PGC-MS at study schools:

- The program was active (i.e., sessions were held) for a minimum of three and maximum of nine months; half of the study schools implemented the program for six months.

- Schools most frequently held their outreach sessions during enrichment, remediation, or advisory periods – flexible time built into the school day when students could receive help with coursework, study, or attend club meetings.

- Only 3 (all from Cohort 1) of the 16 school cohorts implemented the program to fidelity in terms of the number and type of sessions held. All three were able to offer more than 18 outreach sessions and students at these schools attended an average of 16–17 outreach sessions. In addition to offering the minimum number of sessions, all three offered the core outreach sessions recommended by CSS.

- On average, schools held just nine outreach sessions during the 2019–20 and 2021–22 school years; no school met the minimum fidelity threshold of 18 sessions.

- This five-year study was halted by the onset of the COVID-19 pandemic in March of 2020. At that time, program implementation for Cohort 2 (2019–20) was discontinued after all study sites either shut down or transitioned to remote learning for the remainder of the school year.

- Despite delaying study enrollment for Cohort 3 until the 2021–22 school year, schools that participated in Cohort 3 continued to feel the reverberations of the COVID-19 pandemic. Stakeholder team leaders described challenges surrounding a chaotic readjustment to in-person learning at the start of the school year, as well as prolonged and frequent staff and student absences due to mandatory quarantines. Schools also faced challenges related to staffing shortages, which negatively affected their ability to identify staff to facilitate the program (i.e., faculty advisors).

- In addition to disruptions associated with COVID-19, schools reported administrative, environmental, and logistical challenges that impeded their ability to implement the program as intended. In some instances, sites experienced administration changes midway through the 2019–20 school year, which led to significant changes to the school schedule. As a result, schools adjusted PGC-MS implementation to fit the program into their new schedules. During Cohorts 2 and 3, sites also experienced challenges starting the program in the beginning of the fall semester.

- Overall, schools that saw the most success implementing the PGC-MS program had strong buy-in and support from the school's leadership and were able to identify two faculty advisors who were not overburdened with competing priorities in their workload such that they were able to teach the daily leadership class and oversee weekly outreach sessions.

RESEARCH QUESTION 1: EFFECT ON ATTENDANCE

Benchmark statistical estimates for Research Question 1 indicate that offering the PGC-MS program to sixth-grade students had no statistically significant effect on participants' total number of days in attendance during their first year of middle school. Model estimates suggest that students in the PGC-MS condition attended, on average, 161 days of school, whereas students in the control group attended 162 days, on average. Subgroup analyses across demographic groups (gender, race/ethnicity) and academic indicators (English Language Learner, Individualized Education Plan status) were consistent with the benchmark ITT findings. The exception was for students identified as female. Among this group, impact estimates indicate that control students attended 1.13 additional days of school than their PGC-MS counterparts.

RESEARCH QUESTION 2: EFFECT ON CLASSES PASSED

Benchmark statistical estimates for Research Question 2 indicate that offering the PGC-MS program to sixth-grade students had no statistically significant effect on participants' total number of classes resulting in a passing grade during their first year of middle school. Model estimates suggest that students in the PGC-MS condition passed, on average, 7.4 classes during sixth grade, whereas students in the control group passed 7.5 classes, on average. Subgroup analyses across demographic groups were again consistent with the benchmark ITT findings, apart from students identified as female. Among this group, impact estimates indicate that control students passed an average of 0.16 more classes than their PGC-MS counterparts.

CONCLUSION

Benchmark findings indicate that offering the PGC-MS program to sixth-grade students did not have a detectable impact on the confirmatory outcomes of attendance or the number of passed classes during the first year of middle school. Although null results are not desirable in the context of promising educational programming, they are not uncommon in applied research. In this case, they are not surprising given the substantially low program dosage, and, as a result, diluted treatment-control contrast. Ultimately, the impact findings do not reflect a reasonable test of the PGC-MS program as it was designed to be implemented due to factors that were largely outside the control of the grantee.

The aim of this study was to produce empirical, causal responses to the posed research questions, and is just one part of the comprehensive evaluation that PRG conducted on PGC-MS. PGC-MS was a new, innovative program model at the time this evaluation took place. Thus, future research should examine the potential for a well- and consistently implemented program to have a positive impact on outcomes as students make the transition from elementary to middle school.

TABLE OF CONTENTS

INTRODUCTION

Graduation rates in the United States have generally improved since the 1970s, but consequences of student dropout continue to have severe repercussions at both an individual and societal level. Students who do not finish high school, on average, earn less money across their lifespan, are less physically healthy, and are more likely to become incarcerated than their peers who earn diplomas (Belfield & Levin, 2007; Chapman et al., 2011). In addition, communities with less educated populations suffer from reduced tax revenue and increased need for costly public assistance services (Belfield & Levin, 2007). With more jobs requiring higher education than ever before, concerns about having a sufficiently educated workforce have resulted in efforts to identify and implement programs and policies that reduce dropout and increase graduation rates (Carnevale et al., 2010; Chapman et al., 2011; O'Brien, 2012; Stetser & Stillwell, 2014).

Through its Education Innovation and Research (EIR) program, the U.S. Department of Education (ED) provides competitive grants to applicants with a record of improving student achievement and attainment in order to expand the implementation of, and investment in, innovative practices that are demonstrated to have an impact on improving student achievement or student growth, closing achievement gaps, decreasing dropout rates, increasing high school graduation rates, or increasing college enrollment and completion rates.[1]

The purpose of this report is to present summative findings from a five-year project that implemented and evaluated an innovative cross-age peer mentoring program, Peer Group Connection-Middle School (PGC-MS), which aims to improve student retention and achievement in middle school. PGC-MS is a school-based middle school transition and cross-age peer mentoring program for sixth-grade students that is designed to improve social and emotional learning (SEL) skills, enhance student engagement, and improve academic and behavioral outcomes. The program trains eighth-grade peer leaders to act as role models and mentors to incoming sixth-grade students, who are placed into small peer groups and complete a structured curriculum of skill-building activities each week.

Funded through a 2017 EIR early-phase grant, the project was a collaborative effort between the Center for Supportive Schools (CSS), the grantee and program developer, and The Policy & Research Group (PRG), the independent evaluator. PRG conducted a multisite, multiyear individual-level randomized controlled trial (RCT) designed to assess PGC-MS' impact on student attendance and progression in school. PRG also conducted a concurrent implementation study aimed at understanding the extent to which PGC-MS was conducted with fidelity at each study site. As originally designed, the study team planned to enroll two cohorts of students during the 2018–19 and 2019–20 school years, with a target of 1,500 students to be enrolled. Though we achieved our enrollment target, unforeseen challenges resulting from the onset of the COVID-19 pandemic in March of 2020 necessitated recruitment of a third cohort of students in the 2021–22 school year. In all, PRG enrolled a total of 1,902 sixth-grade students from nine middle schools in three East Coast states across three cohorts during the 2018–19, 2019–20, and 2021–22 school years.[2]

---

[1] For more information on the EIR program, see https://oese.ed.gov/offices/office-of-discretionary-grants-support-services/innovation-early-learning/education-innovation-and-research-eir/

[2] A tenth school initially planned to participate in the 2019–20 cohort; however, due to lack of support from administrators and limited staff capacity, this school decided not to implement any programming during the school year. We have excluded the 52 students enrolled from this school from the impact study samples.

This report provides summative findings from the five-year evaluation of the PGC-MS program. We first present an overview of the impact study, confirmatory research questions, and the PGC-MS program model, followed by a summary of the impact study design, including the eligibility criteria, random assignment procedures, outcome measures, and data collection and analytic methods. We then describe the final study and analytic samples and present findings and discussion from the fidelity study and confirmatory impact analyses. Supplemental details are provided in a series of appendices that describe detailed variable operationalization and analytic methods (Appendix A), detailed impact findings (Appendix B), implementation fidelity study overview and findings (Appendix C), and a graphical representation of the PGC-MS logic model (Appendix D).

IMPACT STUDY OVERVIEW

The impact study is a student-level RCT designed to estimate the impact of PGC-MS on two student-level primary academic outcomes: (1) school attendance; and (2) number of courses passed. We employ regression analysis to estimate the impact of the program; covariates, including the baseline measure of the outcome variable, and randomization blocking variables were included in the analytic model to increase the precision of our estimates. We estimate program impact within an intent-to-treat (ITT) framework where students are analyzed in their randomly assigned study condition (PGC-MS treatment or class-as-usual control), regardless of their actual exposure to the PGC-MS treatment.

Within each participating study school, all sixth-grade students who were eligible and consented were individually randomly assigned to be offered either the treatment (PGC-MS) or control condition (class as usual).[3] Randomization was blocked by school and cohort year at an assignment ratio of 1:1. Students were recruited from nine public middle schools; seven contributed students to the sample during two different years of the study, whereas two schools participated for just one year. Students assigned to the treatment group were offered PGC-MS during their first year enrolled in the study, when they were enrolled in sixth grade.[4] To assess confirmatory outcomes (school attendance and classes passed), student educational and demographic data were requested from each participating school or school district. School-level fidelity and individual-level dosage data were also collected to assess the extent study participants were exposed to the intervention.

RESEARCH QUESTIONS

The impact evaluation answers two confirmatory research questions concerned with PGC-MS' effect on outcomes identified by the program's theory of change and logic model, presented in Appendix D. As listed in this section, the research questions for this study focused on students' attendance in and progression through school during their sixth-grade year. Operational definitions for these outcomes, all inclusion criteria, and the analytic framework and procedures to estimate the efficacy of PGC-MS were prespecified by the evaluation team prior to the collection of any outcome data and registered on the Registry of Efficacy and Effectiveness Studies (REES; Registry ID 1797) in 2019.[5]

---

[3] To be eligible for the impact study, students had to be: enrolled in sixth grade at the study school at the time of randomization; be able to complete a *Participant Questionnaire* unassisted in either English or Spanish; be able to participate in PGC-MS outreaches if assigned to the treatment condition; and provide either active or passive consent to participate in the study. PRG was required to obtain active parental consent and student assent from students who attended study schools in the Baltimore City Public School District. All other study sites conducted passive consent where students and parents were given the opportunity to opt out of the study prior to randomization.

[4] Though some schools offered the program in multiple years, students could only be offered the program once – in the first year they were eligible.

[5] The study is registered at the following URL: https://sreereg.icpsr.umich.edu/sreereg/subEntry/7960/pdf?action=view

The research questions are as follows:

1. What is the impact of the offer to participate in PGC-MS (treatment) relative to the offer to receive the control condition (class as usual) on sixth-grade participants' school attendance (measured as number of days attended) at the end of sixth grade?

2. What is the impact of the offer to participate in PGC-MS (treatment) relative to the offer to receive the control condition (class as usual) on sixth-grade participants' progressing in school (measured as number of classes passed) at the end of sixth grade?

PEER GROUP CONNECTION-MIDDLE SCHOOL

THEORY OF CHANGE

Research on student disengagement and dropout has provided rich evidence of risk factors that influence students' likelihood of remaining in school and earning a high school diploma. Within this body of literature, three early warning signs have emerged as most predictive of dropout: (1) high absenteeism; (2) behavior problems; and (3) course failure; collectively known as the *A, B, C*s of dropout prediction (Allensworth & Easton, 2007; Bruce et al., 2011). In addition to identifying early warning signs that a student is at risk of dropping out, researchers have worked to understand what motivates student behavior around dropout. Through that work, school connectedness, which is a student's belief that adults and peers at school care about them as individuals as well as about their learning, has been identified as a strong protective factor against disengagement (Bernat & Resnick, 2009; Centers for Disease Control and Prevention [CDC], 2009). Peer groups have also been identified as important for building a sense of school connectedness among adolescent students (Blum, 2005; Bond et al., 2007; Nitza & Dobias, 2008).

Based on research regarding the early warning signs of dropping out, the importance of engagement during the first year of middle school, and the importance of school connectedness through peer networks, CSS developed the PGC-MS program. PGC-MS is a school-based middle school transition and cross-age peer mentoring program for sixth-grade students that is designed to improve SEL skills (e.g., communication skills, collaboration skills, self-awareness, self-acceptance), enhance student engagement, and improve school-related outcomes (e.g., discipline infractions, progressing in school, staying in school). It is the middle school adaptation of CSS' evidence-based program, Peer Group Connection-High School (PGC-HS).[6]

PGC-MS is grounded in theories of SEL and social learning theory. Research indicates that, compared to students who do not participate in such programs, students who receive SEL programming academically outperform their peers, get better grades, and graduate at higher rates (Collaborative for Academic, Social, and Emotional Learning, 2007). Research also suggests that schools can foster supportive conditions for learning and prevent punitive discipline responses by increasing students' access to caring relationships, improving relationships between educators, students, and parents, and teaching students coping strategies and social and emotional learning skills, which in turn have a positive impact on behavior management and discipline (Durlak et al., 2011; Gregory et al., 2014). CSS hypothesizes that

---

[6] The high school model has undergone two separate evaluations. The first, conducted by Rutgers University indicated that the program positively impacted high school graduation rates. The second study, conducted by PRG, indicated that the program positively impacted disciplinary outcomes. Johnson, V. L., Simon, P., & Mun, E-Y. (2014). A peer-led high school transition program increases graduation rates among Latino males. *The Journal of Educational Research, 107*(3), 186–196. Jenner, E., Lass, K., Walsh, S., Demby, H., Leger, R., & Falk, G. (2022). Effects of cross-age peer mentoring program within a randomized controlled trial, *Journal of Research on Educational Effectiveness*. https://doi.org/10.1080/19345747.2022.2130119

students who are offered the PGC-MS program will build meaningful connections with each other and their peer leaders, develop SEL skills, become engaged in their schools, and have improved school-related outcomes.

The PGC-MS program leverages existing resources, such as school staff, parents, and student leaders, to create a supportive environment for new middle school students that encourages them to develop self-awareness and self-acceptance, build positive connections with their peers, make healthy decisions, and attend school. By offering additional support to sixth-grade students and opportunities to interact with peers in small group settings, the program seeks to mitigate problems that often are associated with the transition into middle school, such as declines in academic performance, motivation, attitudes toward school and self-esteem; and increased discipline problems.

THE PEER GROUP CONNECTION-MIDDLE SCHOOL MODEL

The program's logic model is presented in Appendix D. PGC-MS requires the integration of three key groups that work together to ensure the peer mentoring program is implemented as intended at each school: (1) a stakeholder team consisting of faculty members, parents, and students who work together to make programmatic decisions and incorporate the program into the school; (2) two faculty advisors, selected by the stakeholder team, who are provided professional development and training through CSS, and who teach a daily leadership course to peer leaders; and (3) eighth-grade peer leaders who are trained in a daily leadership development class and who facilitate the sixth-grade peer mentoring program by conducting outreach sessions and activities with PGC-MS sixth-grade participants.

The PGC-MS curriculum consists of 24 outreaches (20 traditional outreaches, 3 *ritual* outreaches, and a Family Night).[7] Sixth-grade PGC-MS participants are placed into small peer groups of 8–10 and the group is assigned either 2 or 3 peer leaders. Faculty advisors are instructed to select a diverse group of eighth-grade peer leaders that reflects the racial/ethnic, gender, and socioeconomic composition of the school community. The peer leaders facilitate the weekly outreach sessions, which occur during regularly scheduled class or enrichment periods during the school day. PGC-MS participants are pulled from their classes to attend outreaches approximately three times per month; students not in the program remain in their regular class during that time. The peer leaders are simultaneously enrolled in a yearlong, for-credit leadership course taught daily by the faculty advisors during regular school hours.

Outreaches include hands-on activities, simulations, and discussions intended to build group cohesion and to improve the communication skills of group members. Though the peer mentoring component of PGC-MS can be tailored to meet the needs of a particular school, typically, the program begins three weeks after the start of the school year with Outreach 1: Orientation to PGC-MS where eighth-grade peer leaders explain the program to the sixth graders and introduce participants to their peer groups and peer leaders. CSS program managers, who act as technical supports to the school, emphasize that a minimum of 18, 45-minute outreach sessions are expected to be offered over the school year for the school to meet the minimum fidelity requirement. Of these, a minimum of four should be Ritual Outreach 1: Appreciation Day, which is repeated throughout the year to honor different members of the outreach group.[8] Although the program is designed to be flexible, allowing schools to offer different outreaches from the full curriculum that they think are best suited to their students, CSS recommends

---

[7] The original curriculum, which was implemented during the 2018–19 school year, consisted of 22 outreaches (18 traditional outreaches, 3 ritual outreaches, and Family Night).

[8] The specific number of Appreciation Day sessions depends on the number of sixth graders in the peer group. Each session aims to recognize two sixth-grade students, and therefore peer groups with 10 sixth graders should hold five Appreciation Day outreaches during the year.

that schools specifically offer Outreach 2: Activity Day, Outreach 18: Welcoming Next Year's Sixth Graders, and Outreach 20: Lend a Land, Leave a Footprint as part of programming during the year.

CONTROL EXPERIENCE – CLASS AS USUAL

This study is an individual-level RCT with a business-as-usual (class-as-usual) control condition. Students assigned to the control condition attended the same schools and were enrolled in the same classes as students assigned to the treatment condition. The class-as-usual experience (the specific courses or programming offered to control participants) was realized differently at each school in the study, depending on which class period the school administrators elected to implement PGC-MS outreaches. Students who were assigned to the control condition remained in their usual class(es) during the time when PGC-MS students were pulled from class to meet with their peer groups for outreach sessions. The flexibility in program implementation is a typical expression of PGC-MS implementation; however, CSS recommends that students only be pulled from nongraded courses or activity periods.

One noteworthy aspect of this experience is that students in the control condition would have received more time in their scheduled classes or activities over the course of the school year than the treatment students. It is possible this variation could have influenced confirmatory outcomes by increasing the effort required by the student to achieve academically (since they did not have as much built-in study time) or by reducing the amount of enjoyment and engagement that a student has with school. This is not a design confound of the study, but rather an artifact of the PGC-MS program itself, because it results from the intended implementation of the program.

STUDY DESIGN

This impact study investigates the effect of PGC-MS on participating students' attendance at school and number of courses passed during their sixth-grade year. We do this by comparing outcomes for students randomly assigned to be offered the PGC-MS program (treatment) with those of students assigned to be offered classes as usual (control). The study is an individual-level RCT in which students are the unit of randomization and analysis.

We assess impact within the ITT framework to measure the effect of the offer of the treatment condition relative to the offer of the control condition (as opposed to the effect of exposure to the assigned condition). Outcome data were collected from study school or district data managers who provided individual-level student administrative records. Data collection procedures were the same for students enrolled in both the treatment and control conditions. Estimates of program impact on each outcome were produced by way of regression equations that model the outcome as a function of treatment assignment, randomization blocking variables, and covariates, including the baseline measure of the outcome.

ELIGIBILITY CRITERIA

The study examines the effects of PGC-MS among sixth-grade students in selected public middle schools in rural North Carolina and urban communities in New Jersey and Baltimore, Maryland. CSS, the grantee and program developer, was responsible for selection, recruitment, confirmation, and retention of study middle schools. CSS provided each study school with a PGC-MS program curriculum, as well as staff training, technical support, and financial support for program activities for the duration of the time the

school participated in the study (up to two years). All schools that participated in the study signed Memoranda of Understanding (MOUs) with CSS and entered into formal data sharing agreements with PRG.

To be eligible for and enrolled in the study, students had to meet the following four basic eligibility criteria:
1. Be enrolled in sixth grade at a study school on the date of random assignment
2. Either provide active consent to participate (if required) or not opt out of participating in the study[9]
3. Be able to complete a *Participant Questionnaire* unassisted in either English or Spanish in 60 minutes or less
4. Be able to participate in PGC-MS outreaches should they be randomized to the treatment condition[10]

PRG coordinated with school staff to pre-screen all incoming sixth graders within the first month of school to determine whether each student on the school's sixth-grade roster met eligibility criteria or not.

ASSIGNMENT PROCEDURES

Individual students were randomly assigned to either the PGC-MS (treatment) or class-as-usual (control) condition. Randomization was blocked by school and cohort year. At most study schools, if a student met all eligibility criteria, PRG assigned them a unique study ID number and randomly allocated them to either the treatment or control condition at a 1:1 ratio where each student had a 50% chance of being assigned to either condition. However, in some cases, a school could not offer a spot in the study to all eligible students, either because there were limited peer leaders available or more than 180 students were eligible to participate.[11] When the pool of eligible students exceeded the school's study participant capacity, PRG conduced a two-stage randomization procedure. In this scenario, PRG first randomly selected a set of students to participate in the study (from the full eligible roster), and then randomly allocated this set of participants into either the treatment or control group. Students were considered enrolled in the ITT sample at the point of random assignment into either the treatment or control condition. Random assignment was conducted using the *ralloc* command in Stata 15.

Table 1 presents the total number of students who were randomized into the study at each school during the three cohorts, overall and by treatment condition. In total, 1,902 sixth graders were enrolled in the impact study; 938 students were assigned to the treatment condition and 964 were assigned to the control condition. Seven of the nine study sites (A-G) participated in two different cohorts of the study and two sites (H and I) participated for just one year.

---

[9] PRG was required to obtain active parental consent and student assent prior to enrolling any students in the impact study at sites located in the Baltimore City Public School District. PRG conducted passive, or opt out, consent at all other study sites.

[10] PRG advised school staff responsible for determining student eligibility to exclude students from the study if they were deemed inappropriate for PGC-MS participation. Because each student had a 50% chance of being randomly assigned to receive the PGC-MS program and participants are analyzed based on their assigned condition, this criterion was included to reduce the likelihood of assignment crossover, specifically treatment students not receiving the intervention.

[11] CSS, the program developer, set a maximum threshold for student participation in PGC-MS at 90 students. Since we used a 1:1 ratio for random assignment, this means a maximum of 180 students could plausibly be enrolled at any given study school.

Table 1. *Study Enrollment*

School	State	Urbanicity	PGC-MS	Control	Total
Cohort 1 (2018–19 SY)					
School A	NC	Rural	79	81	160
School B	NC	Rural	59	59	118
School C	NC	Rural	47	45	92
Cohort 2 (2019–20 SY)					
School A	NC	Rural	90	90	180
School B	NC	Rural	87	87	174
School C	NC	Rural	75	79	154
School D	NC	Rural	88	88	176
School E	NJ	Urban	59	59	118
School F	NJ	Urban	65	66	131
School G	MD	Urban	28	28	56
School H	MD	Urban	40	42	82
School I	MD	Urban	17	17	34
Cohort 3 (2021–22 SY)					
School D	NC	Rural	52	52	104
School E	NJ	Urban	54	54	108
School F	NJ	Urban	72	91	163
School G	MD	Urban	26	26	52
Total	***N/A***	***N/A***	***938***	***964***	***1,902***

OUTCOME MEASURES
Confirmatory outcomes are operationalized as follows: (1) school attendance – a count variable that indicates the number of days a student is present at school during the regular school year (i.e., not including summer school attendance); and (2) progressing in school – a count variable that indicates the number of classes passed during the regular school year (i.e., not including summer school courses). Outcomes are measured and analyzed at the individual student level. Outcome data were collected uniformly from schools for all study participants.[12]

SCHOOL ATTENDANCE
Student attendance is operationally defined as the number of days a student is recorded as being present at a school during a specific semester or school year. Schools are responsible for tracking attendance for all students enrolled at their school and reporting it to their state education agency. Regardless of state or school district, all students under the age of 16 are considered continuously enrolled until the last day of the school year. However, the definition of *days present* may vary by state

---

[12] For additional details of variable operationalization, see Table A.2. in Appendix A.

and individual school districts.[13] Although the definition may vary across states and school districts, there is no variation within schools (attendance is defined the same way for treatment and control students within each school). When students transferred to another school, PRG attempted to obtain the number of days enrolled and present from both the study school and the transfer school to construct a complete count of attendance at the end of sixth grade.[14]

CLASSES PASSED

The primary outcome in the progressing in school domain is a count of the number of courses the student passed during their regular sixth-grade school year. PRG worked with study schools to collect the total number of classes passed by each study student. PRG did not make the determination of whether the student passed a course based on a certain grade; rather the school data managers reported a count of the number of courses the student was enrolled in and the number the student passed during the year. The measure provides a more complete picture of students' progress through school than assessing the number of courses failed, which would not account for students who stop attending school. When students transferred to another school, PRG attempted to obtain the number of courses passed from the transfer school to construct a complete count of the classes passed at the end of sixth grade.[15]

DATA COLLECTION

Student administrative records were prepared by school- or district-level data managers and sent to PRG following secure data sharing protocols. Prior to each school's participation in the study, CSS obtained a MOU with the school and PRG established a data sharing agreement with the school. Data sharing agreements specified which data would be requested by and sent to PRG, the timeline for each data request, the person responsible for preparing the data, and the method through which the data would be shared and stored to ensure participant anonymity. Data collection procedures were identical for students assigned to the treatment and control groups.

During the fall semester of each cohort (fall 2018, 2019, and 2021), PRG submitted a baseline administrative data request to each data manager to collect demographic characteristics and baseline (fifth-grade) outcome data for each student enrolled in the study. PRG sent a second data request to each data manager during the summer following participants' sixth-grade year to collect outcome data.

ANALYTIC METHODS

The impact study aims to determine whether offering PGC-MS to sixth-grade students leads to comparative increases in the number of days the student attends school and the number of classes passed. We estimate program impacts within the ITT framework, which means that all students who have been randomized and provide outcome data are included in the analysis regardless of their actual

---

[13] In North Carolina, for example, students are considered to have attended a school day if they are present for at least 50% of the school day. In New Jersey, a student is considered to have attended a school day if they attend school for at least one hour in the morning and one hour in the afternoon. In Baltimore City, students are counted present for a full day of school if they are in attendance at least four hours of the school day. Information about North Carolina student accounting data can be found in the *School Attendance and Student Accounting Manual* (Retrieved December 1, 2023, from https://www.dpi.nc.gov/documents/fbs/accounting/manuals/sasa-manual-nov2022pdf/download?attachment). Information about the New Jersey student accounting data can be found in the *SID Management Student Data Handbook* (Retrieved December 1, 2023, from https://www.njsmart.org/njr/ks/SID%20Management/NJ%20SMART%20SID%20Management%20Student%20Data%20Handbook.pdf). Information about Baltimore City Public Schools can be found at https://www.baltimorecityschools.org/

[14] For additional details on operationalization of the school attendance outcome, see Table A.2 in Appendix A.

[15] For additional details on operationalization of the course outcome, see Table A.2 in Appendix A.

exposure to the PGC-MS program. An ITT estimate is preferred because it minimizes the potentially biased post-enrollment self-selection that motivates some students to engage more and others to engage less with the intervention.

We estimate the impact of the PGC-MS program on confirmatory student outcomes by regressing each outcome on treatment assignment, the baseline measure of the outcome variable, other covariates (e.g., age, race, gender, Individualized Education Plan [IEP] status, English Language Learner [ELL] status), and randomization blocking variables. Although a straight difference-of-means approach should provide unbiased estimates of the effect of the treatment intervention, a statistical model that includes covariates and the baseline outcome is preferred because it increases the precision of the impact estimates. An Ordinary Least Squares (OLS) model was used to estimate the impact of the program on both outcomes (using Stata 17). For additional details on the analytic methods, including the model specification, see Appendix A.

STUDY SAMPLE

In this section, we first describe the overall sample of participants randomized into the study (the ITT sample); we then discuss attrition and our final analytic samples or the more limited sets of individuals who provided outcome data and are retained in the analysis of school attendance and classes passed.

CHARACTERISTICS OF INTENT-TO-TREAT SAMPLE

The study sample includes all students randomized at study sites that implemented any programming. This sample includes 1,902 sixth-grade students randomly assigned to either the PGC-MS or control condition at nine middle schools in North Carolina, New Jersey, and Maryland.[16] This represents the ITT sample. Table 2 provides counts and descriptive characteristics of the full set of study participants who were randomized to each condition (PGC-MS and control) and overall.

---

[16] A tenth school in Baltimore City initially planned to participate in the study during the 2019–20 school year; however, in fall 2019 the school's stakeholder team ultimately decided not to implement any programming during the school year due to lack of support from administrators and limited staff capacity. PRG had randomized a total of 52 students (25 to treatment and 27 to control) before this decision was made; however, we exclude them from the study sample given that the decision was made by the school leadership, rather than students, and was not influenced by the outcome of random assignment.

Table 2. *Descriptive Characteristics of Study Participants*

Characteristic	All Participants (n = 1,902)		PGC-MS (n = 938)		Control (n = 964)	
	Number Reporting	Statistic	Number Reporting	Statistic	Number Reporting	Statistic
Age						
Mean age in years (at baseline)	1,902	11.5	938	11.5	964	11.5
Race/ethnicity						
White	559	29.4%	280	29.9%	279	28.9%
Black or African American	516	27.1%	258	27.5%	258	26.8%
Hispanic or Latino/a	651	34.2%	317	33.8%	334	34.6%
Other race[17]	36	1.9%	17	1.8%	19	2.0%
Multiracial	136	7.2%	65	6.9%	71	7.4%
Gender						
Male	948	49.8%	446	47.6%	502	52.1%
English Language Learner (ELL) status						
Yes	196	10.3%	96	10.2%	100	10.4%
Individualized Education Plan (IEP) status						
Yes	154	8.1%	74	7.9%	80	8.3%
5th Grade Attendance						
Mean number of days attended during 5th grade	1,902	163.5	938	164.6	964	162.4
5th Grade Classes						
Mean number of classes passed in 5th grade	1,902	7.7	938	7.7	964	7.7

The pooled sample of randomized participants included 1,902 sixth graders from nine middle schools in rural North Carolina, Baltimore, Maryland, and urban New Jersey. On average, students were between 11 and 12 years old at the time of study enrollment. The students enrolled in the study were racially and ethnically diverse. One third of study participants were Hispanic/Latino/a (34%), and over one quarter were either White (29%) or Black (27%). A small number were designated as ELLs (10%) or had an IEP (8%). According to administrative records from their fifth-grade year, participants attended, on average, 164 days during the school year and passed 8 classes.

---

[17] *Other* includes students who identified as Asian, American Indian/Alaska Native, or Pacific Islander.

ATTRITION AND ANALYTIC SAMPLES

In this section, we provide a descriptive contrast of the randomized and analytic samples for both confirmatory research questions, including the overall attrition from the randomized sample, and the differential attrition between the PGC-MS and control groups. Overall attrition refers to the rate of missing data for the entire sample. Differential attrition represents the difference in missing data for the intervention and comparison groups.

As presented in Table 3, a total of 1,902 sixth-grade students were enrolled in the impact study at the beginning of the 2018–19, 2019–20, and 2021–22 school years. The analytic sample varies slightly between the two primary outcomes depending on the school's ability to report attendance and course information at the end of the regular school year. The overall attrition for Research Question 1 (school attendance) is 15.9%, with a differential rate of 1% between the treatment and control groups. Similarly, the overall attrition for Research Question 2 (progressing in school) is 15.0%, with a differential rate of 1% between the treatment and control groups. A significant portion of the overall attrition is because three study schools (1 in Cohort 2 and 2 in Cohort 3) were unable to fulfill the end-of-sixth grade school records data request. As a result, 3 of our 16 randomization blocks are not represented in the final impact estimates. Despite this, both the overall and differential attrition rates for each outcome are well below the What Works Clearing House (WWC's) cautious boundary for an acceptable threat of bias due to attrition, as outlined by the *What Works Clearinghouse Procedures and Standards Handbook, Version 5.0* (WWC, 2022).

As the study uses an ITT framework, the degree to which the analytic samples represent the ITT sample is a critical consideration in evaluating the integrity of the RCT.[18] Fortunately, we find that observed baseline characteristics of our analytic samples closely resemble the ITT sample.[19]

Table 3. Randomized and Analytic Samples

	Research Question 1: School Attendance	Research Question 2: Classes Passed
Number Randomized		
PGC-MS	938	938
Control	964	964
Total	*1,902*	*1,902*
Analytic Sample		
PGC-MS	794	802
Control	806	815
Total	*1,600*	*1,617*
Overall Attrition	15.9%	15.0%
Differential Attrition	1.0%	1.0%

---

[18] Causal inference is justified in a well-executed RCT because random assignment ensures that potential outcomes are independent of assignment and the treatment and control groups are equal in expectation in terms of observable and unobservable characteristics. If overall or especially differential attrition are high such that the analytic sample differs meaningfully from the ITT (enrolled) sample, then the benefits of randomization may not be retained, and causal inference may not be warranted without additional quasi-experimental analytic adjustments.

[19] See Table A.3 in Appendix A for a presentation of the baseline equivalence statistics for both analytic samples.

RESULTS

In this section, we provide a brief overview of the implementation of the PGC-MS intervention and the degree to which study sites implemented the program with fidelity. We then present the findings from the benchmark analyses for each of the two confirmatory research questions.

IMPLEMENTATION OF PGC-MS

Table 4a presents, for each study school, the program start and end dates, the class period during which outreach sessions occurred, the total number of outreach sessions offered, the number of sixth graders placed in the PGC-MS program, and average number of outreach sessions attended by program students. Table 4b indicates whether the school held each *core* PGC-MS outreach.

Table 4a. Program Implementation Details[20]

School	Program Length	Class Period When Outreaches Occurred	Number of Sessions Offered	Number of Students in PGC-MS[21]	Average Number of Sessions Attended (SD)
Cohort 1 (2018–19 SY)					
School A	Oct – May	Remediation	19	79	16.5 (1.6)
School B	Sept – May	Enrichment	23	59	18.4 (3.0)
School C	Sept – May	Enrichment	19	47	14.9 (4.0)
Cohort 2 (2019–20 SY)					
School A	Oct – Mar	Remediation	11	90	7.4 (1.0)
School B	Sept – Mar	Enrichment	7	87	4.2 (0.8)
School C	Oct – Mar	Enrichment	8	75	5.4 (0.8)
School D	Oct – Mar	Enrichment	11	88	4.7 (1.5)
School E	Oct – Mar	Enrichment	9	57	6.2 (1.0)
School F	Nov – Mar	Elective	8	65	5.9 (1.4)
School G	Oct – Mar	Elective	7	41	5.0 (0.9)
School H	Oct – Mar	Remediation	10	40	—
School I	Nov – Mar	Advisory	10	29	7.6 (2.7)
Cohort 3 (2021–22 SY)					
School D	Dec – May[22]	Elective	13	52	—
School E	Nov – Jun	Enrichment	8	50	5.5 (2.3)
School F	Mar – May[23]	Lunch	6	72	—
School G	Dec – May	Remediation	11	57	9.6 (1.4)
Total	***N/A***	***N/A***	***11.3***	***824[24]***	***8.4 (5.0)***

Note: Participant-level outreach attendance data were unavailable for School H during the 2019–20 school year and Schools D and F during the 2021–22 school year.

---

[20] Number of sessions offered is based on the total number of sessions reported by faculty advisors on the school's *Implementation Tracking Tool*. Dosage is calculated using participant-level attendance recorded at each outreach session. For additional details of the implementation study and methods, see Appendix C.

[21] This sample includes students who were not enrolled in the study, but who were placed in the program by school staff. Students who were enrolled in the study but who were not placed in the program are excluded.

[22] Program start date is an approximation; we were unable to confirm what date *Outreach 1: Orientation to PGC-MS* was held.

[23] Program end date is an approximation; we were unable to confirm with the school when they held their last outreach session.

[24] Excludes students assigned to PGC-MS from School H (2019–20) and Schools D and F (2021–22).

Table 4b. *Core Outreaches Offered*[25]

School	Outreach 1	Outreach 2	Outreach 18	Outreach 20	Family Night
Cohort 1 (2018–19 SY)					
School A	✓	✓	✓	✓	✓
School B	✓	✓	✓	✓	✓
School C	✓	✓	✓	✓	✓
Cohort 2 (2019–20 SY)					
School A	✓	✓	—	—	—
School B	✓	✓	—	—	—
School C	✓	✓	—	—	—
School D	✓	✓	—	—	—
School E	✓	✓	—	—	—
School F	✓	✓	—	—	—
School G	✓	✓	—	—	—
School H	✓	✓	—	—	—
School I	✓	✓	—	—	—
Cohort 3 (2021–22 SY)					
School D	✓	—	—	—	—
School E	✓	✓	—	—	—
School F	✓	✓	—	—	—
School G	✓	✓	✓	—	—

Implementation data suggest there was considerable variation in the implementation of PGC-MS, across schools and cohorts. The program was active (sessions had started and not yet ended) for a minimum of three to nine months, with half of school cohorts implementing the program for six months. Schools most frequently held their outreach sessions during flexible enrichment, remediation, or advisory periods built into the school day where students could receive additional help with coursework if needed, study, or attend club meetings. However, three schools held their outreaches during elective periods where students would have been pulled from classes such as physical education, music, art, or technology, and one school held sessions during the sixth-grade lunch period.

According to the PGC-MS program manual, to adhere to program fidelity, schools must implement a minimum of 18, 45-minute outreach sessions including 4 *core* outreach sessions. As included in Tables 4a and 4b, only 3 of the 16 school cohorts (all enrolled in 2018–19, or Cohort 1) implemented the program to fidelity. The three schools that participated in the first study cohort during the 2018–19 school year had the greatest success implementing the program. All three were able to offer more than 18 outreach sessions and students attended an average of 16–17 outreach sessions across schools. In addition to just offering the minimum number of sessions, all three were able to offer the core outreach sessions recommended by CSS. On average, schools held just nine outreach sessions during the 2019–20

---

[25] Core sessions include Outreach 1: Orientation to PGC-MS, Outreach 2: Activity Day, Outreach 18: Welcoming Next Year's Sixth Graders, Outreach 20: Lend a Hand, Leave a Footprint, and Family Night.

and 2021–22 school years; no school met the minimum fidelity threshold of 18 sessions. During Cohort 2, sixth-grade PGC-MS participants attended an average of six sessions throughout the school year. During the third cohort, participants attended between seven and eight sessions, on average.

IMPLEMENTATION CONTEXT

COVID-19 PANDEMIC DISRUPTIONS

This five-year study was halted by the onset of the COVID-19 pandemic in March of 2020. At that time, program implementation for the second cohort of the study (2019–20) was discontinued after all study sites either shut down or transitioned to remote learning for the remainder of the school year. Study enrollment was then paused during the 2020–21 school year due to challenges associated with implementing the program in remote and hybrid learning environments. A third and final cohort was enrolled at the beginning of the 2021–22 school year. However, even in this third cohort, schools continued to feel the reverberations of the pandemic. Stakeholder team leaders described challenges surrounding a chaotic readjustment to in-person learning at the start of the school year, as well as prolonged and frequent staff and student absences due to mandatory quarantines. During Cohort 3, all four sites reported struggling to find time in the school schedule to offer outreach sessions as administrators prioritized recovering from academic learning loss during the remote and hybrid schedules during the 2020–21 school year. Schools also faced challenges related to staffing shortages, including a reduced number of faculty advisors at certain schools, which led to outreaches being canceled if advisors were absent from school or pulled to cover classes for other staff members. Modified schedules designed to reduce the spread of COVID-19, such as students being restricted to one room throughout the school day, also impeded the ability of schools to implement the program.

ADDITIONAL CHALLENGES

In addition to disruptions associated with COVID-19, schools reported administrative, environmental, and logistical challenges that impeded their ability to implement the program as intended.[26] In some instances, sites experienced administration changes midway through the 2019–20 school year. In each case, the new administrations made significant changes to the school schedule, which required a redesign to PGC-MS implementation to fit the program into the modified schedule. These schools ended up having to pause implementation while the stakeholder team leaders worked with CSS to create a new outreach schedule. During Cohorts 2 and 3, sites also experienced challenges with getting the program up and running in the beginning of the fall semester. In some cases, the school was new to the program, and needed longer to prepare for implementation, including training staff to cover peer leadership classes and finding time in their class schedules for outreaches.

In general, the program is intended to begin approximately one month after the start of the school year, usually late September or early October. However, during Cohort 3, both study schools located in New Jersey were impacted by Hurricane Ida in September 2021, which caused widespread damage in both communities due to flooding. Other Cohort 3 sites (not impacted by the storm) were unable to begin holding outreach sessions until November, which resulted in a shortened time frame to hold the

---

[26] Given that schools shut down approximately two thirds of the way into programming, which typically runs from October to June, we would expect that a school that was on track to meet the minimum fidelity requirement of 18 sessions would have held at least 12 outreach sessions by the middle of March 2020, when schools shut down. However, none of the schools in Cohort 2 met this adjusted minimum threshold. Four of the nine schools came close by offering 10 (2 schools) and 11 sessions (2 schools) before shutting down; the remaining offered 7–9 sessions. Participant-level outreach attendance is reported on the school's *Attendance Tracker* where faculty advisors mark for each outreach whether the sixth-grade participant attended the session that day. In some cases, faculty advisors did not record attendance for an outreach session and therefore data are missing/incomplete. On average, sixth graders were in attendance at 85% of the outreach sessions during which attendance was recorded.

recommended 18 sessions. In Baltimore, the delayed start date was partly due to the time needed to collect active parental consent for study participation, as required by the district Institutional Review Board, and baseline survey data collection.

PROGRAM SUPPORTS

Overall, schools that saw the most success implementing the PGC-MS program had strong buy-in and support from the school's leadership and were able to identify two faculty advisors who were not overburdened with competing priorities in their workload such that they were able to teach the daily leadership course and oversee weekly outreach sessions. Schools with comparatively successful implementation also benefited from having a set period during the school day that was not dedicated to a specific class or curriculum in which they could schedule outreaches.[27] Such class periods, which were usually used for club meetings or enrichment or intervention activities, allowed schools to easily schedule all students for outreaches during a set time, and avoided conflicts with required core or elective classes.

IMPACT FINDINGS
RESEARCH QUESTION 1: NUMBER OF DAYS ATTENDED

Benchmark statistical estimates for Research Question 1 indicate that offering the PGC-MS program to sixth-grade students had no statistically significant effect on participants' total number of days in attendance during their first year of middle school. Model estimates presented in Table 5 show that students in the PGC-MS condition attended, on average, 161 days of school, whereas students in the control group attended 162 days, on average. The standardized magnitude of effect for this difference of less than one day is –0.03 for the ITT sample.

Subgroup analyses across demographic groups (gender, race/ethnicity) and academic indicators (ELL, IEP status) were consistent with the benchmark ITT findings, namely that there were no statistically significant differences between the treatment and control groups on the number of days in attendance during sixth grade. The exception was for students identified as female. Among this group (n = 798), impact estimates indicate that control students attended 1.13 additional days of school than their PGC-MS counterparts (p = 0.045, ES = –0.06).

Table 5. Impact Analytic Model Results

Outcome Measure	Treatment Group			Control Group			Treatment – Control Difference	Standard Error	*p*-value
	Sample Size	Mean	Standard Deviation	Sample Size	Mean	Standard Deviation			
Days attended	794	161.21	19.34	806	161.58	20.45	–0.59	0.42	0.162
Classes passed	802	7.41	1.68	815	7.49	1.65	–0.05	0.05	0.281

---

[27] The 12 schools that offered PGC-MS outreaches during remediation, enrichment, or advisory periods, were able to offer an average of 12.2 sessions during the school year. In contrast, the four schools that offered outreaches during elective periods or lunch only offered 8.5 sessions, on average.

RESEARCH QUESTION 2: NUMBER OF CLASSES PASSED

Benchmark statistical estimates for Research Question 2 indicate that offering the PGC-MS program to sixth-grade students had no statistically significant effect on participants' total number of classes resulting in a passing grade during their first year of middle school. Model estimates presented in Table 5 show that students in the PGC-MS condition passed, on average, 7.4 classes during sixth grade, whereas students in the control group passed 7.5 classes, on average. The standardized magnitude of effect for this difference of less than one tenth is –0.03 for the ITT sample.

Subgroup analyses across demographic groups (gender, race/ethnicity) and academic indicators (ELL, IEP status) were largely consistent with the benchmark ITT findings, namely that there were no statistically significant differences between the treatment and control groups on the number of classes passed during sixth grade. The exception again was for students identified as female. Among this group (n = 805), impact estimates indicate that control students passed an average of 0.16 more classes than their PGC-MS counterparts (p = 0.009, ES = –0.10).

DISCUSSION

Benchmark findings indicate that offering the PGC-MS program to sixth-grade students did not have a detectable impact on the confirmatory outcomes of attendance or the number of passed classes during the first year of middle school. For both outcomes, we observed comparatively favorable outcomes in the control group; however, these differences were substantively negligible (effect sizes of –0.03) and statistically nonsignificant (*p > 0.05*). For the most part, subgroup analyses that examine PGC-MS's impact on different groups of participants corroborated the ITT results.

The impact study aimed to assess PGC-MS' impact on student outcomes as it is intended to be implemented according to the program's logic model and structured curriculum.[28] However, as discussed above and shown in Tables 4a and 4b, our implementation study found that most schools experienced barriers to implementing the program to fidelity with their sixth graders, who in turn did not get the recommended minimum amount of programming.[29] In terms of adherence to the outreach session schedule, only three schools, all from Cohort 1, were able to offer the program's minimum 18 outreach sessions and treatment students at these schools attended an average of 16–17 sessions during sixth grade. The schools that were unable to offer the minimum number of sessions either had to abruptly discontinue programming in March 2020 due to the COVID-19 pandemic (Cohort 2), and/or experienced administrative and scheduling challenges or impacts from Hurricane Ida in the fall of 2021 (Cohorts 2 and 3). As a result, less than 10% of our sample of treatment participants received the full intended dosage of 18 outreach sessions.

Although null results are not desirable in the context of promising educational programming, they are not uncommon in applied research. In this case, they are not surprising given the substantially low program dosage, and, as a result, diluted treatment-control contrast. Ultimately, the impact findings do not reflect a reasonable test of the PGC-MS program as it was designed to be implemented, due to factors that were largely outside the control of the grantee.

Additional limitations of this evaluation reflect common pitfalls in applied research. Although a well-executed RCT offers the most internally valid estimates of a program's impact, the design is not immune

---

[28] See Appendix D for a copy of the program's logic model.

[29] Additional component-level details from our evaluation of the program's key components can be found in the fidelity matrix in Appendix C.

to external constraints. In this case, the primary constraint is potential error in our confirmatory outcomes. The research team made every effort possible to review and correct administrative records provided by the study school data managers, but there remained some uncertainty about the extent to which enrollment, attendance, and course information was complete and accurate. Moreover, we know that attendance and course grades were particularly noisy during the 2019–20 school year. We were told by study schools that final course grades were assigned such that they could not be worse than they were as of March 13, the last day of in-person learning. In other words, the grades did not necessarily reflect academic learning for the entirety of the school year. Similarly, study schools reported that students were given credit for daily attendance during the period between March 13 and the end of the school year, whether or not the student attended any virtual class. Lastly, although the research team monitored fidelity of randomization to ensure that crossover was minimal, we were unable to measure the extent to which spillover of concepts and skills taught during PGC-MS outreach sessions reached the students in the control condition. Because this was an individual-level RCT where students were assigned within schools, it is reasonable to assume that students assigned to the program interacted with control students in the same school and may have shared their experience of the program. However, since it is the relationship with the mentor and other peers in the peer group that forms the basis of the intervention under investigation, we remain confident in the internal validity of the study.

The aim of this study was to produce empirical, causal responses to the posed research questions, and is just one part of the comprehensive evaluation that PRG conducted on PGC-MS. PGC-MS was a new, innovative program model at the time this evaluation took place. Thus, future research should examine the potential for a well- and consistently implemented program to have a positive impact on outcomes as students make the transition from elementary to middle school.

REFERENCES

Allensworth, E. M., & Easton, J. Q. (2007). *What matters for staying on-track and graduating in Chicago public high schools: A close look at course grades, failures, and attendance in the freshman year*. Consortium on Chicago School Research, The University of Chicago.

Belfield, C. R., & Levin, H. M. (Eds.). (2007). *The price we pay: Economic and social consequences of inadequate education*. Brookings Institution Press. https://doi.org/10.1177/0013124510380722

Bernat, D. H., & Resnick, M. D. (2009). Connectedness in the lives of adolescents. In R. J. DiClemente, J. S. Santelli, & R. A. Crosby (Eds.), *Adolescent health: Understanding and preventing risk behaviors* (pp. 375–389). Jossey-Bass/Wiley.

Blum, R. W. (2005). A case for school connectedness. *Educational Leadership*, *62*(7), 16–20.

Bond, L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G., & Patton, G. (2007). Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. *Journal of Adolescent Health*. https://doi.org/10.1016/j.jadohealth.2006.10.013

Bruce, M., Bridgeland, J. M., Fox, J. H., & Balfanz, R. (2011). *The use of early warning indicator and intervention systems to build a grad nation*. Civic Enterprises.

Carnevale, A. P., Smith, N., & Strohl, J. (2010). *HELP WANTED: Projections of jobs and education requirements through 2018*. Georgetown University Center on Education and the Workforce.

Centers for Disease Control and Prevention. *School Connectedness: Strategies for Increasing Protective Factors Among Youth*. (2009). U.S. Department of Health and Human Services. https://stacks.cdc.gov/view/cdc/5767

Chapman, C., Laird, J., Ifill, N., & KewalRamani, A. (2011). *Trends in high school dropout and completion rates in the United States: 1972–2009* (Compendium Report IES 2012-006). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Collaborative for Academic, Social, and Emotional Learning (CASEL). (2007). *Background on social and emotional learning* [CASEL Brief]. https://files.eric.ed.gov/fulltext/ED505362.pdf

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, *82*(1), 405–432.

Gregory, A., Bell, J., & Pollock, M. (March 2014). How educators can eradicate disparities in school discipline: A briefing paper on school-based interventions. Discipline Disparities Series: Interventions. The Equity Project at Indiana University, Center for Evaluation and Education Policy.

Nitza, A., & Dobias, B. (2008). Connectedness is key: The evolution of a process-driven high school program. *Perspectives in Peer Programs*, *3*(2), 90–103.

O'Brien, A. (2012). *Middle school's role in dropout prevention* (NCES 2014-391). https://www.edutopia.org/blog/dropout-prevention-middle-school-resources-anne-obrien

Stetser, M. C., & Stillwell, R. (2014). *Public high school four-year on-time graduation rates and event dropout rates: School years 2010–11 and 2011–12*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

What Works Clearinghouse. (2022). *What Works Clearinghouse procedures and standards handbook, version 5.0.* National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. This report is available on the What Works Clearinghouse website. https://ies.ed.gov/ncee/wwc/Handbooks

APPENDIX A. DATA AND METHODS

The purpose of this appendix is to provide additional details of the impact study methods and data used to answer the confirmatory research questions. The impact study aimed to isolate the causal impact the Peer Group Connection-Middle School (PGC-MS) program had on a sixth-grade students' attendance and progression in school. PGC-MS was designed to increase sixth-grade students' engagement with their school communities, social and emotional learning (SEL) skills, and academic motivation. The target population for PGC-MS was students transitioning from elementary to middle school. The impact study was a randomized controlled trial (RCT). Outcomes for treatment group members who were offered the PGC-MS intervention were compared with those of a control group who were offered class as usual.

In this appendix, we provide additional details on the individual eligibility criteria for the study, outcome and covariate operationalization, analytic model specification, and the methods used to establish baseline equivalence between the treatment and control groups.

DETAILED ELIGIBILITY CRITERIA

The study examines the effects of PGC-MS among sixth-grade students in selected public middle schools in rural North Carolina and urban communities in New Jersey and Baltimore, Maryland. The Center for Supportive Schools (CSS), the grantee and program developer, was responsible for selection, recruitment, confirmation, and retention of study middle schools. CSS provided each study school with a fully developed program curriculum, staff training, technical support, and financial support for the program up to two years during which the school implemented PGC-MS as part of the study. All schools that participated in the study signed MOUs with CSS and entered into formal data sharing agreements with PRG.

To be enrolled in the study, students had to meet four basic eligibility criteria. Students were eligible to participate in the impact study if they:
1. Were enrolled at a study school on the date of random assignment
2. Either provided active consent to (if required) or did not opt out of participating in the study[30]
3. Could complete a *Participant Questionnaire* unassisted in either English or Spanish in 60 minutes or less
4. Were able to participate in PGC-MS outreaches should they be randomized to the treatment condition[31]

We describe each of these inclusion criteria in detail below.

Be enrolled at a study school.
Students must have been enrolled at a study school at the time of randomization to participate in the study. If a student was on the roster of sixth graders provided by the school at the time of randomization, they were considered enrolled at that study school. To minimize attrition due to student mobility (e.g., transferring schools) and nonattendance, at the time of randomization, schools were asked to provide the most up-to-date roster of incoming sixth-grade students possible, such that the up-to-date roster included only those students whose enrollment had been confirmed by their attendance

---

[30] Study sites located in Baltimore City Public School District required PRG to obtain active parental consent and student assent prior to enrolling any students into the impact study. PRG conducted passive, or opt out, consent at all other study sites.

[31] PRG advised school staff responsible for determining student eligibility to exclude students from the study if they were deemed inappropriate for PGC-MS participation. Because each student had a 50% chance of being randomly assigned to receive the PGC-MS program and participants are analyzed based on their assigned condition, this criterion was included to reduce the likelihood of assignment crossover.

in class or related school events. After randomization, if it was determined a study participant, for whatever reason, did not attend the study school or was no longer enrolled, they remained in the study in his or her assigned study condition.

Provide active consent (if required) or not opt out of participating in study.
At study schools that required active parental consent and student assent, all incoming sixth graders were provided with a consent form for their parents to sign and an assent form for the student to sign. A student was considered eligible if both their parent/guardian provided consent for their child to participate and the student also gave their assent. If one or both did not provide their consent, then the student was deemed ineligible to participate in the study.

At study schools that did not require active consent, students and parents were provided with an opportunity to opt out of participating in the study prior to enrollment at each school. If a student or a parent expressed to school administrators a desire to opt out, then that student was deemed ineligible for study participation. This eligibility criterion was assessed prior to randomization. If a student opted out of the study following randomization, they were included in the randomized sample and considered a part of the intent-to-treat (TT) sample but were excluded from the analytic sample (i.e., the case contributed to study attrition).

Meet study requirements for data collection.
Participants had to be able to meet study requirements for data collection in order to participate. Students must have been able to complete the self-administered *Participant Questionnaire* in a classroom or group setting, unassisted, in 60 minutes or less in either English or Spanish. Schools were responsible for using student records (e.g., Individualized Education Plans [IEP]) to assess this criterion. In most cases, this criterion was assessed prior to randomization; however, this was not possible in all cases.
- If a school was able to assess this criterion prior to randomization, all ineligible students were removed from the roster of students to be randomized.
- If a school was unable to assess this eligibility criterion prior to randomization, all students who were otherwise eligible (were enrolled at the school and provided consent) were randomized. Following randomization, schools used student records (e.g., IEPs) to identify students who could not meet the data collection requirements. Since ability to meet data collection requirements is a trait that exists prior to random assignment and is exogenous to the treatment, students deemed ineligible according to this criterion remained in their assigned study condition but were removed from the study sample. (In other words, those assigned to the treatment condition could receive PGC-MS as program-only participants, and those who were assigned to the control condition received business as usual; students who were randomized but who were ineligible according to this criterion were not treated as a part of the ITT sample.)

Be able to be participate in PGC-MS outreaches if they are randomized to the treatment condition.
Participants must have been able to participate in PGC-MS to be eligible to participate in the study. Two known situations that would have prevented students from being able to participate are: (1) their academic schedule did not allow them to miss 45 minutes of class 3 times per month, either because they were not present at the school during the PGC-MS scheduled outreach sessions, or they had a competing academic commitment; or (2) they had a behavioral or disciplinary history that indicated placing them in a small group peer-mentoring session may be disruptive. Schools were responsible for using student records (e.g., schedules, disciplinary history) to assess this criterion prior to

randomization. After randomization, if it was determined a study participant assigned to the treatment group, for whatever reason, could not participate in PGC-MS, they remained in the study in their assigned study condition for analysis.

VARIABLE OPERATIONALIZATION

In this section, we present a description of the individual-level covariates and the outcome variables used in the confirmatory impact analyses.

COVARIATES

Table A.1 provides a description of the individual-level covariates that were included in the benchmark analytic model. The completeness of covariate data varied across individual variables. For the following covariates, data missing from school administrative records were imputed using the self-reported information provided by the student on the baseline *Participant Questionnaire*: age at baseline, race/ethnicity, gender. If covariate data were also missing on the baseline questionnaire, missing data were imputed using dummy variable adjustment.

Table A.1. Covariate Operationalization

Variable Name	Variable Type, Construction, and Data Source
Age at baseline	Continuous – calculated by subtracting the participant's date of birth from the date of the first day of school of the participant's 6th grade year, and dividing the difference by 365. Variable was centered at the grand mean. **Data Source:** Baseline data request (school administrative records)
Race	A set of four mutually exclusive dummy (0/1) variables indicating the student's race. We include dummy variables representing students who were identified as: • White (1) or not (0) • Black or African American (1) or not (0) • Multiracial (1) or not (0) • Either Asian, Native American/Alaska Native, or Pacific Islander (1) or not (0) Dummy variables were centered at the grand mean. **Data Source:** Baseline data request (school administrative records)
Hispanic ethnicity	Dummy variable indicating the student's ethnicity as Hispanic (1) or not (0). Variable was centered at the grand mean. **Data Source:** Baseline data request (school administrative records)
Female	Dummy variable indicating a student's gender as female (1) or not (0). Variable was centered at the grand mean. **Data Source:** Baseline data request (school administrative records)
English Language Learner (ELL) status	Dummy variable indicating whether the student is an ELL at the beginning of 6th grade (1) or not (0). Variable was centered at the grand mean. **Data Source:** Baseline data request (school administrative records)
Individualized Education Plan (IEP) status	Dummy variable indicating whether the student has an IEP at the beginning of 6th grade (1) or not (0). Variable was centered at the grand mean. **Data Source:** Baseline data request (school administrative records)
Number of days attended in 5th grade	Continuous – the number of days the student attended school during their 5th grade year (the year immediately preceding their participation in the study). Variable was centered at the grand mean. Variable included in the benchmark analytic model for Research Question 1 and represents the baseline measure of the outcome. **Data Source:** Baseline data request (school administrative records)

Table A.1. *Covariate Operationalization (Continued)*

Variable Name	Variable Name
Number of classes passed in 5th grade	Continuous – the number of classes the student passed during their 5th grade school year (the year immediately preceding their participation in the study). Variable was centered at the grand mean. Variable included in the benchmark analytic model for Research Question 2 and represents the baseline measure of the outcome. **Data Source:** Baseline data request (school administrative records)
Randomization blocks	A series of 16-1 dummy variables indicating whether the student was enrolled at a study school during a specified study year (1) or not (0). **Data Source:** EIR Study Roster

OUTCOME VARIABLES

Table A.2 outlines how outcome measures for the confirmatory Research Questions (1 and 2) were constructed. Confirmatory outcomes were operationalized with two measures: number of days attended during the regular sixth-grade school year and number of classes passed during the regular sixth-grade school year.

Table A.2. *Outcome Variable Operationalization*

Variable Name	Variable Type, Construction, and Data Source
School Attendance Number of days attended during 6th grade	Continuous – the number of days the student attended school during their regular 6th grade year as reported by the study school. Only students with complete attendance data for the full school year are included in the analytic sample. Students who dropped out of school (W2 withdrawal) and did not transfer to another school were included in the analytic sample if the study school reported their attendance for the period they were enrolled in school (i.e., data were not missing). Students who transferred to a new school during 6th grade are included in the analytic sample if attendance data from all schools they attended during their 6th grade year were reported to PRG. Students who transferred to a new school during 6th grade and whose new school did not report their attendance were excluded from the benchmark analytic sample because their attendance was only partially reported for the year; we conducted a sensitivity analysis that included students with partial attendance data. Days attended during the summer session following 6th grade were excluded. Missing values were not imputed. **Data Source:** 6th grade data request (school administrative records)
Progressing through school Number of classes passed during 6th grade	Continuous - the number of courses the student passed (earned a passing grade) during their 6th grade school year as reported by the study school. The study school reported the number of courses attempted and the number the student passed. If a student transferred to a new school during their 6th grade year, we requested that the new school report the total number of classes passed during 6th grade as of the end of the regular school year. In some cases, data from the study school and the transfer school conflicted; in these instances, we used the number of classes passed as reported by the school the student was enrolled in at the end of the spring semester. Classes passed during the summer session following 6th grade were excluded. Missing data were not imputed. **Data Source:** 6th grade data request (school administrative records)

ANALYTIC APPROACH

MODEL SPECIFICATIONS

As detailed in our research questions, our proposed impact study investigated whether offering the PGC-MS intervention to participants impacts school attendance and progressing in school at the end of participants' sixth-grade year. We do this within the ITT framework, which does not take into account participants' actual or measured exposure to the treatment itself, but, rather, the effect of the offer of the treatment (PGC-MS) relative to the offer of receiving the control condition (class as usual). This framework maintains the integrity of the experimental structure by including all participants who were randomized (except those who attrite) in the analytic sample, maintaining an exogenous assignment of participants to the experimental condition. Under this structure, we are able to produce an unbiased estimate of the treatment effect regardless of variation in program exposure.

The analysis pooled data across all study cohorts and schools and estimated effects using student-level data. We used a regression-estimated approach that modeled intervention effects while controlling for relevant covariates (detailed in Table A.1). We used a model-based approach rather than a straight difference-of-means approach in order to increase the precision of those estimates. The empirical model was estimated with an Ordinary Least Squares (OLS) regression model (using Stata). We model both confirmatory contrasts (school attendance and progressing in school) using the following empirical model:

$$Y_{Post} = \beta_0 + \beta_1 T + \sum (\beta_P X_P) + \varepsilon,$$

where:

Y_{Post} – The outcome variable (Outcome 1: days of attendance; Outcome 2: number of classes passed) reported for each participant at the end of the sixth grade.

T – A dummy treatment indicator variable whose value equals 1 if the participant was randomized into the treatment group and 0 if randomized into the control group.

X – A vector of p covariates, including both baseline (i.e., measured prior to receiving intervention or exogenous to treatment) participant-level measures as well as blocking variables (defined by both school and cohort) to account for the variation in outcomes associated with these variables and to increase the precision of our impact estimates. These covariates include the baseline measure of the outcome (either days attended or classes passed in fifth grade), age at baseline, race/ethnicity, gender, EL status, IEP status, and randomization blocking variables. All covariates were centered at the grand mean.

β_0 – The intercept term, which represents the mean outcome score (Outcome 1: days of attendance; Outcome 2: number of classes passed) for control participants at the end of sixth grade, with all other variables in the model held constant at zero.

β_1 – This is the parameter estimate of substantive interest. β_1 represents the adjusted mean difference in treatment and control participants' outcome score (Outcome 1: days of attendance; Outcome 2: number of classes passed) at the end of the sixth grade, controlling for all other variables included in the model. We report the model-estimated difference between the treatment and control group (β_1), along with the model estimates for the treatment mean ($\beta_1 + \beta_0$) and control mean (β_0). Statistical significance

was based on test statistics produced by Stata 15 for the coefficient β_1 using a two-tailed test, with $p <$ .05.

TREATMENT OF MISSING DATA

We did not impute missing outcome data. Impact analysis samples included only those observations that had non-missing post-intervention data.

Missing baseline and covariate data were handled according to the techniques outlined by the National Center for Education Evaluation.[32] Missing covariate data were treated using dummy variable adjustment according to guidance provided by Puma et al. (2009; for details, see pp. 34–35). The justification for this is that (1) our first priority is to reduce selection bias by retaining the sample that is most representative of our ITT sample; (2) covariate data are included only to increase the precision of our impact estimates; and (3) assuming low differential attrition, this should not bias results.

CALCULATION OF EFFECT SIZE

We calculate effect sizes in accordance with the guidelines published in the *What Works Clearinghouse* (*WWC) Procedures and Standards Handbook, Version 5.0*. For each of the outcomes, the standard deviation for each condition is estimated from the sample data. We calculate the pooled standard deviation using the following formula:

$$S_p = \sqrt{\frac{(n_t - 1)S_t^2 + (n_c - 1)S_c^2}{(n_t + n_c - 2)}},$$

where n_t and n_c are the sample sizes, and S_t and S_c are the student-level standard deviations for the analytic treatment and control groups, respectively.

For each outcome, the standardized effect size, known as Hedges' *g*, is calculated using the following formula:

$$g = \frac{\beta_1}{S_p}$$

where β_1 is the regression coefficient for the intervention's effect (adjusted mean difference in the outcome variable between the treatment and comparison group), and S_p is the pooled standard deviation (detailed above).

BASELINE EQUIVALENCE

This section presents a description of the demographic characteristics of the study participants and baseline balance statistics for the treatment and control groups in the form of standardized mean differences (continuous) and differences in probability of occurrence (dichotomous).

Baseline equivalence of the treatment and control samples was established in accordance with the *WWC Procedures and Standards Handbook, Version 5.0*. The WWC specifies that differences less than or equal to 0.05 standard deviations require no statistical adjustment for groups to be considered equivalent. For differences between 0.05 and 0.25 standard deviations, an analysis must include an

---

[32] Puma, M. J., Olsen, R. B., Bell, S. H., & Price, C. (2009). *What to do when data are missing in group randomized controlled trials* (NCEE 2009-0049). National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

acceptable statistical adjustment for the baseline characteristic to meet equivalence standards. Differences above 0.25 standard deviations in value indicate nonequivalence of groups on that baseline characteristic.

For each of our two primary outcomes, Table A.3 presents the treatment and control group means for each characteristic and the balance statistic in the form of standardized differences (Hedges' *g* or Cox Index) for the benchmark analytic sample.

Table A.3. Baseline Equivalence of Treatment and Control Groups

	Research Question 1: School Attendance			Research Question 2: Progressing Through School		
	Treatment (*n* = 794)	Control (*n* = 806)		Treatment (*n* = 802)	Control (*n* = 815)	
Baseline Variable	Mean (SD)	Mean (SD)	Standardized Difference	Mean (SD)	Mean (SD)	Standardized Difference
Mean age in years at baseline	11.44(0.57)	11.49(0.62)	−0.08	11.45(0.57)	11.49(0.62)	−0.07
White	0.33(0.47)	0.33(0.47)	−0.02	0.33(0.47)	0.32(0.47)	−0.02
Black or African American	0.28(0.45)	0.28(0.45)	0.01	0.28(0.45)	0.28(0.45)	−0.02
Other race	0.01(0.10)	0.01(0.09)	0.10	0.01(0.10)	0.01(0.09)	0.09
Multiracial	0.06(0.24)	0.05(0.22)	0.10	0.06(0.24)	0.05(0.22)	0.10
Hispanic	0.32(0.47)	0.33(0.47)	0.02	0.32(0.47)	0.33(0.47)	0.04
Male	0.48(0.50)	0.52(0.50)	−0.09	0.48(0.50)	0.52(0.50)	−0.10
ELL status	0.12(0.32)	0.12(0.33)	−0.02	0.12(0.32)	0.12(0.33)	−0.01
IEP status	0.09(0.29)	0.10(0.30)	−0.07	0.09(0.29)	0.09(0.30)	−0.08
Mean days attended in 5th grade	164.83(16.99)	162.70(22.58)	0.11	164.76(17.31)	162.45(23.38)	0.12
Mean classes passed in 5th grade	7.69(1.03)	7.71(1.01)	0.00	7.66(1.10)	7.71(1.05)	0.00

Note: For continuous baseline variables, standardized mean difference is estimated using the formula for Hedges' *g*. For dichotomous variables, we use the formula for Cox Index.

APPENDIX B. DETAILED ANALYTIC RESULTS
BENCHMARK INTENT-TO-TREAT RESULTS

Table B.1. Detailed Benchmark Analytic Results

Outcome Measure	Treatment Group			Control Group			Treatment – Control Difference (SE)	Standardized Difference	*p*-value
	Sample Size	Mean	Standard Deviation	Sample Size	Model-adjusted Mean	Standard Deviation			
Number of days attended 6th grade	794	161.21	19.34	806	161.58	20.45	−0.59 (0.42)	−0.03	0.162
Number of classes passed 6th grade	802	7.41	1.68	815	7.49	1.65	−0.05 (0.05)	−0.03	0.281

SUBGROUP RESULTS

Table B.2. Results of Subgroup Analyses

Subgroup	Research Question 1: School Attendance					Research Question 2: Progressing Through School				
	Treatment		Control		Difference (SE)	Treatment		Control		Difference (SE)
	N	Mean (SD)	N	Mean (SD)		N	Mean (SD)	N	Mean (SD)	
Male	383	160.68(19.72)	419	161.67(20.19)	−0.03(0.61)	386	7.35(1.69)	426	7.41(1.73)	0.06(0.06)
Female	411	161.70(19.00)	387	161.48(20.75)	−1.13(0.56)*	416	7.47(1.67)	389	7.59(1.56)	−0.16(0.06)**
White	261	165.59(10.07)	262	164.53(12.31)	−0.05(0.59)	262	7.07(1.49)	261	7.14(1.56)	−0.01(0.04)
Non-white	533	159.06(22.23)	544	160.16(23.26)	−0.91(0.56)	540	7.58(1.74)	554	7.66(1.67)	−0.07(0.06)
Hispanic	254	168.94(12.09)	266	170.75(10.02)	−1.49(0.77)~	259	8.02(1.27)	272	8.15(1.06)	−0.07(0.06)
English Language Learner	94	167.64(12.65)	97	168.78(11.09)	0.95(1.06)	96	7.55(1.52)	99	7.77(1.32)	0.02(0.08)
Individualized Education Plan	71	149.60(23.82)	78	150.15(27.69)	−0.15(1.91)	72	6.72(1.85)	79	6.65(1.88)	−0.21(0.21)
Rural	330	166.67(6.15)	325	166.91(5.63)	−0.28(0.37)	330	6.28(0.96)	326	6.34(0.94)	−0.08(0.07)
Urban	464	157.32(24.03)	481	157.98(25.45)	−0.79(0.67)	472	8.20(1.62)	489	8.26(1.57)	−0.03(0.06)

*Note: ~p < 0.10, *p < 0.05, **p < 0.01.*

APPENDIX C. IMPLEMENTATION STUDY

The purpose of this appendix is to present results of PRG's implementation evaluation of the Peer Group Connection-Middle School (PGC-MS) program. In the below matrix, schools are given a numeric score for their level of performance on several indicators of program implementation. For all indicators listed below each key component, the unit of implementation is the school. We implemented this study in nine schools over three academic years, with seven schools participating during two academic years. Schools are classified as *new* schools during their first year implementing PGC-MS and as *veteran* schools when they had implemented the program previously. We first present a description of the PGC-MS program and its key components, followed by a description of the data sources used in the implementation study. The school-level implementation fidelity scores for each study school are presented in the fidelity matrix table and we then aggregate the implementation findings to the cohort (school year) level. A depiction of the PGC-MS logic model can be found in Appendix D.

KEY COMPONENTS

STAKEHOLDER TEAM

The PGC-MS stakeholder team consists of 6–10 administrators, faculty, parents, and students. In some cases, the team is responsible for selecting the two PGC-MS faculty advisors. The Center for Supportive Schools (CSS) provides the stakeholder team with written protocols to select the faculty advisors, including resources for assessing qualifications and fit. In other cases, the principal of the middle school selects the two advisors. The stakeholder team provides support to faculty advisors, the stakeholder team coordinator, and advocates for the program in the school community. CSS program managers typically facilitate approximately six stakeholder team meetings, beginning with the planning period (during the spring prior to PGC-MS implementation) and continuing during the PGC-MS implementation period. One goal of these meetings is to build the capacity of the stakeholder team coordinator to facilitate these meetings in the second year of implementation and beyond. The stakeholder team coordinator acts as a liaison between the school team and CSS, coordinates communication and logistics for PGC-MS-related events, and assists The Policy & Research Group (PRG) in obtaining school records and administrative data for the evaluation.

FACULTY ADVISORS

Two faculty advisors participate in a 10-day intensive train-the-trainer course over a 1½-year period to learn how to run PGC-MS and teach the peer leader daily leadership course. Nine days of training occur over a nine-month period, starting in March/April during the spring semester prior to implementation and ending November/December during the PGC-MS implementation year; the tenth day of training is offered in October/November at the beginning of the second year of implementation at the school. After the first year that a school implements the PGC-MS program, if the same two staff are selected to be faculty advisors in the second year, they are not required to attend the training again. However, if there are new advisors during the second year that a school is implementing PGC-MS, the new staff are invited to participate in the training cycle alongside staff from newly implementing schools.

Faculty advisors are responsible for recruiting and selecting eighth graders to become peer leaders and serve as mentors for sixth-grade PGC-MS participants. CSS provides written protocols to help the faculty advisors select peer leaders, including a rubric for assessing qualifications and fit. Prospective peer leaders complete a written application, participate in a group interview, and obtain faculty recommendations. CSS encourages faculty advisors to select a diverse group of peer leaders that reflects the racial/ethnic and gender composition of the school community, neighborhood affiliation,

socioeconomic status, and known cliques. The faculty advisors are also responsible for facilitating a leadership retreat with the peer leaders (described below).

EIGHTH-GRADE PEER LEADERS

Prospective eighth graders complete a written application, participate in a group interview, and obtain faculty recommendations in order to be selected as peer leaders. CSS encourages faculty advisors to select a diverse group of peer leaders that reflects the racial/ethnic and gender composition of the school community, neighborhood affiliation, socioeconomic status, and known cliques. During the school year, peer leaders attend a two-day, one-night leadership retreat with their faculty advisors; this is an essential component of the training process for peer leaders. It focuses on foundational skills, group stages, and team building.

Peer leaders are also enrolled in a year-long leadership development class offered as an elective course for credit. During this class, peer leaders are expected to (1) receive training approximately five days per week for 45 minutes and (2) conduct 45-minute outreach sessions with the sixth-grade participants three times per month. The peer leader training aims to prepare students to co-lead PGC-MS sessions and debrief following each outreach session, sharing successes, challenges, and suggestions for handling issues.

SIXTH-GRADE PARTICIPANT ACTIVITIES

During the year-long intervention, PGC-MS sixth graders attend 45-minute outreach sessions three times per month, in peer groups of 8–10 during the school day. The outreach sessions are led by two to three peer leaders and include hands-on activities, simulations, and discussions. Schools are encouraged to hold a minimum of 18, 45-minute outreach sessions over the course of the year. The PGC-MS curriculum includes three types of ritual outreaches that can be repeated throughout the program. One of these ritual outreaches –Appreciation Day – should be repeated over the course of the year to celebrate two members of the group at a time (4–5 ritual outreaches are needed to ensure all 8–10 students are recognized in an Appreciation Day session).

In addition to the 4–5 Appreciation Days, schools are encouraged to offer Family Night and four specific outreaches from the curriculum to meet minimum fidelity requirements: Outreach 1: Orientation to PGC-MS, Outreach 2: Activity Day, Outreach 18: Welcoming Next Year's Sixth Graders, and Outreach 20: Lend a Hand, Leave a Footprint.

DATA COLLECTION PLAN AND KEY MEASURES

DATA SOURCES

CSS REGIONAL PROGRAM MANAGERS

CSS regional program managers track and report to PRG information for the following indicators: whether the stakeholder team was identified, the number and dates of all stakeholder team meetings held at each school, whether the stakeholder team coordinator was identified, and whether the stakeholder institute (or equivalent) was offered (Key Component 1); and the dates that each faculty advisor training session was offered (Key Component 2). These data were reported to PRG by email and during monthly check-in calls between PRG and CSS.

EIR STUDY ROSTER

The *EIR Study Roster* is an Excel file stored on a shared Google drive that has two tabs. One tab lists the names of all peer leaders selected to participate in PGC-MS at the school; the other tab lists the names

of the sixth-grade students in the study, which treatment condition they are randomly assigned to, and which peer leaders they are assigned to (if assigned to PGC-MS). Peer leader data are entered into the roster by the school faculty advisors. The *EIR Study Roster* provides data on the following indicators: faculty advisors select peer leaders (Key Component 2); peer leaders assigned to each PGC-MS group, and sixth graders assigned to each PGC-MS group (Key Component 4).

IMPLEMENTATION TRACKING TOOL

The *Implementation Tracking Tool* is a school-specific web tool developed by CSS. It is designed to house data on school-level aspects of program implementation. Data are entered on an ongoing basis throughout the planning and implementation period by the faculty advisors (or stakeholder team coordinators) at each school. The tool provides data on the following indicators: names of two faculty advisors selected (Key Component 1); dates that two-day leadership retreat is offered to peer leaders, date and times that the leadership course is offered to peer leaders, date that the mid-program leadership retreat is offered (Key Component 3); the dates that each outreach session is offered, including Orientation Day, Activity Day, Welcoming Next Year's Sixth Graders, Lend a Hand, Leave a Footprint, Appreciation Day(s), and Family Night (Key Component 4).

ATTENDANCE TRACKING SPREADSHEET

Each school has an *Attendance Tracking Spreadsheet* for each cohort of students in the study. These Excel files are stored on a shared Google drive and each spreadsheet has three tabs. One tab lists the names of all peer leaders, demographic information, date of withdrawal if the peer leader withdrew from the program, and attendance records for each session of the daily peer leadership course. The second tab lists all sixth graders receiving PGC-MS, demographic information, date of withdrawal if the student withdrew from the program, and attendance records for each PGC-MS outreach session. The third tab summarizes the data in the first two tabs and calculates reach demographics. The attendance tracker will provide data on the following indicator: peer leaders enrolled in leadership development class (Key Component 3).

ANALYSIS APPROACH

To assess the degree to which each key component of the intervention was implemented with fidelity, we reviewed data on implementation fidelity for each of the four intervention components, during each year of implementation. For each component, indicator scores were summed to create a total component score for each intervention school. To determine whether a key component was implemented with fidelity for the full intervention sample, we calculate the percentage of intervention schools that implemented the component with fidelity during each school year. The specific thresholds for implementation with fidelity for each school year – at both the school- and sample level – are defined below for each key component.

STAKEHOLDER TEAM

The Stakeholder Team key component fidelity is measured using five indicators. Schools with a score of 7 or higher are considered to have implemented the Stakeholder Team component with fidelity for the school year. The component was considered to have been implemented with fidelity in the sample for the school year if at least 75% of intervention schools implemented the component with fidelity.

Table C.1. Key Component 1: Stakeholder Team

Indicators	Definition	Data Source	Score for level of implementation at unit level	Threshold for adequate implementation at unit level
1.1 Stakeholder team identified	At least 4 members of the PGC-MS school stakeholder team are identified	CSS regional program managers and school stakeholder team self-report	0 = no stakeholder team identified 1 = stakeholder team identified	Score of 1
1.2 Stakeholder team meetings held	PGC-MS stakeholder team meets 3 times to plan, prepare for, and support program implementation	PGC-MS school stakeholder team self-reports	0 = held 0 meetings 1 = held 1–2 meetings 2 = held 3 or more meetings	Score of 2
1.3 Stakeholder team coordinator identified	PGC-MS school stakeholder team selects a coordinator who will lead the team	School-specific *Implementation Tracking Tool* - Stakeholder & Advisor Information tab	0 = no stakeholder team coordinator selected 1 = stakeholder team coordinator selected	Score of 1
1.4 Two faculty advisors identified	Two faculty advisors are selected by stakeholder team or principal at each school	School-specific *Implementation Tracking Tool* - Stakeholder & Advisor Information tab	0 = no faculty advisors selected 1 = 1 faculty advisor selected 2 = 2 faculty advisors selected	Score of 2
1.5 Stakeholder Institute (or equivalent) training offered	CSS offers stakeholder team members a 1-day Stakeholder Institute (or equivalent)	CSS regional program managers self-report	0 = CSS did not offer stakeholder team Stakeholder Institute 1 = CSS offered stakeholder team Stakeholder Institute	Score of 1
All Indicators	Score range: 0–7 Adequate implementation score: 7		Sample-level roll up: 0 = <26% of schools with score = 7 1 = 26–50% schools with score of = 7 2 = 51–75% of schools with score of = 7 3 = >75% of schools with score of = 7	Threshold for fidelity = score of 3

FACULTY ADVISORS

The Faculty Advisors key component is assessed using two indicators (comprised of three potential measures). Schools with a score of 2 are considered to have implemented the Faculty Advisor component with fidelity for the school year. The component is considered to have been implemented with fidelity in the sample for the school year if at least 75% of intervention schools implemented the component with fidelity.

Table C.2. Key Component 2: Faculty Advisors

Indicators	Definition	Data Source	Score for level of implementation at unit level	Threshold for adequate implementation at unit level
2.1a Faculty advisor training offered (Year 1)	CSS offers new faculty advisors a 10-day train-the-trainer course to teach them how to run PGC-MS and teach the peer leader daily leadership course	CSS regional program managers self-report	0 = CSS did not offer all 10 days of training to new faculty advisors 1 = CSS did offer all 10 days of training to new faculty advisors	Score of 1
2.1b Faculty advisor refresher training offered (Year 2)	CSS offers veteran faculty advisors a 1-day refresher training	CSS regional program managers self-report	0 = CSS did not offer 1-day training to veteran faculty advisors 1 = CSS did offer1-day training to veteran faculty advisors	Score of 1
2.2 Faculty advisors select peer leaders	School faculty advisors select peer leaders from list of qualified applicants	*EIR Study Roster* - Peer Leader tab	0 = Peer leaders not selected 1 = Peer leaders selected	Score of 1
All Indicators	Score range: 0–2 Adequate implementation score: 2		Sample-level roll up: 0 = <26% of schools with score = 2 1 = 26–50% schools with score of = 2 2 = 51–75% of schools with score of = 2 3 = >75% of schools with score of = 2	Threshold for fidelity = score of 3

EIGHTH-GRADE PEER LEADERS

The Peer Leader key component is assessed using four indicators. Schools with a score of 4 or higher are considered to have implemented the Peer Leader component with fidelity. The component is considered to have been implemented with fidelity in the sample if at least 75% of intervention schools implemented the component with fidelity that school year.

Table C.3. Key Component 3: Peer Leaders

Indicators	Definition	Data Source	Score for level of implementation at unit level	Threshold for adequate implementation at unit level
3.1 Two-day leadership retreat offered	School offers peer leaders a 2-day leadership retreat with their faculty advisors	School-specific *Implementation Tracking Tool* - Program Information tab	0 = school did not offer any retreat 1 = school offered 1-day retreat 2 = school offered 2-day retreat	Score of 1 or 2
3.2 Leadership development class offered	School offers daily leadership development class	School-specific *Implementation Tracking Tool* - Program Information tab	0 = school did not offer daily leadership class during school days 1 = school offered daily leadership class during school days	Score of 1
3.3 Enrolled in leadership development class	Peer leaders at school are enrolled in (scheduled to take) daily leadership development class taught by faculty advisors	School-specific *Attendance Tracking Spreadsheet* - Peer Leader tab	0 = at least 1 selected peer leader did not attend any daily leadership classes 1 = all peer leaders attended at least 1 daily leadership class	Score of 1
3.4 Mid-program leadership retreat offered	School offers peer leaders a 5-hour mid-program leadership retreat with their faculty advisors	School-specific *Implementation Tracking Tool* – Program Implementation tab	0 = school did not offer mid-program retreat 1 = school offered mid-program retreat	Score of 1
All Indicators	Score range: 0–5 Adequate implementation score: 4 or higher		Sample-level roll up: 0 = < 26% of schools with score > = 4 1 = 26–50% schools with score of > = 4 2 = 51–75% of schools with score of > = 4 3 = > 75% of schools with score of > = 4	Threshold for fidelity = score of 3

SIXTH-GRADE PGC-MS PARTICIPANTS

The PGC-MS Participants key component is measured using nine indicators. Schools with a weighted score of 12 or higher are considered to have implemented the PGC-MS Participant component with fidelity. The component is considered to have been implemented with fidelity in the sample if at least 75% of intervention schools implemented the component with fidelity that school year.

To account for schools closing in March 2020, the following modifications were made to the component scoring for the 2019–20 school year:

1. The minimum threshold for the total number of outreaches offered for **Indicator 4.3** was reduced from 18 to 12.
2. **Indicators 4.6, 4.7, and 4.9** were not assessed during the 2019–20 school year as these outreach sessions are intended to be implemented in the spring semester toward the end of programming.
3. The threshold for adequate implementation for **Indicator 4.8** (Ritual Outreach 1: Appreciation Day) was reduced from a score of 2 to a score of 1 or 2.
4. The threshold for overall component score to meet adequate implementation at the unit level was reduced from 12 to 8.

Table C.4. Key Component 4: PGC-MS Participants

Indicators	Definition	Data Source	Score for level of implementation at unit level	Threshold for adequate implementation at unit level
4.1 Peer leaders assigned to groups	At least 2 peer leaders are assigned to each group	School-specific *EIR Study Roster*	0 = <50% of peer groups are assigned 2 or more peer leaders each 1 = 50–74% of peer groups are assigned 2 or more peer leaders each 2 = 75–100% of peer groups are assigned 2 or more peer leaders each	Score of 2
4.2 6th graders assigned to groups	8–10 6th graders are assigned to each group	School-specific *EIR Study Roster*	0 = <50% of peer groups are comprised of 8–10 6th graders 1 = 50–74% of peer groups are comprised of 8–10 6th graders 2 = 75–100% of peer groups are comprised of 8–10 6th graders	Score of 2
4.3a Outreach sessions offered 3 times per month, on average (2018–19 and 2021–22)	School offers minimum of 18 outreach sessions using most up-to-date version of the PGC-MS curriculum	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school offered 0–6 outreach sessions during implementation period 1 = school offered 7–13 outreach sessions during implementation period 2 = school offered 14–18 outreach sessions during implementation period 3 = school offered 19 or more outreach sessions during implementation period	Score of 2 or 3
4.3b Outreach sessions offered 3 times per month, on average (2019–20)[33]	School offers minimum of 12 outreach sessions using most up-to-date version of the PGC-MS curriculum	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school offered 0–4 outreach sessions during implementation period 1 = school offered 5–8 outreach sessions during implementation period 2 = school offered 9–11 outreach sessions during implementation period 3 = school offered 11 or more outreach sessions during implementation period	Score of 2 or 3
4.4 Outreach 1: 6th grade Orientation Day offered	School offers 6th grade Orientation Day	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school did not offer Outreach 1: 6th grade Orientation Day 1 = school did offer Outreach 1: 6th grade Orientation Day	Score of 1
4.5 Outreach 2: 6th grade Activity Day offered	School offers 6th-grade Activity Day	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school did not offer Outreach 2: 6th grade Activity Day 1 = school did offer Outreach 2: 6th grade Activity Day	Score of 1

Table C.4. *Key Component 4: PGC-MS Participants (Continued)*

Indicators	Definition	Data Source	Score for level of implementation at unit level	Threshold for adequate implementation at unit level
4.6 Outreach 16: Welcoming Next Year's 6th Graders offered (2018–19 and 2021–22)	School offers Outreach 16: Welcoming Next Year's 6th Graders	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school did not offer Outreach 18: Welcoming Next Year's 6th Graders 1 = school did offer Outreach 18: Welcoming Next Year's 6th Graders	Score of 1
4.7 Outreach 18: Lend a Hand, Leave a Footprint offered (2018–19 and 2021–22)	School offers Outreach 18: Lend a Hand, Leave a Footprint	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school did not offer Outreach 20: Lend a Hand, Leave a Footprint 1 = school did offer Outreach 20: Lend a Hand, Leave a Footprint	Score of 1
4.8 Ritual Outreach 1: Appreciation Days offered	School offers Appreciation Days to 6th graders	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school offered <50% of the needed Appreciation Days to highlight each student in a peer group 1 = school offered 50–74% of the needed Appreciation Days to highlight each student in a peer group 2 = school offered 75–100% of the needed Appreciation Days to highlight each student in a peer group	Score of 2 (2018–19 & 2021–22) Score of 1 or 2 (2019–20)
4.9 Family Night offered (2018–19 and 2021–22)	School offers Family Night to 6th graders, peer leaders, and their families	School-specific *Implementation Tracking Tool* - Curriculum tab	0 = school did not offer Family Night 1 = school did offer Family Night	Score of 1
All Indicators (2018–19 and 2021–22)	Score range: 0–14 Adequate implementation score: 12 or higher		Sample-level roll up: 0 = <26% of schools with score > = 12 1 = 26–50% schools with score of > = 12 2 = 51–75% of schools with score of > = 12 3 = >75% of schools with score of > = 12	Threshold for fidelity = score of 3
All Indicators (2019–20)	Score range: 0–11 Adequate implementation score: 8 or higher		Sample-level roll up: 0 = <26% of schools with score > = 8 1 = 26–50% schools with score of > = 8 2 = 51-—5% of schools with score of > = 8 3 = >75% of schools with score of >= 8	Threshold for fidelity = score of 3

---

[33] Schools closed in March 2020 due to the onset of the COVID-19 pandemic. Given that schools were only in session for approximately two thirds of the regular school year, we revised the scoring categories to reduce the range of outreach sessions by one third for the purpose of scoring fidelity of implementation during the 2019–20 school year.

RESULTS

Table C5 presents the cohort-level fidelity scores for each of the four key components. Schools implemented Key Component 1 (Stakeholder Team) with fidelity during the first two years of the study, but fell short of implementing with fidelity during the final year (school year 2021–22). Three schools lost fidelity points for their stakeholder team coordinator not attending a refresher training at the beginning of the school year and one school had too few members on the stakeholder team. Similar to Key Component 1, Cohort 1 and 2 schools implemented Key Component 2 (Faculty Advisors) with fidelity; however, Cohort 3 schools just missed the sample-level threshold. One school during this cohort lost a point because their faculty advisors did not attend a refresher training at the beginning of the year. Schools across all three cohorts implemented Key Component 3 (Peer Leaders) with fidelity. During the second cohort, two schools lost points for not holding the two-day leadership retreat or the mid-program leadership retreat; however, a sufficient number of schools did implement the component with fidelity for the cohort to meet the threshold score. Finally, only the first cohort of schools (SY 2018–19) implemented the Key Component 4 (PGC-MS Participants) to fidelity, while the second and third cohorts did not meet minimum fidelity requirements. Even with adjusted indicator thresholds to accommodate the COVID-19 pandemic, only two schools achieved a score of 8 (the minimum adequate implementation score for the year) during the 2019–20 school year. During the final year of the study, no schools achieved a score of 12 (the minimum score for the year). Schools lost points for not holding enough outreach sessions, and not holding the specific types of sessions recommended by the program developers (i.e., outreaches 1, 2, 18, and 20 and Ritual Outreach 1).

Table C.5. PGC-MS Implementation Fidelity Findings

	Key Component 1: Stakeholder Team	Key Component 2: Faculty Advisors	Key Component 3: Peer Leaders	Key Component 4: PGC-MS Participants
Year 1 (2018–19 SY)				
Percentage of schools that met adequate implementation threshold	100% (3 of 3)	100% (3 of 3)	100% (3 of 3)	100% (3 of 3)
Sample-level score	3	3	3	3
Sample met fidelity	Yes	Yes	Yes	Yes
Year 2 (2019–20 SY)				
Percentage of schools that met adequate implementation threshold	100% (9 of 9)	100% (9 of 9)	89% (8 of 9)	22% (2 of 9)
Sample-level score	3	3	3	0
Sample met fidelity	Yes	Yes	Yes	No
Year 3 (2021–22 SY)				
Percentage of schools that met adequate implementation threshold	25% (1 of 4)	75% (3 of 4)	100% (4 of 4)	0% (0 of 4)
Sample-level score	0	2	3	0
Sample met fidelity	No	No	Yes	No

Note: Samples met fidelity if they had a sample-level score of 3, which indicated at least 76% of schools in the sample (cohort) achieved the adequate implementation score for the given component.

APPENDIX D. PGC-MS LOGIC MODEL

Inputs

- Funding
- CSS Staff
- LEA Staff & Resources
- School Partner Resources
- On-site technical support/coaching
- Fidelity monitoring
- Structured, experiential PGC curriculum
- Support from stakeholder team
- Continuous improvement activities

Key Components

PROFESSIONAL DEVELOPMENT

- Experiential training (10-days) for selected school staff who serve as faculty advisors and stakeholder team coordinator
- On-site coaching for faculty advisor team

8th GRADE PEER LEADERS

- Team of 16-20 diverse 8th grade students are carefully selected to be peer leaders and serve as positive role models, discussion leaders, and mentors for 6th graders
- Peer leaders participate in 2-day, 1-night leadership training retreat facilitated by faculty advisors
- Peer leaders participate in daily credit-bearing (45-minutes, 5 days per week) leadership course co-taught by faculty advisor team during regular school hours
- Peer leaders work in pairs to co-lead and mentor groups of 8-10 sixth graders

6th GRADE PARTICIPANT ACTIVITIES

- 6th graders participate in at least 18 group mentoring/outreach sessions (45-minute/session) consisting of hands-on activities and simulations in supportive environments where students learn and practice essential academic, social, and emotional skills
- Family Night event
- 6th graders plan a welcome for the next year's incoming class of 6th graders

Mediators

IMPROVEMENTS IN SOCIAL AND EMOTIONAL LEARNING AND ENHANCED STUDENT ENGAGEMENT

- Increased school engagement
- Increased sense of connectedness among peers
- Increased achievement orientation/motivation
- Increased aspirations for future (future orientation)
- Increased self-awareness
- Increased self-acceptance
- Increased self-efficacy in goal setting skills
- Increased self-efficacy in decision-making skills
- Increased self-efficacy in communication skills
- Increased self-efficacy in help-seeking skills
- Increased self-efficacy in collaboration/teamwork skills

Student Outcomes

SHORT-TERM

- Greater courses passed (academic achievement indicator)
- Increased school attendance (engagement indicator; staying in school indicator)
- Fewer discipline incidents

LONG-TERM

- Increased grade-level on-time promotion rates
- Decreased high school dropout rates (i.e., greater persistence in school)
- Increased on-time high school graduation rates
- Increased college enrollment and completion; and success in careers