HELPING STUDENTS MAKE THE TRANSITION INTO HIGH SCHOOL

The Effect of Ninth Grade Academies on Students' Academic and Behavioral Outcomes

Marie-Andrée Somers
Ivonne Garcia

June 2016

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BUILDING KNOWLEDGE
TO IMPROVE SOCIAL POLICY

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with

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Overview

Ninth Grade Academies (NGAs) — also called Freshman Academies — have attracted national attention as a particularly intensive and promising approach for supporting a successful transition for high school freshmen. An NGA is a self-contained learning community for ninth-graders that operates as a school within a school. NGAs have four core structural components: (1) a designated separate space within the high school, (2) a ninth-grade administrator who oversees the academy, (3) a faculty assigned to teach only ninth-grade students, and (4) teachers organized into interdisciplinary teams that have both students and a planning period in common. The theory of action behind NGAs is that when these components are employed together, they interact to create a more personalized learning environment where ninth-grade students feel less anonymous and more individually supported. This, in turn, should help students succeed in school and stay on track to high school graduation. NGAs have shown promising results when employed as part of a whole-school reform model, but in these cases schools have received external support from a developer to create and sustain them. A growing number of schools and districts have been experimenting with NGAs on their own, but the little research that exists on their effectiveness is limited to anecdotal accounts.

This study, which is based on a quasi-experimental research design, examines the effect of NGAs on students' progress toward graduation, their academic achievement, and their behavior in several school districts in Florida. The sample for this study includes 27 high schools that created NGAs between 2001-2002 and 2006-2007, along with 16 comparison high schools that serve ninth-grade students with similar characteristics as students in the NGA schools. As context for understanding the impact findings, this study also looks at the extent to which the key features of the NGA model were implemented in the NGA schools in the study and how this differs from the structures and supports in the comparison schools.

The key finding is that the NGAs in this study do not appear to have improved students' academic or behavioral outcomes (credit earning, state test scores, course marks, attendance, suspensions, or expulsions). The findings also suggest that it can be difficult for schools to fully implement the components of the NGA model without expert assistance: Three years after their creation, only half the NGAs in the study had all four structural components of the model in place. Nationally, school districts continue to create NGAs, and recent efforts to implement them have incorporated various enhancements that are intended to strengthen and improve their implementation, but little is known about their effectiveness. Because students' experience in ninth grade is an important predictor of their future success, these efforts to create and improve NGAs should be examined in future studies.

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Preface

Although graduation rates have improved in recent years, far too many students still do not complete high school. Numerous students stray off the path to graduation when they enter high school, which can be a challenging transition for students both academically and socially. New freshmen must find their way around an unfamiliar and typically much larger school than they are used to. Unlike in middle school, students are expected to manage their own behavior, and they are held less accountable for class attendance and the effort they put into their school work. As a result, the average student's course performance declines in ninth grade. Preventing this collapse is crucial to helping students succeed. Important work by the University of Chicago Consortium for School Research and others has shown that students who pass their ninth-grade classes are more likely to graduate from high school and attend college.

This report looks at the effect of an approach that has been adopted by many schools and districts in the country: Ninth Grade Academies (NGAs) — self-contained learning communities for ninth-graders that operate as small schools within larger high schools, with their own administrative leaders, faculty, space, and team organization. They strive to offer freshmen a more personalized, engaging, and responsive learning environment.

Most of the high schools in the study, located in several Florida school districts, created their NGAs in 2005 or 2006. Using a quasi-experimental evaluation, the study found that these NGAs do not seem to have succeeded at improving their students' academic and behavioral outcomes. But many of these schools were not able to implement the NGA model fully; only about half put in place all the model's core components. An earlier implementation study conducted by MDRC in Broward County — one of the districts in this study — found that an even smaller proportion of schools implemented the components as strongly as intended.

Despite these disappointing results, MDRC's study should not be the last word. The Talent Development Secondary model, which begins with an NGA as a core component, has produced positive effects in other studies. Moreover, schools and districts across the country have continued to create NGAs, and recent efforts have combined NGAs with different kinds of enhancements to improve their implementation. Because students' success in ninth grade is so important to their later success — and given how few interventions have been shown to help freshmen — there is a need for researchers and practitioners to continue to evaluate and strengthen NGAs so that they can fulfill their potential.

Gordon L. Berlin
President

Acknowledgments

Executive Summary

The transition into high school is a volatile time for adolescents and a precarious point in the course of their education. Ninth-graders who successfully navigate this transition are far more likely to graduate from high school with their peers and attend college than those who experience failure their freshman year.[1] Growing awareness of the importance of the first year of high school for future success has prompted schools and districts across the country to develop forms of support and interventions designed specifically for ninth-graders.

Ninth Grade Academies (NGAs) — also called Freshman Academies — have attracted national attention as a particularly intensive and promising approach for supporting a successful transition for high school freshmen. An NGA is a self-contained learning community for ninth-graders that operates as a school within a school. With its own administrative team, faculty, and space, an NGA is designed to offer ninth-graders a more personalized, engaging, and responsive learning environment and, by extension, to help students stay on track to high school graduation. NGAs are a core element in several comprehensive high school reform models, such as High Schools That Work and Talent Development Secondary. In addition, a growing number of schools and districts have been experimenting with NGAs themselves, without external or specialized assistance.[2]

This study, which is based on a quasi-experimental research design, examines the effect of NGAs on students' progress toward graduation, their academic achievement, and their behavior in several school districts in Florida.[3] As context for understanding the impact findings, this study also looks at the extent to which the key components of the model were implemented in the study schools that created an NGA and how these features differ from the structures and support services in a group of similar comparison high schools.

What Are Ninth Grade Academies and Why Evaluate Them?

An NGA is a self-contained small learning community in which a group of administrators and teachers work exclusively with ninth-grade students to create a school within a school that is responsive to the academic and social needs of incoming and repeating freshmen. NGAs have four core structural components: (1) a designated separate space in the high school, (2) a ninth-grade administrator who oversees the academy, (3) a faculty assigned to teach only ninth-grade students, and (4) teachers organized into interdisciplinary teams that have both students and a

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[1]Roderick, Kelley-Kemple, Johnson, and Beechum (2014).

[2]Kennelly and Monrad (2007); Chmelynski (2004); Kilanski, Smerdon, Legters, and Evan (2012).

[3]This study is funded by a research grant from the U.S. Department of Education's Institute of Education Sciences (Evaluation of State and Local Education Programs and Policies Grant #R305E090019).

planning period in common. In addition to these structural components, NGAs incorporate supportive practices that can include a "summer bridge" program for rising freshmen; a curriculum to help students who are behind catch up and close achievement gaps; extra academic help outside of school hours; and a curriculum focused on career and college awareness. NGAs can also be paired with data-driven progress monitoring and positive behavior incentive systems.[4]

The theory of action behind NGAs is that when the core structural components of the NGA model are put in place together, they interact to foster a more personalized learning environment where ninth-grade students feel less anonymous and more individually supported. In a well-implemented NGA, ninth-grade students are located in a *separate space*, which promotes an environment where students and teachers can get to know each other and interact more regularly. *NGA teachers work exclusively with ninth-grade students*, so students have a consistent group of adults who are accountable for their success and are aware of their specific social and academic needs. In a well-implemented NGA, *interdisciplinary teaching teams* are important: Ninth-grade teachers from different content areas meet regularly to coordinate their course work and their instructional and behavioral management practices to better serve their students and maintain students' academic effort and engagement. During these meetings, teachers also identify students who need extra help and are especially at risk of dropping out, and strategize about how to connect them with specialized support services. A well-implemented NGA is also *overseen by a dedicated administrator*, who coordinates all other components of the model so that ninth-grade students' needs are met. Together, the structural components of the NGA model are intended to create a more personalized learning environment for students — one where students are less anonymous and more accountable, where they feel a greater sense of community, and where they receive individual help. Ideally, these changes in students' ninth-grade experience should lead to improvements in their behavior and their academic achievement in ninth grade, and ultimately their progress toward high school graduation.

Unfortunately, there is little rigorous empirical research on the effectiveness of NGAs. What research exists has focused on the effect of the comprehensive reform models that include NGAs, as opposed to the effect of NGAs in isolation. In general, these studies have found that NGAs — when implemented as part of a whole-school reform model — appear to improve student outcomes. A quasi-experimental study published by MDRC in 2005 investigated the impact of the Talent Development Secondary high school model — which includes NGAs as a core component — in five high schools in Philadelphia. Each of the high schools in the study received intensive, on-site support from facilitators at Johns Hopkins University, where the model was developed. The study found that the Talent Development Secondary model appeared

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[4]Southern Regional Education Board (2002); Cook, Fowler, and Harris (2008).

to produce significant and substantial positive effects during students' first year of high school in attendance, academic course credits earned, and promotion rates.[5]

Though promising, these findings reflect the effects of NGAs for schools that received external support from a developer to create and sustain their NGAs. Yet many schools and districts have been experimenting with NGAs by themselves, without external or specialized assistance.[6] Whether NGAs implemented in this context are effective is limited to anecdotal accounts that reflect mixed experiences and results.[7]

Therefore, an important and policy-relevant question is whether it is feasible to try to implement strong, effective NGAs in the absence of a whole-school reform approach and without external support from a developer. Accordingly, this study examines the effects and the characteristics of 27 NGAs that were created in several school districts in Florida from 2001 to 2006, during their first three years of implementation.

How Was the Effect of NGAs Evaluated in This Study?

This study uses a comparative interrupted time series design (CITS) to evaluate the effect of NGAs.[8] In the CITS design, two groups of schools are studied: those that implemented an intervention (program schools) and those that did not (comparison schools). The first step in the CITS design is to look at the trend in student outcomes for the program and comparison schools during the school years *before* the intervention was launched (baseline trends). The second step is to gauge by how much the program and comparison schools "deviated" from their baseline trend *after* the intervention was launched. The two groups of schools are then compared not directly on their outcomes but on deviations from their baseline trends. In the present study, the effect of NGAs is examined by looking at whether high schools that implemented NGAs experienced larger and more positive deviations from trend than a group of matched comparison schools, with respect to their ninth-grade student outcomes (such as percentage of core credits earned by students). The CITS design is more rigorous than many other quasi-experimental designs because it combines data collected at several time points with data from a matched comparison group. This combination makes it more plausible that estimated effects from a CITS design can be attributed to the effect of NGAs, because when the match is strong it can eliminate many alternative explanations for why deviations from trend would be different for the

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[5]Kemple, Herlihy, and Smith (2005).

[6]For example, in the 2013-2014 school year, the DC Public Schools also decided to launch NGAs in nine high schools (District of Columbia Public Schools, 2013).

[7]Kennelly and Monrad (2007); Chmelynski (2004); Kilanski, Smerdon, Legters, and Evan (2012).

[8]For a discussion and history of CITS designs, see Shadish, Cook, and Campbell (2002). For a discussion of these designs in the context of education research, see Bloom (2003).

NGA schools and the comparison schools.[9] The CITS design has been shown to be able to reproduce the results of a randomized experiment in those circumstances when the criteria for a well-implemented design can be met (which they appear to have been in this study).[10]

The sample for this study includes 27 high schools in Florida that created NGAs. These NGAs were launched between 2001-2002 and 2006-2007 in eight urban school districts (Brevard, Broward, Duval, Hillsborough, Lee, Orange, Palm Beach, and Pinellas). The study sample also includes 16 comparison high schools whose trends in ninth-graders' outcomes and whose school characteristics were similar to those of the NGA schools before NGA implementation.[11] Various sensitivity tests suggest that the comparison schools provide a credible reference point for what would have happened to the NGA schools had they not implemented the academies. This, in turn, increases this study's ability to evaluate whether the NGAs *caused* any changes in ninth-grade student outcomes.

Were the NGA Schools Able to Implement the Structural Features and Support Services of the NGA Model?

This study examines the extent to which the 27 high schools were able to put in place the components of the NGA model. As discussed earlier, some components are not unique to the NGA model, so this study also examines whether elements of the NGA model were being used in some of the comparison schools as well. Information for this analysis comes from a survey that was sent to the administrators of all high schools in the eight study districts in spring 2011, asking them to report on whether they were implementing the different structural components and support services associated with an NGA, and if so, in what year they started implementing them. The key findings are as follows:

- **Many of the NGAs in the study were unable to implement all four structural components.** Three years after their creation, only half the NGAs in the study had implemented all four components of the NGA model.

- **Some of the features of the NGA model were also part of the ninth-grade experience in the comparison schools.** The comparison high schools in this study, for example, provide different kinds of support services to their ninth-grade students, and a substantial percentage of them have a dedicated ninth-grade faculty.

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[9]Corrin and Cook (1998).

[10]St. Clair, Cook, and Hallberg (2014); Somers, Zhu, Jacob, and Bloom (2013); Fretheim et al. (2013).

[11]One comparison school was selected for each NGA school. However, the total number of unique comparison schools is less than the total number of NGA schools, because some comparison schools were selected as the match for more than one NGA school. Statistical hypothesis tests are adjusted to account for the fact that some comparison schools are included in the analysis multiple times.

- **The main difference between the NGAs and the comparison schools is with respect to space, leadership, and teaching teams.** The NGAs in the study are much more likely than the comparison schools to report having a dedicated space for ninth-grade students, a dedicated administrator watching over the ninth grade, and teaching teams.

An important finding to emerge from this study is that some of the features of the NGA model, particularly support services and dedicated faculty, are also part of the ninth-grade experience in the comparison schools. This practical reality confirms that what distinguishes the NGA model is not its individual components, but rather the idea that when the components are put in place together, they should interact to promote an environment where adults make a concerted effort to be aware of and responsive to student needs. Unfortunately, it was not possible in this study to measure how *well* the components of the NGA model were implemented in the study schools — only whether the components were present or absent.[12] Therefore, even though the NGA schools and the comparison schools do appear to differ structurally, it is unclear whether these differences were sufficient to have created a more personalized learning environment for ninth-grade students in the NGA schools.

Did the NGAs in the Study Improve Student Outcomes?

This study next examines whether the NGAs were able to achieve their ultimate goal: to improve ninth-grade student outcomes. Outcomes in three domains are explored: *school progress* (as measured by credits earned in core subject areas),[13] *academic achievement* (as measured by students' proficiency on state tests in English language arts and math, and their grade point average in core subject areas), and *student behavior* (as measured by average attendance rates, in- and out-of-school suspensions, and expulsions). These outcomes were measured using student-level data for multiple cohorts of ninth-grade students, provided by the Florida Department of Education. A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The effect of NGAs is estimated for the first three cohorts of ninth-grade students to enroll in the study schools, corresponding to the first three years of NGA implementation. Table ES.1 summarizes the findings for the third year of implementation.

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[12]Measuring implementation quality would have required conducting site visits to observe the teachers and ninth-grade students in the NGAs. This was not possible because the study is retrospective (it is based on a sample of ninth-grade students who were in the NGAs before the start of this research study).

[13]The core subject areas are English language arts, math, science, and social studies.

Table ES.1

**Estimated Effect of NGAs on Student Outcomes in Ninth Grade,
Third Year of NGA Implementation**

Outcome	Deviations from Baseline Trend			P-Value for Estimated Effect
	NGA Schools	Comparison Schools	Estimated Effect	
Progress toward graduation				
Credits earned in core subjects				
(as % needed to graduate)	-3.24 †††	-1.92	-1.31	0.397
Academic achievement				
Proficient on ELA state test (%)	2.47 ††	0.82	1.65	0.409
Proficient on math state test (%)	-3.44 ††	-1.29	-2.15	0.307
GPA in core subject areas (out of 4.0)	-0.06	-0.09 †	0.03	0.619
Behavior (%)				
Attendance rate	-2.14 †††	-1.76 †	-0.38	0.748
Received an in-school suspension	-1.17	2.04	-3.21	0.448
Received an out-of-school suspension	2.49	4.62 †††	-2.13	0.423
Were expelled	-0.02	0.05	-0.06	0.155
Number of schools (total = 43)	27	16		

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.

The findings in this table represent the estimated effect of NGAs for the third cohort of students who entered the study schools after the NGAs were launched. A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. Ninth-grade outcomes are measured in students' first year of high school.

The values in the columns labeled "NGA Schools" and "Comparison Schools" are the estimated deviations from baseline trend. Rounding may cause slight discrepancies in calculating sums and differences.

A two-tailed t-test was applied to estimated deviations and estimated differences between NGA schools and comparison schools. The statistical significance of estimated deviations is indicated as: ††† = 1 percent; †† = 5 percent; † = 10 percent. The statistical significance of estimated effects is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

- **Overall, there is no conclusive evidence that the NGAs in this study improved ninth-grade students' outcomes.**

After the NGAs were created, ninth-grade students in the NGA schools actually performed worse than predicted (relative to their schools' baseline trends) on a range of different

academic and behavioral outcomes. So did students in the comparison schools. This suggests that external factors unmeasured in this study (such as a new statewide accountability system) may have caused a general decline in student outcomes in all the study schools, and that creating NGAs did not help schools avoid this decline.

For example, Figure ES.1 shows the trend in credits earned in core subject areas in ninth grade (as a percentage of core credits required for graduation). In the years before the NGAs were created, credit earning was on the rise in both the NGA schools and the comparison schools. But after the NGAs were launched, the NGA schools' deviations from their baseline trend were statistically negative for this outcome, which indicates that ninth-grade students in the follow-up cohorts earned *fewer* credits than would have been predicted based on earlier cohorts' credit earning. Ninth-grade students in the comparison schools also performed worse than expected. Although the NGA schools deviated from their baseline trend by a slightly greater (more negative) amount than the comparison schools on the percentage of credits earned, the difference in their deviations from trend is not statistically significant (estimated effect = -1.31 percentage points and p-value = 0.397 in the third year of implementation). The conclusion is that the NGA schools did not improve the percentage of credits earned by ninth-grade students, whether in absolute terms or relative to the comparison schools.

- **Nor is there any conclusive evidence that the subgroup of NGA schools that implemented all four core structural components had an effect on ninth-grade students' outcomes.**

The effect of NGAs was separately examined for the 14 NGA schools that implemented all four core structural components during the follow-up period (dedicated space, dedicated administrator, dedicated faculty, and teaching teams). The hypothesis is that by doing so, these schools were able to set up an organizational structure more conducive to creating a personalized learning environment for ninth-grade students. However, estimated effects on student outcomes for these 14 NGA schools are similar to the results for the full sample.

Discussion

The findings from this study suggest that creating effective Ninth Grade Academies can be difficult. The NGAs in this study do not appear to have improved ninth-grade students' progress toward graduation, their academic achievement, or their behavioral outcomes. Even among the subgroup of NGA schools that implemented all four core structural components, student outcomes do not seem to have improved. One hypothesis for this pattern of results is that the core NGA components may not have been implemented as intended in the study schools, and that as a result, staff members were not able to create the anticipated personalized ninth-grade experience.

Figure ES.1

**Baseline Trends and Deviations from Baseline Trend in the Percentage of
Core Credits Earned in Ninth Grade**
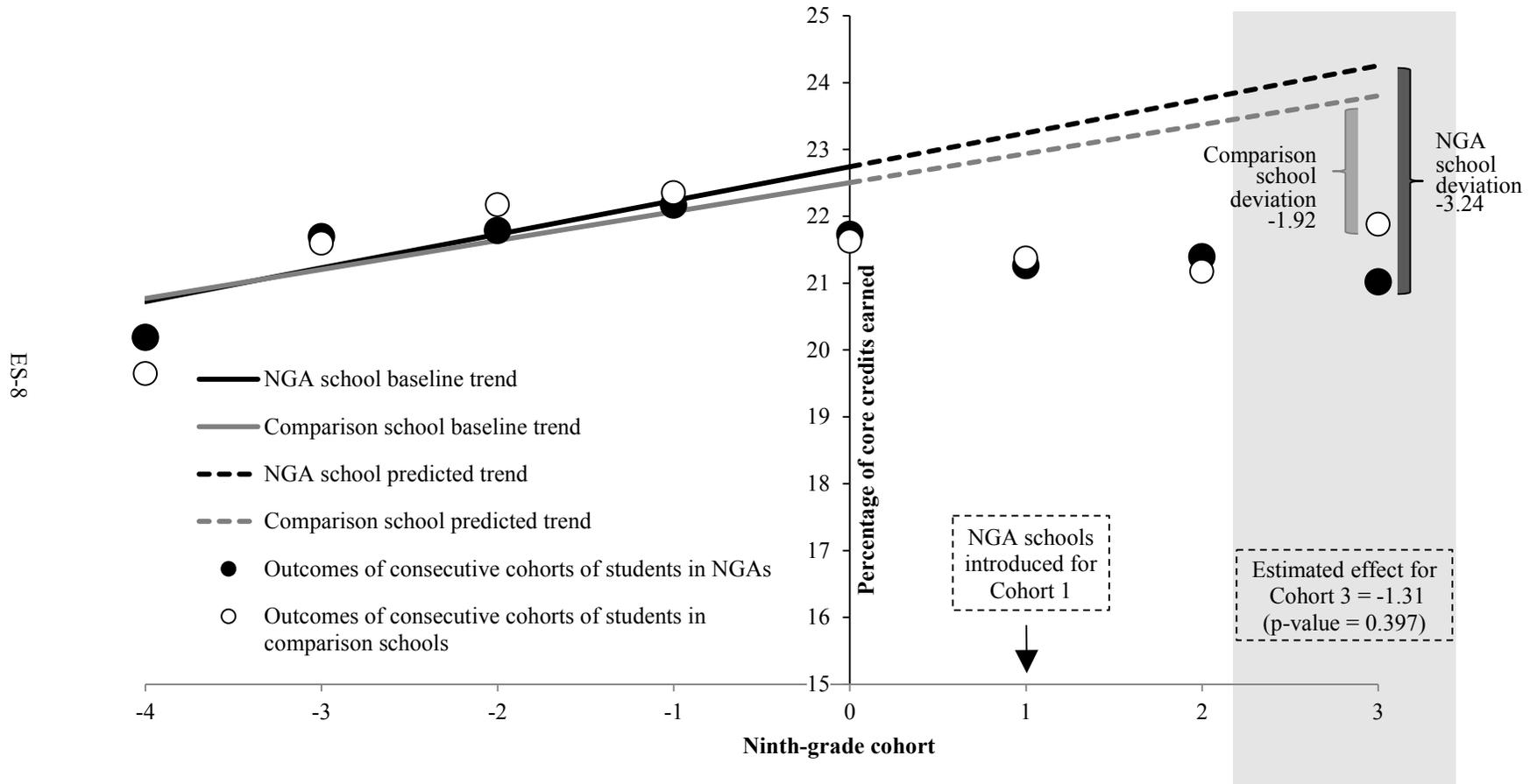
SOURCE: Student records from the Florida Department of Education.

NOTE: The estimated effect of NGA schools is equal to the estimated deviation from baseline trend for the NGA schools minus the estimated deviation from baseline trend for the comparison schools. The estimated effect of NGA schools shown in this figure is not statistically significant at the 10 percent level.

In recent years, districts and comprehensive reform models using NGAs have been strengthening their academies with additional elements aimed at improving their implementation — such as monitoring systems to identify students at risk of dropping out, mentoring by near peers, and communities of practice that bring together NGA staff members to receive training, share their experiences, and learn from each other. Because students' experience in ninth grade is an important predictor of their future success, these efforts to create and improve NGAs should be examined in future studies. In order to provide the most rigorous evidence of their effectiveness, it would also be of benefit to the field for researchers to partner with districts that would be willing to randomly select which high schools will implement new NGAs; as of yet all studies of NGAs have been based on quasi-experimental research designs. Future studies should also measure how well the NGA components are being implemented and whether they create a more personalized learning environment, so that the NGA theory of action can be fully understood and tested.

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Chapter 1

Introduction

The transition into high school is a volatile time for adolescents and a precarious point in the course of their education. Ninth-graders who successfully navigate this transition — and pass their ninth-grade classes — are far more likely to graduate from high school with their peers and attend college than those who experience course failure in their freshmen year.[1]

Unfortunately, the traditional structure and organization of a high school does not promote a successful ninth-grade transition. In most high schools, teachers assume that students should manage their own behavior. Ninth-grade students are given more autonomy than in middle school, and academic effort is framed as an option rather than an obligation.[2] Because high school teachers are organized by department (math, English language arts, etc.), they work with students across all grade levels, which makes it more challenging for them to pay close attention to their ninth-grade students' academic effort, engagement, and attendance. Faced with this new freedom and relative anonymity, the average student shows a decline in course performance after entering high school — not because the material is more difficult, but because the student exerts less academic effort and attends classes less regularly.[3]

Yet growing awareness of the importance of the first year of high school for future success has prompted schools and districts across the country to develop support services and interventions designed specifically for ninth-graders. Ninth Grade Academies (NGAs) — also called Freshman Academies — have attracted national attention as a particularly intensive and promising approach for supporting a successful transition for high school freshmen. An NGA is a self-contained learning community for ninth-graders that operates as a school within a school. With its own administrative team, faculty, and space, an NGA is designed to offer ninth-graders a more personalized, engaging, and responsive learning environment that is closer to what students would experience in middle school. This, in turn, should help students to better navigate the high school environment and stay on track to graduation.

This study, which is based on a quasi-experimental research design, examines the effect of NGAs on students' progress toward graduation, their academic achievement, and their behavior in several school districts in Florida.[4] To provide context for understanding the impact

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[1]Roderick, Kelley-Kemple, Johnson, and Beechum (2014); Allensworth and Easton (2005); Allensworth and Easton (2007).

[2]Rosenkranz, de la Torre, Stevens, and Allensworth (2014).

[3]Rosenkranz, de la Torre, Stevens, and Allensworth (2014).

[4]This study is funded by a research grant from the U.S. Department of Education's Institute of Education Sciences (Evaluation of State and Local Education Programs and Policies Grant #R305E090019).

findings, this study also looks at the extent to which the key features of the NGA model were implemented in the NGA schools in the study, and how these features differ from the structural characteristics and support services in schools that are not implementing NGAs.

The remainder of this chapter provides further background on NGAs — including a summary of existing research on their effectiveness — and the research questions that guide this study. Chapter 2 discusses the analytical framework used in this report. Chapter 3 examines the implementation of the NGAs and the features offered in the non-NGA high schools. Chapter 4 looks at the effect of the NGAs on ninth-grade student outcomes. Chapter 5 concludes by reflecting on some of the key lessons that can be drawn from the study's results.

Ninth Grade Academies: Features and Theory of Action

An NGA is a self-contained small learning community in which a group of administrators and teachers work exclusively with ninth-grade students to create a personalized school within a school that is responsive to the academic and social needs of incoming and repeating freshmen. NGAs have four core *structural components:* (1) a designated separate space in the high school, (2) a ninth-grade administrator who oversees the academy, (3) faculty assigned to teach only ninth-grade students, and (4) teachers organized into interdisciplinary teams that have both students and a planning period in common. In addition to these structural components, NGAs also incorporate *instructional and student support practices* aimed at promoting success for ninth-grade students. Instructional support can include an interdisciplinary curriculum coordinated across ninth-grade classes; flexible scheduling that allows teachers to regroup students as needed to provide targeted help or skill development; a curriculum to help students who are behind catch up and close achievement gaps; and a curriculum focused on career and college awareness. NGAs may also support students with a "summer bridge" program for rising freshmen, extra help in core academic subjects, data-driven progress monitoring, and positive behavior incentive systems.[5]

The theory of action behind NGAs is that when the core structural components of the NGA model are implemented together, they interact to foster a more personalized learning environment where ninth-grade students feel less anonymous and more individually supported (see Figure 1.1). In a well-implemented NGA, ninth-grade students are located in a *separate space*, which promotes an environment where students and teachers can get to know each other and interact more regularly. NGA teachers *work exclusively with ninth-grade students*, so students have a consistent group of adults who are accountable for their success and are aware of their specific social and academic needs. *Interdisciplinary teams* of ninth-grade teachers, who share

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[5]Southern Regional Education Board (2002); Cook, Fowler, and Harris (2008).

Figure 1.1

Theory of Action for Ninth-Grade Academies

Situation and Diagnosis of Need for NGAs	Intervention	Ninth-Grade Experience	Student Outcomes

Situation and Diagnosis of Need for NGAs

Low student achievement and high rates of course failure

Low academic effort and poor attendance

Lack of student engagement and sense of community

Lack of personal attention for students in ninth grade, making it easier to fall behind

Low graduation rates

Intervention

Four Core NGA Structural Components

Dedicated NGA space
NGA administrator
Dedicated NGA faculty
Interdisciplinary teacher teams

Curricular and Student Support Services

Curriculum and Instruction

Curriculum that prepares students for college and career, allows for credit recovery, and teaches study and social skills

Flexible scheduling that allows teachers to regroup students throughout the year

Use of common planning time to integrate instruction more fully across classes and address whole needs of students

Student Support

An orientation program that creates and fosters a smooth transition into high school

Extra help in academic subjects, if needed

Use of data to identify attendance, behavior, and course performance problems

Recognition of students for their academic successes and positive behaviors

Personalized Learning Environment

Students feel less anonymous and more accountable

Students receive individual support that addresses their specific academic and social needs

Student Outcomes

Short-term (ninth-grade) outcomes

Improved *student behavior*, as measured by attendance rates and discipline

Improved *student achievement*, as measured by course marks and test scores

Improved *school progress*, as measured by credits earned

Longer-term outcomes

Improved *student attainment*, as measured by high school graduation

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students, meet regularly to coordinate their course work and their instructional and behavior management practices so that they can respond to the needs of their students and help them maintain their academic effort and engagement. During these meetings, teachers also identify students who need extra help and are especially at risk academically and develop strategies to connect them with specialized support. A well-implemented NGA is also *overseen by a dedicated administrator*, who coordinates all other components of the model so that ninth-grade students' needs are met. Together, the structural components of the NGA model are intended to create a more personalized learning environment. (Box 1.1 presents a summary of what this environment involves.) Ideally, these changes in students' ninth-grade experience should lead to

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Box 1.1

**What Is a Personalized Learning Environment and
How Do NGAs Foster It?**

Ninth Grade Academies (NGAs) are intended to create a more personalized learning environment for ninth-grade students than in a typical high school. What are the elements of this environment?

- **Less anonymity and greater accountability.** Students feel like they are part of a community of learners and that they are accountable for their behavior and academic performance.

- **Individual help.** Students receive individually tailored help and support services that are responsive to their specific academic and social needs.

When the core structural components of an NGA are well implemented, they can help create this kind of environment for ninth-grade students.

- **Dedicated space.** Ninth-grade classes are located in a separate space. This addresses anonymity and accountability by creating a communal environment where teachers and students know each other better and share common goals.

- **Dedicated faculty.** Because teachers work exclusively with ninth-graders, they are more aware of the specific needs of their students.

- **Interdisciplinary teaching teams.** Teachers share a group of students and meet with each other regularly to discuss the challenges faced by specific students and to develop strategies for helping them.

- **Dedicated administrator.** The ninth-grade administrator oversees the NGA and coordinates staff efforts to be aware of and responsive to students' needs.

improvements in their behavior and their academic achievement in ninth grade, and ultimately their progress toward high school graduation. It is worth noting that some components of the NGA model (like dedicated faculty and teaching teams) can be used by schools independent of creating an NGA. Therefore, the particular value (and anticipated effects) of the NGA model stem from the *interaction* among its components and the personalized learning environment that it is intended to create.

NGAs are a core element in several comprehensive high school reform models. For example, as part of the High Schools That Work (HSTW) model, an initiative developed by the Southern Regional Education Board, many high schools designate a separate part of the building for ninth-grade students, and ninth-grade teachers have common planning time where they assess students and arrange interventions for students who are struggling.[6] NGAs are also a critical element of Talent Development Secondary (TDS), which is a whole-school education reform developed by Johns Hopkins University that combines school restructuring with curricular and instructional reforms, as well as extended learning time for students at risk of dropping out. Both HSTW and TDS offer on-site technical assistance to schools implementing these models.

A growing number of schools and districts have been experimenting with NGAs themselves, without external or special assistance.[7] Through the federal Small Learning Communities grant program, for example, several school districts have received funding from the U.S. Department of Education to implement NGAs.[8] In the 2013-2014 school year, DC Public Schools launched NGAs in nine high schools using a combination of district and federal funds.[9]

Debates persist, however, about the design of NGAs, and in particular the wisdom of separating ninth-graders from upper-grade students. A key concern is that NGAs isolate ninth-graders and delay their full entry into high school. High schools in Sarasota, Florida, for example, discontinued their NGA initiative in part because administrators and parents perceived that ninth-graders were being forced to navigate two difficult transitions, one into the NGA and then a second into tenth grade.[10]

There are also questions about the feasibility of implementing NGAs. Simply putting in place the structural components of an NGA is not sufficient for creating a more personalized learning environment. School staff members must also make a concerted effort to work together to "activate" these components and take advantage of the opportunities afforded by the NGA

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[6]Smith (2005).

[7]Kennelly and Monrad (2007); Chmelynski (2004); Kilanski, Smerdon, Legters, and Evan (2012).

[8]For example, among the 2010 district or state grantees of the U.S. Department of Education's Small Learning Communities grant program, several of the 28 grantees planned to create an NGA or enhance an existing NGA in their high schools (U.S. Department of Education, 2015).

[9]District of Columbia Public Schools (2013).

[10]Scott (2006).

structure. Yet, as content area specialists, high school teachers tend to interact more with teachers in their own departments, so interdisciplinary teaming and cooperation can be unfamiliar territory. Therefore, schools implementing NGAs may need to provide additional training and support to their ninth-grade teachers on how to work more effectively with each other across disciplines to meet the specific needs of ninth-grade students. External developers — because they can offer various additional support services and technical assistance — may be better equipped to help the school staff build collaborative relationships and systems that make the most of the NGA structure. For an individual school district that is trying to implement NGAs on its own, providing these additional staff support services could be challenging. This may explain why some district practitioners report very positive experiences with NGAs, while others have abandoned the NGA concept because they found it too costly and difficult.

Prior Research on NGAs and This Study's Research Questions

Given these debates, it is unfortunate that there is little rigorous empirical research on the effectiveness of NGAs. What research exists has focused on the effect of the comprehensive reform models that include NGAs, as opposed to the effect of NGAs in isolation. In general, these studies have found that NGAs — when implemented as part of a whole-school reform model — appear to improve student outcomes. A quasi-experimental study published by MDRC in 2005 investigated the impact of the TDS high school model — which includes NGAs as a core component — in five high schools in Philadelphia. Each of the high schools in the study received intensive, on-site support from facilitators at Johns Hopkins University, where the model was developed. The study found that the TDS high school model appeared to produce significant and substantial positive effects during students' first year of high school in attendance, academic course credits earned, and promotion rates. Effects on credits earned and promotion rates also appeared to be sustained as students moved through high school.[11] Another nonexperimental study conducted by the North Carolina Department of Public Instruction examined the effect of NGAs implemented under a variety of whole-school reform models, including TDS and HSTW. The study found that ninth-grade students in NGA schools had lower nonpromotion and dropout rates when compared with students in similar schools across the state. The analysis was based on six years (2001-2007) of school summary data for 82 NGA schools and comparable high schools in the state.[12]

Though promising, these findings reflect the effects of NGAs for schools that received external support from a developer to create and sustain their NGA, and where the NGA is embedded within a larger reform model that makes a concerted effort to support ninth-grade students as they leave the NGA and make the transition into tenth grade. As noted earlier, how-

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[11]Kemple, Herlihy, and Smith (2005).
[12]Cook, Fowler, and Harris (2008).

ever, many schools and districts have initiated NGAs themselves, without (or with very little) external support. Whether or not NGAs implemented in this context are effective is limited to anecdotal accounts that reflect mixed experiences and results.[13] Given that districts and schools across the country continue to create NGAs, an important and policy-relevant question is whether it is feasible to try to implement strong and effective NGAs in the absence of a whole-school reform approach and without external support from a developer.

Accordingly, this study examines the effects and the characteristics of 27 NGAs that were created in several school districts in Florida from 2001 to 2006. The following questions are addressed:

1. To what extent were the key features of the NGA model implemented by the NGA schools in the study, and how do these features differ from the structural characteristics and support services in schools that are not implementing NGAs?

2. Did the NGAs improve students' school progress, their academic achievement, and their behavior in ninth grade?

The effect of the NGAs on student outcomes is examined using a comparative interrupted time series design. In this type of design, effects are assessed by looking at whether, after their NGAs were created, the average ninth-grade outcomes of schools that implemented NGAs "deviated" from their pre-NGA trends by a greater amount than a group of matched comparison schools with similar preintervention trends. This study also examines the extent to which, in practice, the NGAs in the study differed from their matched comparison schools with respect to their structural features and the support services provided to students. Thus, this study provides an opportunity to examine both the characteristics and potential effects of NGAs in a realistic and policy-relevant context.

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[13]Kennelly and Monrad (2007); Chmelynski (2004); Kilanski, Smerdon, Legters, and Evan (2012).

Chapter 2

Study Design

This chapter describes the analytical approach used in this study to evaluate the effect of Ninth Grade Academies (NGAs) on student outcomes. The first section provides an overview of the comparative interrupted time series (CITS) design, which is the quasi-experimental research design on which this study relies. The second section discusses the data sources that are used to measure the student outcomes and school characteristics of interest. The third section describes the NGA schools and the comparison schools included in this study, which are similar to each other with respect to the characteristics and baseline outcomes of their students.

The Comparative Interrupted Time Series Design

In this study, the effect of NGAs on student outcomes is evaluated using a CITS design, which is a quasi-experimental design that lends itself well to exploring the effect of school-wide interventions. CITS designs have been used for decades to evaluate interventions in areas such as epidemiology, political participation, substance abuse, advertising, and employment programs.[1] In education, CITS designs have been used to evaluate federal policies like No Child Left Behind and the effect of whole-school reform models.[2] Studies have shown that a well-implemented CITS design can, in some circumstances, reproduce the results of a randomized experiment.[3]

In the CITS design, program impacts are evaluated by looking at whether schools that implemented an intervention (in this case, NGAs) "deviated" from their baseline trends by a greater amount than a group of similar comparison schools. Figure 2.1 illustrates how the CITS design is applied in this study, using hypothetical data on students' progress toward graduation as measured by the percentage of required core subject credits that they have earned in ninth grade. The steps in the CITS design are as follows:

- **Mean outcomes by cohort.** First, student-level data are used to create a time series that represents the percentage of core credits that were earned by consecutive cohorts of ninth-grade students in the NGA schools (black dots) and the comparison schools (white dots). A ninth-grade cohort is defined as a

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[1]Bloom and Riccio (2005); Ballart and Riba (1995); Campbell and Ross (1968); Mulford, Ledolter, and Fitzgerald (1992). For a discussion and history of CITS designs, see Shadish, Cook, and Campbell (2002). For a discussion of these designs in the context of education research, see Bloom (2003).

[2]Dee and Jacob (2011); Wong, Cook, and Steiner (2009); Kemple, Herlihy, and Smith (2005).

[3]St. Clair, Cook, and Hallberg (2014); Somers, Zhu, Jacob, and Bloom (2013); Fretheim et al. (2013).

Figure 2.1

Using a Comparative Interrupted Time Series Design to Estimate the Effect of NGAs on the Percentage of Core Credits Earned in Ninth Grade: A Hypothetical Example
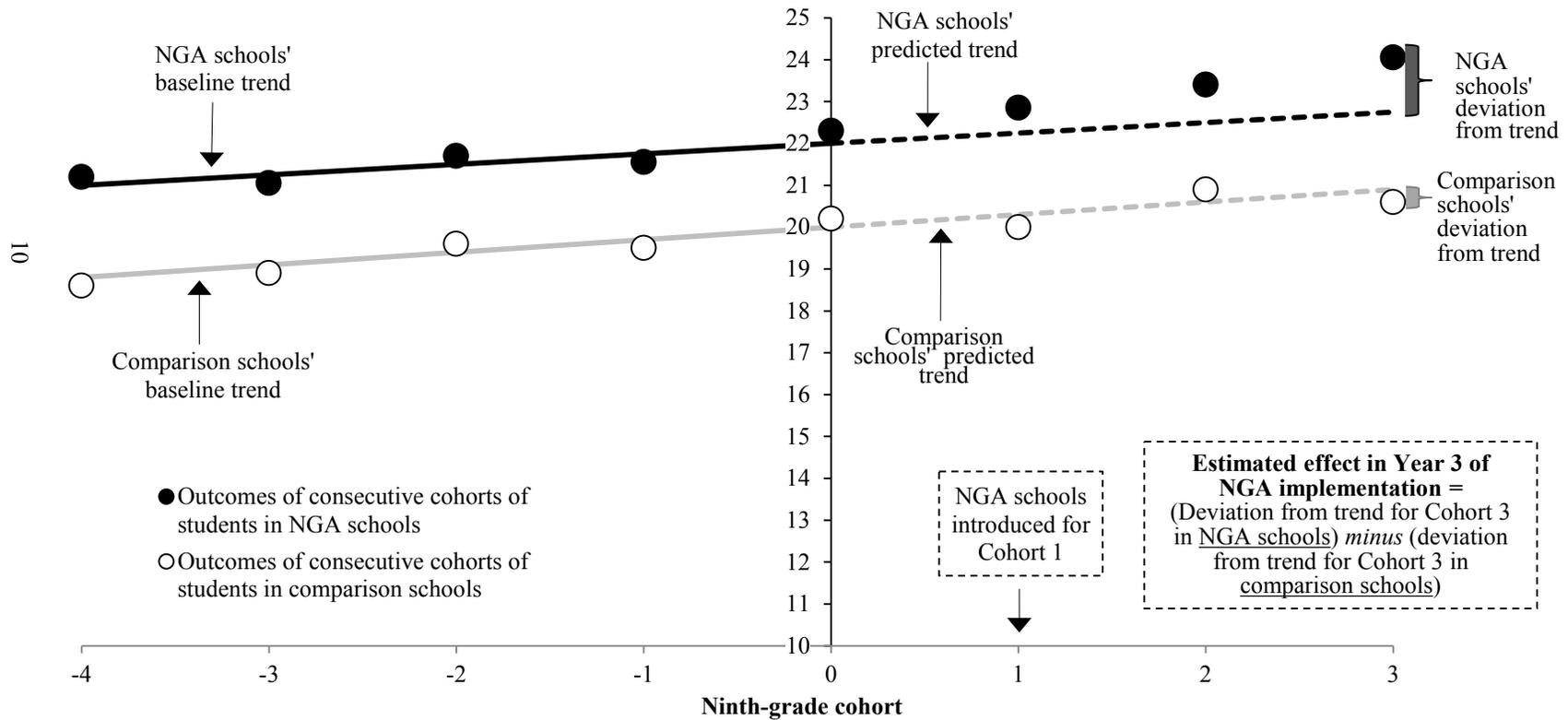
group of students who enter a high school in the same school year. The cohorts who entered the study high schools before the NGAs were created are referred to as the "baseline cohorts" and the cohorts who entered after the NGAs were created are the "follow-up cohorts."

- **Baseline trends.** The next step is to estimate the pre-NGA trend in student outcomes, based on the baseline cohorts of ninth-grade students.[4] Baseline trends are separately estimated for the NGA schools in the study (solid black line) and the comparison schools (solid gray line). These trends are then projected into the follow-up period, in order to predict what percentage of core credits the follow-up cohorts of students would have earned had their schools' baseline trends persisted (dotted lines).

- **Estimated deviations from the baseline trend.** The next step is to compare the percentage of core credits that the follow-up ninth-grade cohorts actually earned (the dots in the follow-up period) and what they would have earned had their schools' pre-NGA trends persisted (the dotted lines). These "deviations from baseline trend" are estimated for the NGA schools and the comparison schools for each follow-up cohort.

- **Estimated effect.** Finally, the effect of NGAs is estimated as the difference between the average deviation from baseline trend for the NGA schools and the average deviation from trend for the comparison schools. If the program is effective, then average deviations from trend for the NGA schools will be positive and greater than deviations for the comparison schools. The effect of NGAs is estimated for each of the first three cohorts of ninth-grade students to enroll in the NGAs (corresponding to the first three years of NGA implementation).[5]

The CITS design is more rigorous than most other quasi-experimental designs because it combines time series data with a matched comparison group. Together, these two design elements make it more plausible that estimated effects from a CITS design can be attributed to the effect of NGAs, because they can eliminate most alternative explanations for

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[4]A student's cohort is determined based on the *first school year* in which he or she entered ninth grade. For example, a student is a member of the 2005-2006 cohort if he or she enrolled in ninth grade for the first time in the 2005-2006 school year.

[5]Considering that it may take several years for a school to have all the NGA components in place with the intended level of quality — especially without outside technical assistance — it is important to look at the effect of NGAs for as many follow-up cohorts as possible. Given the data available for this study, the effect of NGAs can be examined up to and including the third year of implementation.

why deviations from trend would be different for the NGA schools and comparison schools.[6] First, by using several years of preintervention (baseline) data, the CITS design eliminates the possibility that estimated effects are actually due to differences in preexisting trends between the NGA schools and the comparison schools.[7] Second, by including a comparison group, the CITS design also reduces the possibility that estimated program effects are confounded with the effect of a state or district reform launched at the same time as the program being studied.[8] In a CITS design, the effect of other educational reforms or initiatives is captured by the comparison schools' deviations from their baseline trend, which is subtracted out when estimating the effect of the program.

This illustrates an important assumption of the CITS design: The comparison schools' deviations from their baseline trend are supposed to represent the deviations from trend that the NGA schools would have experienced *had they not implemented the program* ("the counterfactual"). To maximize the likelihood that this assumption holds, the NGA schools in this study were matched to comparison schools with similar baseline trends in the outcomes of the ninth-grade students that they served. Matching on the outcomes of earlier cohorts of ninth-grade students makes it more probable that the NGA schools and the comparison schools were motivated and affected by the same contextual factors. The selection of comparison schools is discussed in greater detail later in this chapter.

Measures and Data Sources

This study looks at the effect of NGAs on student outcomes in three domains: school progress (as measured by the number of credits earned in core subject areas in ninth grade, as a percentage of total core credits required for graduation);[9] academic achievement (as measured by students' proficiency on state tests in English language arts [ELA] and math, and their grade point average [GPA] in core subject areas); and student behavior (as measured by average attendance rates, in- and out-of-school suspensions, and expulsions). These outcomes — which correspond to the short-term outcomes in the NGA theory of action (Figure 1.1) — are measured at the end of students' ninth-grade year.[10]

Looking at the effect of NGAs on multiple outcomes increases the risk of mistakenly concluding that NGAs had a statistically significant effect on an outcome when in fact they did

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[6]Corrin and Cook (1998).

[7]This is also referred to as maturation bias (Shadish, Cook, and Campbell, 2002).

[8]This is also referred to as historical bias (Shadish, Cook, and Campbell, 2002).

[9]The core subject areas are English language arts, math, science, and social studies.

[10]Promotion to tenth grade is not used as an outcome in this study because there is variation in grade promotion policies across the school districts in the study.

not.[11] To reduce this risk, conclusions about NGAs' effectiveness in this study are based only on whether NGAs have an effect on core credits earned (the primary outcome). This outcome is primary because passing courses in ninth grade is a key predictor of high school graduation.[12] The effect of NGAs on the other outcomes is also examined, but only as a way of better understanding effects on credits earned.

All student outcomes were measured using student-level data for multiple cohorts of ninth-grade students provided by the Florida Department of Education (see Table 2.1 for further information). These data were obtained for the 1997-1998 to 2008-2009 ninth-grade cohorts for all high schools in eight urban school districts in Florida (Brevard, Broward, Duval, Hillsborough, Lee, Orange, Palm Beach, and Pinellas), which are referred to as the "study districts."[13] Given available data, it is possible to look at the effect of the NGAs for the first three cohorts of ninth-grade students who enrolled in them.

To understand the impact findings and put them in context, this study also looks at whether the schools in the study were able to put in place the core structural components and support services of the NGA model (the "intervention" in Figure 1.1). A survey was sent to the administrators of all high schools in the eight study districts in spring 2011. The survey asked administrators to report on whether they were implementing the different structural components and support services of an NGA, and if so, in what year they started implementing these components and supports.[14] Because the survey was sent to all schools, it can be used to examine not only whether the NGA schools in the study were able to implement the components of the model, but also to what extent these components differed from the characteristics and features of the comparison schools.

An important limitation of the survey is that it captures only whether the NGA components and support services were in place in the study schools. It does not measure whether the NGA components were implemented well, or whether the intended staff and student interactions that characterize a strong NGA were actually happening. Nor does it measure whether the NGAs resulted in a more personalized learning environment for ninth-graders, which is a key intermediate step in the NGA theory of action (the "ninth-grade experience" column in the theory of action in Figure 1.1). Measuring implementation quality and personalization would have required administering a student survey in the study schools and conducting site visits to observe teachers and students. Collecting these data was not possible because this

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[11]This is called a Type I error.

[12]Roderick, Kelley-Kemple, Johnson, and Beechum (2014); Allensworth and Easton (2005); Allensworth and Easton (2007).

[13]See Appendix A for further information about response rates for these data.

[14]The average response rate on the administrator survey was 70 percent.

Table 2.1

Sources for Ninth-Grade Student Outcomes and Measures of NGA Components

Outcome or Measure	Data Source	9th-Grade Cohort School Years
Progress toward graduation		
Credits earned in core subjects (as % needed to graduate)[a]	Student records	1997-1998 to 2008-2009
Academic achievement		
GPA in core subject areas (4-point scale)	Student records	1997-1998 to 2008-2009
Proficient on state ELA assessment	Student records	2000-2001 to 2008-2009
Proficient on state math assessment	Student records	2000-2001 to 2008-2009
Behavior		
Attendance rate	Student records	1997-1998 to 2008-2009
Received an in-school suspension	Student records	1997-1998 to 2008-2009
Received an out-of-school suspension	Student records	1997-1998 to 2008-2009
Were expelled	Student records	1997-1998 to 2008-2009
Ninth-grade structures and support services		
Presence of structural NGA components	Administrator Survey[b]	1997-1998 to 2009-2010
Curricular support	Administrator Survey[b]	1997-1998 to 2009-2010
Student support	Administrator Survey[b]	1997-1998 to 2009-2010

NOTES: ELA = English language arts; GPA = grade point average.

[a]Primary outcome.

[b]The Administrator Survey was sent out in Spring 2011. Administrators were asked to recall when they started/stopped implementing different NGA features.

study is retrospective — it is based on a sample of ninth-grade students who were in the NGA schools before this study began.

Finally, the study uses the Common Core of Data, collected by the National Center for Education Statistics, to describe the structural and demographic characteristics of the high schools in the study.

The Study Sample

In total, 27 NGA schools are included in this study. These NGAs were identified from the pool of high schools in the eight study districts that responded to the administrator survey, based on their responses about their ninth-grade structures and systems.[15] To be included as an NGA school in the study, a school had to meet several criteria:

- **NGA components.** Having a dedicated ninth-grade administrator or space is a strong signal that a school considers ninth-graders to have unique needs that require special attention. However, implementing one of these core structural components on its own would not be sufficient: At a minimum, each would need to be paired with one other structural component in order to make ninth-graders' experience substantially different from their experience in a more traditional setting. Therefore, in this study, a school was defined as having created an NGA if it implemented two of the four core structural components of the NGA model (dedicated space, dedicated administrator, dedicated faculty, and teaching teams),[16] and at least one of these components was either a dedicated administrator or a dedicated space. However, in theory, implementing all four core components could transform the ninth-grade experience even more, so this study also examines what percentage of schools were able to implement *all four* components (Chapter 3). In addition, as an exploratory analysis, the study looks at the effect of NGAs on student outcomes for the subgroup of schools that met this stricter criterion (Chapter 4).

- **NGA start year.** To be included in the study sample, a school must have created its NGA between 2001-2002 and 2006-2007, ensuring that student outcomes data were available for at least four baseline cohorts and three follow-up cohorts of ninth-grade students for use in the CITS analysis.[17]

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[15]The characteristics of the NGA schools in this study are quite similar to those of all schools in the study districts (see Table 2.2). Therefore, the survey respondents appear to be fairly representative of the average high school in the study districts.

[16]The teaching team for an NGA should be *interdisciplinary*, but for the purposes of defining NGAs, it was not always possible to determine from the survey whether the team was interdisciplinary, because of missing data on the related survey item. Therefore, a school with any type of teaching team is considered to have implemented this component.

[17]As noted earlier, data were available for the 1997-1998 to 2008-2009 ninth-grade cohorts. Therefore, a school had to have launched its NGA between 2001-2002 and 2006-2007 to have four years of preintervention data and three years of follow-up data.

- **Data availability.** The school had to have complete data on the outcomes of interest for all its baseline and follow-up cohorts.

- **School characteristics.** The school had to be a regular nonmagnet public school with a grade 9-12 configuration (so that the ninth grade represents a change in school for students).

As Table 2.2 indicates, the majority of the NGAs in the study were launched in 2005-2006 and 2006-2007, and the study districts with the most NGA schools are Broward (10), Duval (5), and Pinellas (5).[18] Relative to the study districts and the state, the 27 NGA schools in this study and their students are somewhat more academically and economically disadvantaged, as shown in Table 2.3. Compared with all ninth-grade students in the study districts, the students in the NGA schools in this study were less likely to be proficient on the state reading and math tests in eighth grade before they entered high school, and more likely to be eligible for free or reduced-price lunch. Relative to other high schools in the state and the study districts, the high schools in which the NGAs in this study are housed are more likely to be in urban areas, to be eligible for Title I funds,[19] and to have a higher proportion of black students.

The sample for this study also includes a group of 16 comparison schools. These comparison schools were selected from among the 31 schools that did not meet the study's operational definition for an NGA ("non-NGA schools") during the study period and that had outcome data for all student cohorts in the study design.[20] Each of the 27 NGA schools was matched to the non-NGA school in the comparison pool with the most similar ninth-grade outcomes and characteristics in the school years before NGA implementation.[21] Because the pool of non-NGA schools from which to choose was small, matching was conducted "with

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[18]The NGA "start year" is the year that the school "started supporting ninth-graders with structures, resources, and activities that constitute a significant departure from traditional practice." If a school did not report which year this happened — or if one of the four core components was implemented *more than two years* before the self-reported start year — then the start year of the NGA is the year when the school first reported having a dedicated administrator or a dedicated space.

[19]Title I is the federal funding stream designated for schools serving low-income students.

[20]The pool of non-NGA schools is small (31 schools) because not all schools in the study districts returned the administrator survey (30 percent did not respond) and because some schools that did return a completed survey had to be excluded for lack of a sufficiently long time series of data.

[21]Given the small number of non-NGAs available for matching, comparison schools were chosen based on a limited number of matching characteristics, including the following ninth-grade outcomes: baseline trends in core credits earned (the primary outcome), baseline means in GPA in core subjects, attendance rates, and retention rates. State test scores and schools' demographic characteristics were not included in the matching, because it was not possible to find comparison schools that were similar to the NGA schools with respect to both these characteristics and the other (more important) student outcomes.

Table 2.2

NGAs in the Study by District and Start Year

School District	Total Number of NGA Schools	First School Year of the NGA					
		2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007
Brevard	1					1	
Broward	10	1		1		4	4
Duval	5					2	3
Hillsborough	1					1	
Lee	2					1	1
Orange	2				1	1	
Palm Beach	1					1	
Pinellas	5				1	3	1
Total	27	1	0	1	2	14	9

SOURCE: Administrator Survey.

NOTE: A school is considered to have an NGA if it implemented two of the four core structural components of an NGA (dedicated space, dedicated administrator, dedicated faculty, team teaching), and at least one component is a dedicated administrator or dedicated space. The first year of the NGA is the year when a school reported that it "started supporting ninth graders with structures, resources, and activities that constitute a significant departure from traditional practice." If a school did not report a year when this happened -- or if one of the four core components was implemented *more than two years* before the self-reported start year -- then the start year of the NGA is the year when the school first reported having a dedicated administrator or a dedicated space.

replacement," which means that a comparison school could be chosen as the "best match" for more than one NGA school.[22]

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[22]The literature on matching also recommends that matching be conducted *locally* (in this case within a district). In this study, matching was conducted locally in two districts, but in the other six districts it was not possible to match locally because there were too few similar schools in the district. However, the trends in student outcomes in the eight study districts are similar, so matching outside of the district can still provide a credible counterfactual.

Table 2.3

Characteristics of NGA Schools in the Study Compared with Other High Schools in the Study Districts and the State, 2008-2009 School Year

| Characteristic | NGA Schools in the Study Sample | Study Districts | | All High Schools in Florida |
		All Survey Respondents	All High Schools	
School characteristics				
Eligible for free/reduced-price lunch (% of all students)	41.3	36.3	37.5	40.5
Racial/ethnic composition (% of all students)				
Black	36.7	29.1	29.5	24.2
Hispanic	17.0	18.6	19.3	19.7
White	39.5	45.2	44.4	50.6
Other	6.8	7.0	6.8	5.4
Ninth-grade enrollment	576.1	592.1	582.0	505.7
Pupil-teacher ratio (all grades)	17.8	18.3	18.0	17.8
Title I status (% of schools)	74.1	51.9	55.4	55.3
Location (% of schools)				
City	96.3	88.5	89.2	76.2
Town	0.0	1.0	0.7	5.5
Rural	3.7	10.6	10.1	18.3
Characteristics of 9th-grade students (%)				
Eligible for free/reduced-price lunch	49.6	44.5	45.4	NA
English language learners	6.2	5.6	5.8	NA
Proficient on 8th-grade ELA state test	50.9	55.7	53.5	NA
Proficient on 8th-grade math state test	64.8	69.3	67.7	NA
Number of schools	27	104	148	365

SOURCES: Common Core of Data and student records from the Florida Department of Education.

NOTES: ELA = English language arts; NA = data not available.

The study districts are Brevard, Broward, Duval, Hillsborough, Lee, Orange, Palm Beach, and Pinellas. Values for "all high schools" (last two columns) include all noncharter and nonmagnet regular public high schools that serve ninth- to twelfth-grade students.

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The final study sample includes 27 NGA schools and 16 unique matched comparison high schools.[23] Given this sample size, the study has the ability to detect an effect of 2.3 percentage points on core credits earned (the primary outcome) for the first cohort of ninth-grade students to enroll in the NGA schools, 3.1 percentage points for the second cohort, and 3.9 percentage points for the third cohort.[24] This translates into about one-third to one-half of a credit.

As explained earlier, in a CITS design, the NGA schools and the comparison schools should be as similar as possible in terms of the characteristics and outcomes of the students that they serve, as this increases the likelihood that the two groups of schools were motivated and affected by the same factors and that they faced similar contextual challenges. This, in turn, makes the comparison schools a more credible reference point for the NGA schools.

Accordingly, the first panel of Table 2.4 looks at the outcomes of the ninth-grade students who were enrolled in the study schools in the school year before the creation of the NGAs. These results show that, before the NGAs were created, ninth-graders in both the NGA schools and the comparison schools were struggling academically. Students in both groups of schools had earned about 22 percent of the core credits required for graduation (indicating that they were below the 25 percent benchmark for being "on track" to graduate),[25] and only a third of students were proficient on the ninth-grade ELA state test. Students' average GPA in core subjects was about 2.2, or just above a C.

The second panel of Table 2.4 looks at the *middle school* outcomes of these same students for each group of schools. These results provide information on whether the NGA schools and the comparison schools served ninth-grade students who, as they entered high school, were similar in terms of their earlier academic performance. As shown in this table, both groups of schools served students who struggled academically before they entered high school: About 43 percent to 44 percent of students were proficient on the ELA state test in eighth grade, and 56 percent were proficient on the math state test. The table also shows that the NGA schools and the comparison schools served students who entered high school with similar levels of economic and language needs: About 5 percent to 6 percent of ninth-grade students were English

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[23]As stated above, the total number of unique comparison schools is *less* than the number of NGA schools because some comparison schools were chosen as the match for more than one NGA. Standard errors and hypothesis tests are adjusted to account for the fact that some comparison schools are included in the analysis multiple times. See Appendix A for further information about the impact analysis model.

[24]In a CITS design, the minimum detectable effect (MDE) is larger for later follow-up cohorts, because there is greater uncertainty about trend projections. See Bloom (1999) for a discussion. Appendix A provides information on the MDE for all study outcomes.

[25]There are four grade levels in high school (ninth to twelfth grade), so by the end of ninth grade students should have earned a quarter of the credits they need to graduate.

Table 2.4

**Outcomes and Characteristics of the Last
Baseline Cohort of Ninth-Grade Students**

Outcome or Characteristic	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Ninth-grade outcomes				
Progress toward graduation				
Credits earned in core subjects				
(as % needed to graduate)	22.15	21.78	0.37	0.744
Academic achievement				
Proficient on ELA state test (%)	35.87	36.23	-0.36	0.930
Proficient on math state test (%)	58.96	58.57	0.39	0.922
GPA in core subject areas (out of 4.0)	2.15	2.17	-0.02	0.822
Behavioral outcomes (%)				
Attendance rate	93.29	93.19	0.10	0.919
Received an in-school suspension	21.33	23.52	-2.19	0.667
Received an out-of-school suspension	14.32	11.76	2.56	0.318
Were expelled	0.03	0.02	0.01	0.560
Eighth-grade outcomes and characteristics (%)				
Eligible for free/reduced-price lunch	44.98	47.25	-2.26	0.515
English language learners	5.42	6.05	-0.63	0.530
Proficient on 8th-grade ELA state test	43.39	43.82	-0.43	0.860
Proficient on 8th-grade math state test	56.43	56.37	0.06	0.986
Number of schools (total = 43)	27	16		

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.

    A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The findings in this table are for the cohort of students who entered the study schools immediately prior to the implementation of NGAs. Students' ninth-grade outcomes are measured in students' first year of high school. Students' eighth-grade outcomes and characteristics are for the school year before they entered high school.

    The values in the columns labeled "NGA Schools" and "Comparison Schools" are observed means. Rounding may cause slight discrepancies in calculating sums and differences.

    A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Table 2.5

School Characteristics in the School Year Before
NGA Implementation

School Characteristic	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Eligible for free/reduced-price lunch				
(% of all students)	31.6	34.1	-2.5	0.352
Racial/ethnic composition (% of all students)				
Black	35.9	33.5	2.4	0.580
Hispanic	14.7	14.6	0.0	0.986
White	45.6	48.1	-2.4	0.542
Other	3.8	3.8	0.0	0.976
Ninth-grade enrollment	747.0	674.3	72.7 ***	<0.001
Pupil-teacher ratio (all grades)	20.1	19.6	0.5	0.392
Title I status (% of schools)	3.7	11.1	-7.4	0.326
Location (% of schools)				
City	96.3	96.3	0.0	1.000
Rural	3.7	3.7	0.0	1.000
Number of schools (total = 43)	27	16		

SOURCE: Common Core of Data.

NOTES: The values in the columns labeled "NGA Schools" and "Comparison Schools" are the observed means. Rounding may cause slight discrepancies in calculating sums and differences.
   A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

language learners in eighth grade, and 45 percent to 47 percent of students were eligible for free or reduced-price lunch.[26]

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[26]In Table 2.4, all information is based on the *last baseline cohort* of ninth-grade students. The eighth-grade characteristics and outcomes of students in the three *follow-up cohorts* were also examined, and the pattern of results looks similar (see Appendix A for these results). Appendix A also includes standard deviations for student outcomes that can be used to convert the baseline differences in these tables into effect sizes. To meet What Works Clearinghouse (2014) standards for baseline equivalence, baseline differences for student outcomes and characteristics must be less than 0.25 (as an effect size). All baseline student outcomes and characteristics meet this criterion.

Whereas Table 2.4 focuses on the outcomes of ninth-grade students, Table 2.5 turns to the characteristics of all students in the study schools, as well as the schools' structural characteristics. This table shows that, in the school year before the NGAs were launched, the two groups of schools had similar proportions of high school students eligible for free or reduced-price lunch (about a third) and a similar racial and ethnic composition. The one exception is that the NGA schools in the study enroll a larger number of ninth-grade students than the comparison schools (an average of 747 students compared with 674 students), and this difference of 73 students is statistically significant. Substantively, this means that the NGA schools have about two to three additional classrooms of ninth-grade students. This difference could make it more challenging for the NGA schools to create a personalized learning environment and potentially lead to an *underestimate* of the effect of NGAs. That said, because ninth-grade enrollment is high in both groups of schools, a difference of 73 students is proportionally quite small, and therefore any such bias is likely to be minimal if it exists.[27]

The fact that the NGA schools and the comparison schools are indeed very similar increases the likelihood that the comparison schools' deviations from their baseline trends provide the right counterfactual for what would have happened to the NGA schools had they not implemented the academies. This, in turn, strengthens this study's ability to evaluate whether the NGAs *caused* any changes in ninth-grade student outcomes.[28]

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[27]The pattern of similarities (and differences) in Table 2.5 also holds for the school years after the NGAs were created.

[28]The two groups of schools also have similar baseline *trends* in ninth-grade student outcomes. The size and the direction of the slope in these baseline trends are similar for NGA schools and comparison schools, and the difference in baseline trends is not statistically significant for the primary outcome (core credits earned). See Appendix A for further information.

Chapter 3

Structural Features and Support Services in the Study Schools

This chapter examines the extent to which the Ninth Grade Academies (NGAs) in this study were able to put in place the components of the NGA model. As discussed earlier, some NGA components are not unique to the NGA model, so this study also examines whether the structures and supports of the NGA model were being used in some of the comparison schools as well.[1] The key findings discussed in this chapter are as follows:

- **Many of the NGAs in the study were unable to implement all four structural components.** Three years after their creation, only half the NGAs in the study had implemented all four components of the NGA model.

- **Some of the features of the NGA model were also part of the ninth-grade experience in the comparison schools.** The comparison high schools in this study, for example, also provided various support services to their ninth-grade students, and a substantial percentage of them had a faculty dedicated to the ninth grade.

- **The main difference between the NGA schools and the comparison schools is with respect to space, leadership, and teaching teams.** The NGA schools in the study were much more likely than the comparison schools to report having a dedicated space for ninth-grade students, a dedicated administrator watching over the ninth grade, and teaching teams.

Overall, the NGA schools and the comparison schools do appear to differ structurally. However, it was not possible to measure how well or strongly the components of the NGA model were implemented in the study schools — only whether the components were present or absent. Therefore, it is unclear whether the structural differences between the NGA schools and the comparison schools were sufficient to have created a more personalized learning environment for ninth-grade students in the NGA schools.

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[1]The findings reported in this chapter were obtained by comparing the percentages of NGA schools and comparison schools that implemented a particular type of structural component or support. Cluster-robust standard errors were used to account for the fact that some comparison schools are included in the data more than once.

Core Structural Components

As described in Chapter 2, NGAs have four core structural features: a dedicated space, a dedicated ninth-grade administrator, a dedicated faculty, and teaching teams. By definition, all the NGA schools in the study implemented at least two of these four core structural components, and at least one of these components was a dedicated administrator or a dedicated space. (This was the necessary or minimum condition for a high school to be considered as having an NGA in this study.) Ideally, however, NGAs should include all four of these components, in order to maximize the conditions that will promote a more personalized learning environment for ninth-grade students. Accordingly, Table 3.1 also looks at the percentage of study schools that implemented each of the four core structural features during the first three years of their NGAs and the percentage of schools that implemented all four components.

As shown in this table, the NGA schools in the study are more likely than the comparison schools to have implemented a dedicated administrator and space. By the third year of implementation, 82 percent of the NGA schools had a dedicated space and administrator, whereas none of the comparison schools did.

The NGA schools were also more likely than the comparison schools to have a dedicated ninth-grade faculty and to use teaching teams. However, the contrast between the NGA schools and the comparison schools is smaller for these two components, because some of the comparison schools were also using these strategies: 76 percent of the comparison schools had dedicated ninth-grade faculty by the third follow-up year, and 28 percent had teaching teams. This reflects the fact that team teaching and dedicated faculty are approaches that can be used by schools independent of implementing an NGA with its own space and its own administrator.[2]

Overall, the NGA schools and the comparison schools do seem to differ structurally in many respects.[3] However, a key question is whether the NGA schools implemented these structural components sufficiently well to have created a more personalized experience for their ninth-grade students relative to the comparison schools. For reasons explained in Chapter 2, it

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[2]Some of the NGA schools and comparison schools already had dedicated faculty and teaching teams *before* the NGAs were created, which provides further evidence that these components can be implemented independent of NGAs. Appendix A provides further information on the percentage of study schools implementing the core components in the last baseline year.

[3]The study team also examined the contrast between the NGA schools and the comparison schools with respect to other structural components that are sometimes part of an NGA: a dedicated ninth-grade counselor, a dedicated ninth-grade social worker, and student teams. By the third year of implementation, 74 percent of the NGA schools in the study reported having a dedicated ninth-grade counselor, whereas only about 11 percent of comparison schools did, and 41 percent of NGA schools were teaming students, while only 18 percent of comparison schools were using this strategy. Very few schools in either group had a dedicated social worker.

Table 3.1

**Core Structural Components of NGA Schools in Place
in the Follow-Up Period**

Structural Component (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Schools with each core component				
Dedicated space				
Year 1	59.3	0.0	59.3 ***	<0.001
Year 2	81.5	0.0	81.5 ***	<0.001
Year 3	81.5	0.0	81.5 ***	<0.001
Dedicated administrator				
Year 1	59.3	0.0	59.3 ***	<0.001
Year 2	77.8	0.0	77.8 ***	<0.001
Year 3	81.5	0.0	81.5 ***	<0.001
Dedicated faculty				
Year 1	81.5	66.5	15.0	0.215
Year 2	96.3	71.3	25.0 **	0.027
Year 3	96.3	76.3	20.0 *	0.053
Teaching teams				
Year 1	60.7	20.7	40.0 ***	0.006
Year 2	79.9	23.9	56.0 ***	<0.001
Year 3	79.7	27.7	52.0 ***	0.001
Schools with all four core components				
Year 1	33.3	0.0	33.3 ***	<0.001
Year 2	51.9	0.0	51.9 ***	<0.001
Year 3	51.9	0.0	51.9 ***	<0.001
Number of schools (total = 43)	27	16		

SOURCE: Administrator Survey.

NOTES: The "follow-up period" is defined as the first three years of implementation in schools that implemented NGAs. The values in the columns labeled "NGA Schools" and "Comparison Schools" are the observed means. Rounding may cause slight discrepancies in calculating sums and differences.

A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

was not possible to measure how well the components were implemented in the study schools. Yet it may be telling that many of the NGA schools in the study were not able to implement all four core structural components; only half the NGAs (14 of 27) had all these elements in place by the third year of implementation.[4] This suggests that finding the resources simply to put in place the four basic structural features of an NGA may be challenging for schools. Implementing these components well could be even harder.

Curricular and Student Support Services

As described in Chapter 1, NGAs often incorporate curricular and instructional support for ninth-grade students, as well as direct support services. Table 3.2 shows the percentage of study schools that offered such kinds of support at any point during the follow-up period.[5]

As shown in this table, many of the NGA schools in this study provided curricular and student support services to their ninth-graders. The most common types of curricular support were a curriculum for closing grade gaps (82 percent of NGAs), a career planning curriculum (74 percent), opportunities to catch up during the school day (60 percent), a college awareness curriculum (56 percent), and a study/social skills curriculum (56 percent). The most common types of student support services were extracurricular help in core subjects (85 percent of NGAs) and the recognition of positive behavior and achievement (70 percent).

However, a notable proportion of the comparison schools also offered many of these types of support, which suggests that these services may already be part of the "business as usual" ninth-grade experience. This is perhaps to be expected, given that these kinds of support do not require an NGA structure. Given their broader prevalence, the contrast between the NGA schools and the comparison schools with respect to these support services is relatively small. One area where the NGA schools and their comparisons differ is with respect to a career planning curriculum: 74 percent of NGA schools implemented a career planning curriculum, whereas only 16 percent of comparison schools did so. The NGA schools were also more likely to have a college preparation curriculum (30 percent of NGA schools compared with none of the comparison schools), but this difference predates the creation of NGAs, so it cannot be attributed to the their implementation.[6]

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[4]This does not appear to be driven by any one component: By the third year of implementation, each component was in place in at least 80 percent of schools.

[5]The results are very similar when broken down by follow-up year.

[6]See Appendix A for further information about the percentage of NGA schools and comparison schools that offered the curricular and instructional support services in the last baseline year.

Table 3.2

Curricular and Student Support Services for Ninth-Grade Students in the Follow-Up Period

Type of Support (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Curricular and instructional support				
Career planning curriculum	74.1	16.4	57.7 ***	<0.001
College awareness curriculum	55.6	44.0	11.5	0.536
College preparation curriculum	29.6	0.0	29.6 ***	0.005
Curriculum for closing grade gaps	81.5	77.6	3.8	0.762
Opportunities for catch-up during school day	59.3	48.1	11.1	0.417
Curriculum for study/social skills	55.6	63.0	-7.4	0.609
Flexible scheduling for student regrouping	18.5	18.5	0.0	1.000
Student support				
Summer bridge or orientation program	44.4	66.7	-22.2	0.182
Extracurricular help in core subjects	85.2	77.8	7.4	0.497
Data-driven response to academics and behavior	51.9	59.3	-7.4	0.597
Recognition of positive behavior/achievement	70.4	51.9	18.5	0.232
Number of schools (total = 43)	27	16		

SOURCE: Administrator Survey.

NOTES: The "follow-up period" is defined as the first three years of implementation in schools that implemented NGAs. The values in the columns labeled "NGA Schools" and "Comparison Schools" are the observed means. Rounding may cause slight discrepancies in calculating sums and differences.

A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Another pattern that is worth noting (not shown in Table 3.2) is that the percentage of study schools offering these support services increased over time. This is true in both the NGA schools and the comparison schools. For example, an additional 48 percent of comparison schools used a curriculum to close grade gaps in the follow-up period (relative to the last baseline year).[7] These increases could have been driven by some statewide policy change in Florida that prompted schools to ramp up their services, or by a greater general awareness of the importance of supporting ninth-grade students.

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[7]See Appendix A for further information about the percentage of schools that offered curricular and instructional support in the last baseline year.

Summary

An important finding to emerge from this chapter is that some of the features of the NGA model are also part of the ninth-grade experience in the comparison schools. The comparison high schools in this study, for example, provided various kinds of support services to their ninth-grade students, and many of them have a faculty dedicated to ninth grade. This practical reality confirms that what distinguishes the NGA model is not its individual components, but rather the idea that when the components are put in place together, they should interact to promote an environment in which adults make a concerted effort to be aware of and responsive to student needs. Unfortunately, it is not possible to measure whether the NGA schools in this study implemented the components of the model in a way that would be characterized as strong or ideal implementation, and in turn, whether this produced the more personalized learning environment for ninth-grade students intended by the NGA theory of action. However, this study can look at whether the NGA schools were able to achieve their ultimate goal: improving ninth-grade student outcomes.

Chapter 4

Effects on Student Progress,
Academic Achievement, and Behavior

This chapter looks at whether the structural differences between the schools implementing Ninth Grade Academies (NGAs) and the comparison schools in this study were sufficient to produce improvements in ninth-grade students' progress toward graduation, their academic achievement, and their behavioral outcomes. The effect of NGAs is examined for the first three cohorts of students to enroll in the study schools, corresponding to the first three years of NGA implementation. The key findings discussed in this chapter are as follows:

- **Overall, there is no conclusive evidence that the NGAs in this study improved ninth-grade students' outcomes.** After the NGAs were created, ninth-grade students in the NGA schools actually performed worse than predicted (relative to their schools' baseline trends) on a range of outcomes. However, so did students at the comparison schools. This suggests that some policy change may have happened in the state of Florida that caused a general decline in student outcomes, and that creating NGAs did not prevent the study schools from experiencing this decline.

- **Nor is there any conclusive evidence that the subgroup of NGA schools that implemented all four core structural components had an effect on ninth-grade students' outcomes.** This suggests that the NGA schools — even those that implemented all of the core NGA components — may not have been able to implement these components as well as intended.

As explained in Chapter 2, the effect of the NGAs in this study is the difference between the average *deviations from baseline trend* for the NGA schools and the comparison schools. This is different from a randomized experiment, where the impact of an intervention is obtained by comparing the mean outcomes of the program group and the control group in the follow-up period. Therefore, the tables in this chapter include information on deviations from baseline trend, as opposed to mean outcomes. These deviations can be useful for helping to interpret the impact findings: They provide contextual information on whether ninth-grade students in the follow-up cohorts performed better or worse than expected relative to earlier cohorts of students. Box 4.1 explains how to interpret the tables in this chapter.[1] The statistical significance of estimated effects is assessed up to the 10 percent level in this study.

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[1]Appendix A includes information on the statistical model used to produce the results.

Box 4.1

How to Read the Tables in This Chapter

The tables in this chapter show the estimated effect of NGAs on student outcomes by follow-up cohort (Cohorts 1, 2, and 3, representing the first three years of NGA implementation). A ninth-grade cohort is defined as a group of students who enter high school in the same school year.

The columns in the tables present the following information:

- **Deviation from baseline trend.** The first two columns of results show the estimated deviation from their baseline trend for NGA schools and the matched comparison schools for each outcome by follow-up cohort. For all outcomes except disciplinary infractions, positive deviations from trend indicate that ninth-grade students in the NGA schools or the comparison schools did better than expected in the follow-up period given their baseline trends, while negative deviations from trend indicate that students did worse than expected. For disciplinary outcomes (suspensions and expulsions), the reverse is true. The statistical significance of estimated deviations from trend is indicated for levels of 1 percent (†††), 5 percent (††), and 10 percent (†).

- **Estimated effect.** The third column of results is the estimated effect of the NGAs for each outcome by follow-up cohort. The estimated effect is the difference between the NGA schools' deviation and the comparison schools' deviation from their baseline trends (column 1 minus column 2).

- **Confidence interval.** The next two columns in the table are the lower and upper bounds of the 90 percent confidence interval for the estimated effects of the NGAs. Generally speaking, the true impact of NGAs has a 90 percent probability of falling somewhere within this interval.

- **P-value for estimated effect.** The last column of the table shows the p-value for each estimated effect. The p-value indicates the probability of finding the estimated effect (or a larger effect) if there were in fact no difference between the NGA schools and the comparison schools with respect to their deviations from their trends. In this study, an estimated effect that has a p-value of 10 percent or less is considered "statistically significant" because it is unlikely that this estimated effect would be observed if the NGA schools and comparison schools did not have different deviations from trend. The number of asterisks indicates whether the estimated effect is statistically significant at the 1 percent (***), 5 percent (**), or 10 percent (*) level.

The *rows* in the tables represent the outcome and follow-up cohort (Cohort 1, Cohort 2, and Cohort 3) associated with each estimated deviation from baseline trend and each estimated effect.

Effects on Ninth-Grade Student Outcomes

Figure 4.1 starts by examining the trends in credits earned in core subject areas in ninth grade (as a percentage of core credits required for graduation), which is the primary outcome in this study. In the years before the NGAs were created, the percentage of credits earned by students was on the rise in both the NGA schools and the comparison schools. However, after the NGAs were launched, deviations from baseline trend for the NGA schools were negative, which indicates that ninth-grade students in the follow-up cohorts earned fewer credits than would have been predicted based on earlier cohorts' credit earning. Ninth-grade students in the comparison schools also performed worse than expected, by a similar amount.[2] As Table 4.1 indicates, the estimated effect of NGAs on this outcome is not statistically significant for the first three cohorts of ninth-grade students to enroll in them, and it cannot be concluded that NGAs helped students earn more credits in ninth grade.

Nor do the NGAs in this study appear to have improved students' academic achievement (Table 4.1). Similar to the pattern of results for credits earned, ninth-grade students in the follow-up period were less likely to be proficient on state tests than predicted by the baseline trend for this outcome, and this is true for both the NGA schools and the comparison schools. Thus, the NGAs do not show a positive effect on students' state test scores. In fact, the estimated effect on math proficiency is statistically negative for the first follow-up cohort, because the comparison schools' deviations from trend are not as negative as those of the NGA schools. However, this result should be interpreted cautiously, because these negative effects do not stand up in some of the sensitivity analyses that were conducted.[3] (The nature of these analyses are discussed later in this chapter.)

With respect to students' grade point average (GPA) in core subjects, at first glance the findings seem slightly more encouraging. The estimated effect of the NGAs on this outcome, though not statistically significant, is positive. However, closer inspection of the results reveals that the average GPA of students did not actually improve in the NGA schools. The positive direction of the effect is driven by the fact that students' average GPA was lower than predicted for both groups of schools, but more so in the comparison schools than in the NGA schools.

Finally, as Table 4.2 shows, the NGAs in this study do not appear to have improved students' behavioral outcomes during the first three years of implementation. Mirroring the pattern for credits earned and proficiency on state tests, ninth-grade students in the follow-up

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[2]As a secondary analysis, the effect of NGAs on core credits *attempted* (as a percentage of the credits needed for graduation) was also examined. The pattern of results for this outcome is very similar to the pattern for credits earned (estimated effects are negative in direction and not statistically significant). This suggests that the trends in Figure 4.1 are being driven by factors affecting credit taking.

[3]See Appendix A for these findings.

Figure 4.1

**Baseline Trends and Deviations from Baseline Trend in the Percentage of
Core Credits Earned in Ninth Grade**
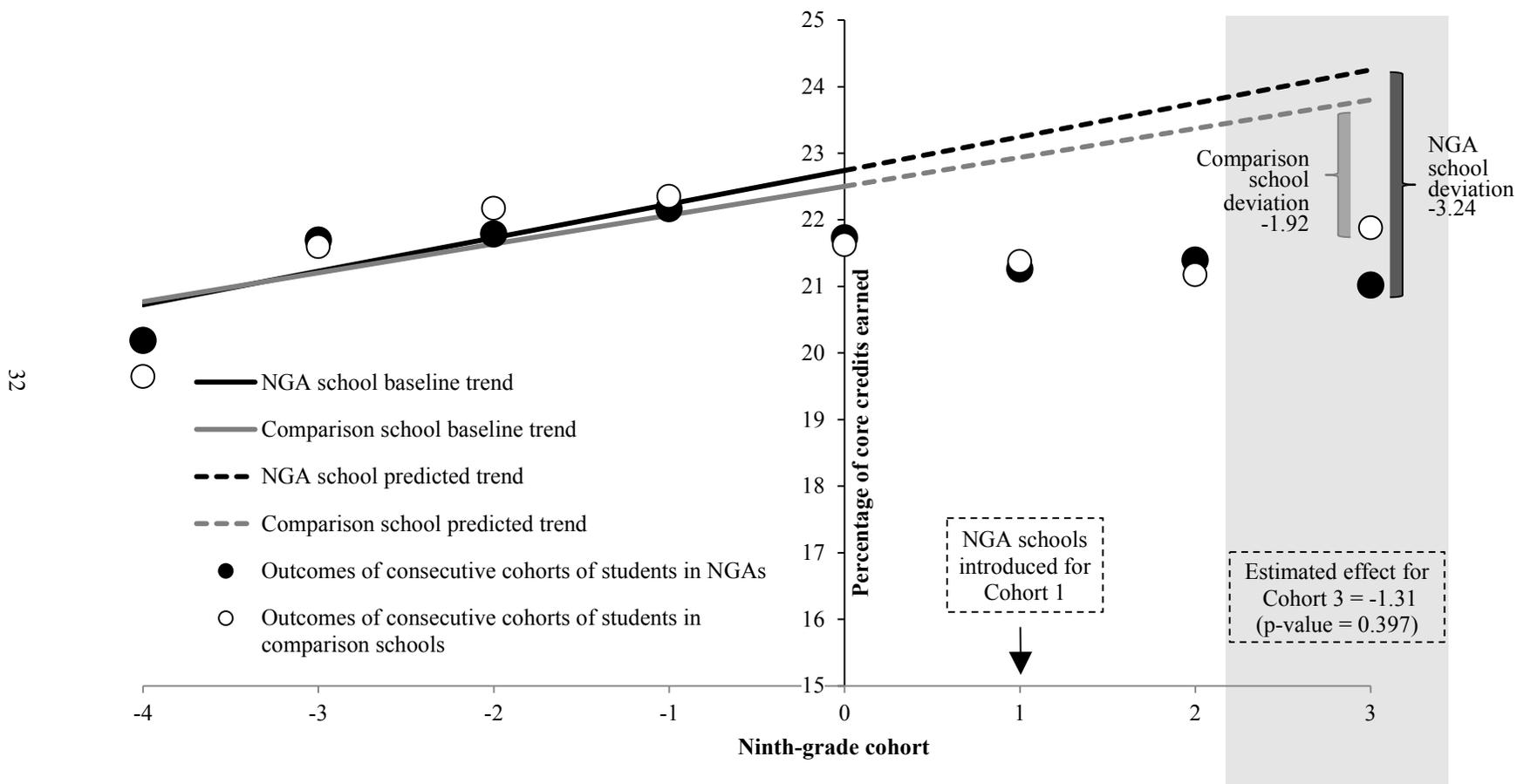
SOURCE: Student records from the Florida Department of Education.

NOTE: The estimated effect of NGA schools is equal to the estimated deviation from baseline trend for the NGA schools minus the estimated deviation from baseline trend for the comparison schools. The estimated effect of NGA schools shown in this figure is not statistically significant at the 10 percent level.

Table 4.1

Estimated Effect of NGAs on School Progress and Academic Achievement in Ninth Grade

Outcome	Deviation from Baseline Trend		Estimated Effect	90% Confidence Interval		P-Value for Estimated Effect
	NGA Schools	Comparison Schools		Lower Bound	Upper Bound	
Progress toward graduation						
Credits earned in core subjects						
(as % needed to graduate)						
Follow-Up Cohort 1	-1.98 †††	-1.56 ††	-0.42	-1.93	1.09	0.646
Follow-Up Cohort 2	-2.36 †††	-2.20 ††	-0.16	-2.19	1.87	0.897
Follow-Up Cohort 3	-3.24 †††	-1.92	-1.31	-3.87	1.24	0.397
Academic achievement						
Proficient on ELA state test (%)						
Follow-Up Cohort 1	0.39	0.71	-0.32	-2.53	1.89	0.813
Follow-Up Cohort 2	2.23 ††	1.43	0.80	-2.08	3.67	0.647
Follow-Up Cohort 3	2.47 ††	0.82	1.65	-1.64	4.94	0.409
Proficient on math state test (%)						
Follow-Up Cohort 1	-2.90 †††	-0.22	-2.68 *	-5.09	-0.26	0.068
Follow-Up Cohort 2	-3.49 †††	-0.79	-2.70	-5.59	0.20	0.125
Follow-Up Cohort 3	-3.44 ††	-1.29	-2.15	-5.63	1.32	0.307
GPA in core subject areas (out of 4.0)						
Follow-Up Cohort 1	-0.01	-0.06 †	0.05	-0.03	0.13	0.309
Follow-Up Cohort 2	-0.01	-0.08 ††	0.07	-0.02	0.16	0.177
Follow-Up Cohort 3	-0.06	-0.09 †	0.03	-0.07	0.14	0.619
Number of schools (total = 43)	27	16				

Table 4.1 (continued)

NOTES: ELA = English language arts; GPA = grade point average.

A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Ninth-grade outcomes are measured in students' first year of high school.

The values in the column labeled "NGA Schools" are the estimated deviations from baseline trend for schools that implemented an NGA. The "Comparison Schools" values are the estimated deviations from baseline trend for matched comparison schools. The values in the "Estimated Effect" column are the differences between NGA schools and comparison schools with respect to their deviations from baseline trend. Rounding may cause slight discrepancies in calculating sums and differences.

A two-tailed t-test was applied to estimated deviations and estimated differences between NGA schools and comparison schools. The statistical significance of estimated deviations is indicated as: ††† = 1 percent; †† = 5 percent; † = 10 percent. The statistical significance of estimated effects is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

cohorts generally had lower attendance rates and were more likely to be suspended than predicted by the baseline trends for these outcomes. This is true for both the NGA schools and the comparison schools, so the estimated effect of NGAs on these outcomes is not statistically significant (and is generally in the wrong direction).

Exploratory Analyses

Several additional analyses were conducted to explore various hypotheses about when and for whom the NGAs in this study might have been effective.

First, the effect of the NGAs on students' outcomes in their second year of high school (tenth grade) was examined. The underlying hypothesis is that ninth-grade students may have benefited from NGAs in ways that were not captured by the outcomes in this study, and that it takes time for these benefits to manifest themselves as effects on students' academic and behavioral outcomes. Alternatively, because students cannot be identified as at risk for dropping out of high school until they have completed some of their course work and have failed classes, additional support for these students may not be triggered until later in ninth grade, in which case effects on student outcomes may not emerge until tenth grade. Neither of these hypotheses is supported by the data, however: The NGAs in this study do not appear to have had an effect on students' tenth-grade outcomes, so there is no evidence of any delayed effects.

Second, the effect of NGAs was examined for subgroups of students who have higher academic needs, including English language learners and students who were not proficient on their eighth-grade reading and math state tests. The underlying hypothesis is that NGAs are perhaps most beneficial to students who are struggling academically and most at risk of dropping

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Table 4.2

Estimated Effect of NGAs on Behavioral Outcomes in Ninth Grade

Outcome (%)	Deviation from Baseline Trend		Estimated Effect	90% Confidence Interval		P-Value for Estimated Effect
	NGA Schools	Comparison Schools		Lower Bound	Upper Bound	
Attendance rate						
Follow-Up Cohort 1	-1.26 ††	-0.73	-0.54	-1.92	0.84	0.523
Follow-Up Cohort 2	-1.82 †††	-1.11	-0.71	-2.42	1.00	0.494
Follow-Up Cohort 3	-2.14 †††	-1.76 †	-0.38	-2.35	1.58	0.748
Received an in-school suspension						
Follow-Up Cohort 1	0.77	-0.37	1.15	-3.75	6.05	0.699
Follow-Up Cohort 2	0.10	0.56	-0.47	-6.03	5.09	0.890
Follow-Up Cohort 3	-1.17	2.04	-3.21	-10.17	3.76	0.448
Received an out-of-school suspension						
Follow-Up Cohort 1	0.46	0.73	-0.27	-3.36	2.81	0.884
Follow-Up Cohort 2	2.13	3.47 †††	-1.34	-4.97	2.28	0.542
Follow-Up Cohort 3	2.49	4.62 †††	-2.13	-6.52	2.25	0.423
Were expelled						
Follow-Up Cohort 1	-0.01	0.01	-0.02	-0.07	0.04	0.570
Follow-Up Cohort 2	-0.01	0.04	-0.05	-0.11	0.02	0.241
Follow-Up Cohort 3	-0.02	0.05	-0.06	-0.14	0.01	0.155
Number of schools (total = 43)	27	16				

(continued)

Table 4.2 (continued)

NOTES: A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Ninth-grade outcomes are measured in students' first year of high school.

    The values in the column labeled "NGA Schools" are the estimated deviations from baseline trend for schools that implemented an NGA. The "Comparison Schools" values in the next column are the estimated deviations from baseline trend for matched comparison schools. The values in the "Estimated Effect" column are the differences between NGA schools and comparison schools with respect to their deviations from baseline trend. Rounding may cause slight discrepancies in calculating sums and differences.

    A two-tailed t-test was applied to estimated deviations and estimated differences between NGA schools and comparison schools. The statistical significance of estimated deviations is indicated as: ††† = 1 percent; †† = 5 percent; † = 10 percent. The statistical significance of estimated effects is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

out. Yet the NGAs in this study do not appear to have improved the outcomes of lower-performing students.

       Finally, the effect of NGAs was separately examined for the 14 NGA schools that implemented all four core structural components during the follow-up period (dedicated space, dedicated administrator, dedicated faculty, and teaching teams). The hypothesis is that these schools, because they implemented all core structural components, were able to set up an organizational structure that was more conducive to creating a personalized learning environment for ninth-grade students. Once again, the results did not support the hypothesis; estimated effects on student outcomes for these 14 NGA schools are similar to the results for the full sample. One possible reason for this pattern of results is that the implementation of the four core components in these schools may have been weak, and that the intended improvements in personalization that characterize a strong version of the NGA model may not have occurred.

Sensitivity Analyses

Several sensitivity analyses were conducted to explore whether the comparison schools in this study provided the right counterfactual for the NGA schools and the extent to which the results from this study are rigorous.[4]

- **Changes in school and student characteristics.** The NGA schools and comparison schools in this study may have experienced different demographic shifts in the characteristics of their ninth-grade cohorts during the follow-

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[4]See Appendix A for the findings from these analyses.

up period. If this were true, then the comparison schools would not provide the right counterfactual for the NGA schools.[5] To investigate this threat to validity, the effect of NGAs on student outcomes was reestimated, controlling for the average characteristics of students in each cohort and the structural characteristics of schools.[6] The findings from this analysis are similar to those presented earlier in this chapter, which suggests that the results from this study are not influenced by demographic changes.

- **Propensity score matching.** When choosing the comparison schools for this study, the "similarity" between NGA schools and potential comparison schools was measured using the Euclidean distance metric, which captures the distance between two schools across several matching variables.[7] To test whether the results of this study were sensitive to the matching method, comparison schools were rechosen using propensity score matching instead (another method of measuring the "similarity" between schools). The impact of NGAs was reestimated using the comparison schools selected through this alternative method. The estimated effects from this sensitivity analysis are similar to those from the main analysis.

- **Design validation analysis.** One of the advantages of having access to several years of baseline data is that the results of the comparative interrupted time series (CITS) design can be validated by looking at the estimated "effect" of NGAs on students in the last baseline cohort. By definition, this effect should be zero, because the NGAs were not yet being implemented; thus this provides a useful benchmark for validating the design and the selection of comparison schools. This sensitivity analysis was conducted by pretending that ninth-grade students who were enrolled in the school year previous to NGA implementation (the last baseline cohort) were the first follow-up cohort in the CITS design. The selection of comparison schools was then conducted again using the newly defined baseline period (now excluding the last baseline cohort), and the effects of NGAs on student outcomes were reestimated. This analysis found that the "effects" of

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[5]This can be thought of as selection bias. See Shadish, Cook, and Campbell (2002).

[6]Specifically, the analysis controls for school characteristics (percentage of students by racial/ethnic group, ninth-grade enrollment, pupil-teacher ratio) in the year that each cohort entered the study schools, as well as the eighth-grade characteristics of each cohort of students (percentage of English language learners, percentage eligible for free or reduced-price lunch, percentage proficient on the English language arts and math state tests).

[7]The Euclidean distance across M matching variables is defined as $D = \sqrt{\sum_M (T_m - C_m)^2}$, where T_m is the value of characteristic m for the NGA school and C_m is the value of characteristic m for the non-NGA school.

NGAs on the outcomes of the last baseline cohort are close to zero in magnitude and not statistically significant, and that estimated effects for subsequent cohorts are similar to those from the main analysis.

Taken together, the findings from these sensitivity analyses suggest that the comparison schools are similar enough to the NGA schools to provide a convincing counterfactual, which in turn lends greater credibility to the findings presented in this report.

Summary and Discussion

The findings in this chapter provide no conclusive evidence that the NGAs in the study improved ninth-grade students' outcomes. In fact, both the NGA schools and the comparison schools performed worse than predicted on a range of outcomes. This decline in student outcomes is particularly striking because, as discussed in Chapter 3, support services actually increased during this time in both groups of schools. One hypothesis for this pattern of results is that the study schools were trying to do too much at the same time, which reduced the quality of the support services provided and ultimately student outcomes. Another hypothesis is that external factors unmeasured in this study (such as a new statewide accountability system) precipitated a decline in all schools' outcomes during the years when most of the study schools created their NGAs. If this is true, then the findings from this study suggest that creating NGAs did not help schools stem this decline. Even NGA schools that implemented all four core structural components do not appear to have improved student outcomes. This finding suggests that the study schools may not have been able to implement the core NGA components well enough to create a more personalized learning environment for ninth-grade students.

Chapter 5

Discussion

The findings from this study suggest that creating effective Ninth Grade Academies (NGAs) can be difficult. The NGAs in this study do not appear to have improved ninth-grade students' progress toward graduation, their academic achievement, or their behavioral outcomes. Even among the subgroup of NGA schools that implemented all four core structural components, student outcomes do not seem to have improved. One hypothesis for this pattern of results is that the core NGA components may not have been implemented as intended in the study schools, and that as a result, the staff was not able to create a more personalized ninth-grade experience for students.

This hypothesis is supported by the findings of an earlier study conducted by MDRC that examined the implementation of NGAs in Broward County, one of the school districts in this study.[1] Several high schools in Broward County launched NGAs starting in the 2005-2006 school year, when the district received an $8 million, five-year grant from the federal Smaller Learning Communities (SLC) program. Then, in fall 2007, the Broward school district led an effort to support NGAs, which prompted another wave of NGA creation in the district. MDRC's study examined the implementation of NGAs in 18 Broward high schools — to learn about the context of the initiative, the extent to which NGAs were implemented as intended, and the conditions associated with strong and weak implementation.[2] MDRC's study found that of the 18 high schools in the district that tried to implement the core structural features of NGAs, only 3 were able to establish strong NGAs.[3] A faculty dedicated to the ninth grade and interdis-

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[1]Legters, Parise, and Rappaport (2013).

[2]The implementation study conducted by MDRC in Broward included 18 NGAs. Of these NGAs, 10 are included in the present study. The remaining 8 are not included because they created their NGAs too early or too late to be used in the comparative interrupted time series analysis. As a subgroup analysis, the effect of the 10 Broward NGAs on student outcomes was separately estimated. There is no evidence that these NGAs improved ninth-grade student outcomes.

[3]These high schools were rated as having "strong" implementation of the first three NGA components (dedicated space, administrator, and faculty) and at least "moderate" implementation of the interdisciplinary teaching teams component during the first three years of the NGA. Schools with strong implementation of the dedicated space component had a self-contained space where all ninth-graders spend the majority of their day, and this space housed the classrooms of virtually all teachers teaching ninth-grade classes, had offices and administrative support staff, and had a visible identity as an NGA. Schools with strong implementation of the dedicated administrator component had an administrator who was knowledgeable about the NGA, engaged almost exclusively with ninth-grade students and faculty, and was committed to making the NGA his or her top priority. Schools with strong implementation of the dedicated faculty component were those where all ninth-grade teachers taught exclusively ninth-graders, identified themselves as ninth-grade teachers as opposed to subject-area teachers, and expressed belief in the NGA concept. Schools with moderate implementation of the interdisciplinary teaching team component were ones where teacher teams were at least present in some way.

ciplinary teaching teams were the most challenging components for schools to implement at a level that was considered strong.[4]

Broward County provides an interesting case study for understanding the challenges of creating strong NGAs without external assistance. In Broward, one of the main barriers to strong NGA implementation was a lack of financial and technical support to schools from the district. Most schools did not have the necessary in-house expertise to implement the features of NGAs on their own. Creating strong interdisciplinary teaching teams — and getting ninth-grade teachers from different content areas to work together — proved to be especially difficult. Yet schools did not receive any additional funds to train ninth-grade teachers on how to work more effectively with each other across disciplines to meet the specific needs of ninth-grade students. As a result, though most administrators and teachers in Broward understood what an NGA should look like conceptually, they did not seem to know how to enact NGAs on a daily basis.

The implementation of NGAs in Broward was further undermined by the way in which the district chose to define NGAs. The district emphasized the structural aspects of the academies (dedicated space, a dedicated administrator, a dedicated faculty, and interdisciplinary teaching teams), rather than how school staff members should work within these structures. Accordingly, few NGA administrators and principals in Broward considered what it would take to use these structures to improve teacher collaboration and to create a more personalized environment for students.

Finally, the strength of Broward's NGAs was compromised by competing district priorities. In addition to promoting NGAs, the district turned its attention to data-driven progress monitoring and subject-area professional learning communities. While not inconsistent with NGAs, these efforts were implemented independently of NGAs, so they competed for scarce district resources.

These three challenges — to varying degrees — are likely to have played out in all or most of the NGA schools in the present study, for two reasons. First, over a third of the schools in the study sample are located in Broward County. Second, the non-Broward NGAs in this study do not appear to have been created by a district-wide policy (they were probably created by individual high schools), so these NGAs may have had access to even less support than the NGAs in Broward.

Thus Broward's experience suggests three key lessons for schools and districts that have decided to use the NGA model. First, beyond implementing the structural features of

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[4]Strong implementation of the dedicated faculty component is defined in the previous footnote. Strong implementation of the teaching team component is defined as follows: Almost all ninth-grade students were taught by teachers in interdisciplinary teams, and teachers strongly identified as being part of their teams and met regularly to identify and address student needs collectively.

NGAs, plans to create NGAs should build in processes and forms of support to engage staff and help them take advantage of the NGA structure to personalize ninth-grade students' experience. Second, schools need specific guidelines, on-site support, training for teachers, secure resources, and tools to guide practice if they are to implement strong and self-sustaining NGAs that succeed in personalizing the learning environment. Finally, plans to create NGAs should be coordinated with other district initiatives intended to improve student outcomes so that NGAs are not weakened by competing priorities.

More recently, Broward County has been piloting three types of staff-related support to strengthen and intensify its NGAs: (1) a teacher leader who develops and implements academic and social support services for ninth-graders; (2) data-response teams that meet weekly to review student data, identify and monitor struggling students, and respond with appropriate academic and behavioral interventions; and (3) formal partnerships with organizations to support tutoring, mentoring, and other enriching activities for ninth-graders. The vehicle for promoting these enhancements is a Community of Practice (CoP) that includes a team from each participating school. The CoP meets regularly to develop action plans for implementing these new practices, to receive additional training, and to reflect on progress and share challenges. MDRC has been studying these enhancements.[5]

The idea of pairing NGAs with intensive monitoring and other support has also made its way into existing high school reform models that include NGAs. Talent Development Secondary, for example, has recently partnered with two other organizations — City Year and Communities In Schools — to create the Diplomas Now high school reform model.[6] Talent Development Secondary's role in this partnership is to implement various types of instructional and structural reforms, including NGAs. City Year provides near-peer volunteers (recent college graduates) who assist teachers in the classroom, monitor attendance and behavior, and provide coaching, tutoring, mentoring, homework support, and extended day activities to students. Communities In Schools rounds out the partnership by providing school-wide supports aimed at improving the school climate, as well as case management for the students most at risk of dropping out.[7]

Although combining NGAs with monitoring and other support makes sense in theory, whether this can improve student outcomes is an open question. Supplementing the NGA model with other elements increases the number of program features that schools must put in place, thus leaving schools with more limited time and bandwidth to create strong NGAs at the core of their approach. For example, MDRC is currently evaluating the implementation and impact of the Diplomas Now model based on a school-level randomized experiment. Of the schools in the

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[5]Legters and Parise (2016).
[6]Sepanik et al. (2015).
[7]There is also a Diplomas Now middle school model, which does not include NGAs.

MDRC study that are implementing the Diplomas Now model, only 60 percent were able to put in place an NGA with adequate or high fidelity during the first two years of implementation, and only 29 percent had interdisciplinary teaching teams that met multiple times a week to discuss students.[8]

Given the continuing popularity of NGAs and recent efforts to strengthen them, further research is needed to understand their implementation and effects. Several districts have attempted to create NGAs in the last few years.[9] The findings in this report — which are based on NGAs created a decade ago — may not generalize to these more recent attempts to create NGAs, which may have benefited from some of the lessons offered by earlier efforts such as Broward's. In order to provide the most rigorous evidence of their effectiveness, it would also be of benefit to the field for researchers to partner with districts that would be willing to randomly select which high schools will implement future NGAs, because as of yet all studies of NGAs have been based on quasi-experimental research designs. These studies should also measure how well the NGA components are being implemented and whether they create a more personalized learning environment, so that the NGA theory of action can be fully understood and tested.

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[8]Sepanik et al. (2015). Interim impact findings from the study are forthcoming.

[9]Appendix B provides background information on several other school districts that have created NGAs more recently.

Appendix A

Technical Information

This appendix provides information on various technical aspects of the analysis. The first section presents response rates for the student outcomes in the analysis. The second section describes the statistical model used to estimate the effect of Ninth Grade Academies (NGAs). The third section discusses the minimum detectable effect sizes for the study's outcomes. The fourth section presents additional information on the baseline outcomes and characteristics of students in this analysis. The fifth section provides the standard deviations for the measures in this study. The sixth section presents the results of the sensitivity analyses discussed in Chapter 4. The final section presents information on the percentage of schools that implemented the NGA components in the baseline period.

Response Rates for Student Outcomes

As explained in Chapter 2, the student outcomes data for this study come from student records provided by the Florida Department of Education. Because these data are administrative, they are available for almost all students enrolled in the study schools. Appendix Table A.1 shows the percentage of students for whom outcomes data are available, for the last baseline cohort of students and the three follow-up cohorts. Response rates range from 87 percent to 100 percent, depending on the outcome. For any given outcome, the response rate is similar for the NGA schools and the comparison schools. Although response rates do differ by a statistically significant amount for credits earned and grade point average (GPA), the difference is very small in magnitude and still qualifies as "low attrition" based on What Works Clearinghouse standards.[1]

Statistical Model

In this study, the effect of NGAs is estimated using a comparative interrupted time series (CITS) design. Due to issues related to data processing, the student-level data used for the analysis were aggregated by school and ninth-grade cohort for the purposes of conducting the analysis (rather than being used at the student level). The effect of NGAs was then estimated by fitting the following model to the aggregated data set:[2]

$$Y_{jt} = \sum_j \gamma_j SCHOOL_{jt} + \sum_j \phi_j SCHOOL_{jt} * RELYEAR_t + \alpha_1 FY1_t + \beta_1 NGA_j * FY1_t + \alpha_2 FY2_t + \beta_2 NGA_j * FY2_t + \alpha_3 FY3_t + \beta_3 NGA_j * FY3_t + \varepsilon_{jt}$$

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[1]What Works Clearinghouse (2014).

[2]The analysis does *not* weight each observation by the number of students in each school, based on recommendations from the field related to using school-level data (Jacob, Goddard, and Kim, 2014).

Appendix Table A.1

Response Rates for Ninth-Grade Outcomes

Outcome (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Last baseline cohort				
Credits earned in core subjects	92.2	93.5	-1.3	0.114
Retained in 9th grade	100.0	100.0	0.0	1.000
Proficient on ELA state test	87.0	88.4	-1.4	0.192
Proficient on math state test	86.9	87.9	-1.0	0.366
GPA in core subject areas	92.2	93.5	-1.3	0.114
Attendance rate	96.9	97.6	-0.7	0.103
Received an in-school suspension	100.0	100.0	0.0	1.000
Received an out-of-school suspension	100.0	100.0	0.0	1.000
Were expelled	100.0	100.0	0.0	1.000
Follow-Up Cohort 1				
Credits earned in core subjects	92.5	93.8	-1.3 **	0.016
Retained in 9th grade	100.0	100.0	0.0	1.000
Proficient on ELA state test	87.4	88.0	-0.6	0.480
Proficient on math state test	87.2	87.7	-0.6	0.520
GPA in core subject areas	92.5	93.8	-1.3 **	0.016
Attendance rate	97.0	97.4	-0.4	0.334
Received an in-school suspension	100.0	100.0	0.0	1.000
Received an out-of-school suspension	100.0	100.0	0.0	1.000
Were expelled	100.0	100.0	0.0	1.000
Follow-Up Cohort 2				
Credits earned in core subjects	93.1	94.2	-1.1 *	0.056
Retained in 9th grade	100.0	100.0	0.0	1.000
Proficient on ELA state test	87.1	88.7	-1.6	0.158
Proficient on math state test	87.1	88.6	-1.5	0.156
GPA in core subject areas	93.1	94.2	-1.1 *	0.056
Attendance rate	96.7	97.6	-1.0 *	0.098
Received an in-school suspension	100.0	100.0	0.0	1.000
Received an out-of-school suspension	100.0	100.0	0.0	1.000
Were expelled	100.0	100.0	0.0	1.000

(continued)

Appendix Table A.1 (continued)

Outcome (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Follow-Up Cohort 3				
Credits earned in core subjects	93.4	94.7	-1.3 **	0.045
Retained in 9th grade	100.0	100.0	0.0	1.000
Proficient on ELA state test	88.5	89.6	-1.1	0.246
Proficient on math state test	88.2	89.4	-1.2	0.222
GPA in core subject areas	93.4	94.7	-1.3 **	0.045
Attendance rate	97.1	97.2	0.0	0.912
Received an in-school suspension	100.0	100.0	0.0	1.000
Received an out-of-school suspension	100.0	100.0	0.0	1.000
Were expelled	100.0	100.0	0.0	1.000
Number of schools (total = 43)	27	16		

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.
   A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The last baseline cohort is the cohort of students who entered the study schools immediately prior to the implementation of the NGAs. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Response rates are for outcomes measured in students' first year of high school.
   A two-tailed t-test was applied to estimated deviations and estimated differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

where j denotes schools and t denotes school year (or equivalently, the ninth-grade cohort for a given school year). In a CITS design, school years (cohorts) are measured relative to the follow-up period: t is equal to 1, 2, and 3 for the first three follow-up cohorts of ninth-grade students, and is 0 or negative for the baseline cohorts.[3]

The variables in the model are defined as follows:

Y_{jt} = the school-level outcome for cohort t in school j.

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[3]The baseline and follow-up cohorts for a *comparison* school are the same as the NGA school to which it is matched (that is, the definitions of *RELYEAR*, *FY*1, *FY*2, and *FY*3 are the same for an NGA school and its matched comparison school). Also, some schools have data available for five baseline cohorts, while others have data for four baseline cohorts. The statistical model can accommodate this variability in the length of the baseline period.

$SCHOOL_j$ = a set of J dichotomous indicators for school ($= 1$ for school j and 0 otherwise).

$RELYEAR_t$ = a continuous variable for school year (cohort) centered at the last baseline cohort for a school, such that RELYEAR $= 0$ is the last baseline cohort.

NGA_j = a dichotomous indicator for whether school j is an NGA school ($= 1$ if school is an NGA school, 0 if a matched comparison school).

$FY1_t$ = a dichotomous indicator for the first follow-up cohort to be enrolled in an NGA school ($= 1$ if yes, 0 otherwise).

$FY2_t$ = a dichotomous indicator for the second follow-up cohort to be enrolled in an NGA school ($= 1$ if yes, 0 otherwise).

$FY3_t$ = a dichotomous indicator for the third follow-up cohort to be enrolled in an NGA school ($= 1$ if yes, 0 otherwise).

ε_{jt} = the random variation in the outcome of interest across cohorts within schools (within-school variation).

Note that in this model, each school has its own baseline intercept and slope. This strategy is used to account for the longitudinal nature of the data, whereby school years are clustered within schools.

From the model, the following quantities of interest can be obtained:

γ_j = the predicted mean (intercept) for each NGA school and comparison school in the study in the last baseline year.

ϕ_j = the baseline slope for each school in the study.

α_1 = the deviation from baseline trend for the first follow-up cohort in the comparison schools.

$\alpha_1 + \beta_1$ = the deviation from baseline trend for the first follow-up cohort in the NGA schools.

α_2 = the deviation from baseline trend for the second follow-up cohort in the comparison schools.

$\alpha_2 + \beta_2$ = the deviation from baseline trend for the second follow-up cohort in the NGA schools.

α_3 =   the deviation from baseline trend for the third follow-up cohort in the comparison schools.

$\alpha_3 + \beta_3$ =   the deviation from baseline trend for the third follow-up cohort in the NGA schools.

It is important to note that in this model, β_1 represents the estimated impact of NGAs in the first year of their implementation — that is, the deviation from baseline trend for NGA schools minus the deviation from trend for comparison schools. Similarly, β_2 represents the estimated impact of NGAs in the second year of implementation, and β_3 represents the estimated impact in the third year.

As explained in Chapter 2, some comparison schools were chosen as the "match" for more than one NGA school. Thus, some comparison schools are in the data set more than once. To account for these duplicate observations, cluster-robust standard errors are used for hypothesis testing.

Minimum Detectable Effects

Appendix Table A.2 shows the minimum detectable effects (MDEs) for this study. Formally, the MDE is the smallest true program impact that can be detected with a reasonable degree of power (in this case, 80 percent) for a given level of statistical significance (in this case, 10 percent for a two-tailed test). These MDEs were obtained by multiplying the standard error of the estimated impact by 2.5. Note that the number of schools — which is an important determinant of the MDE because it affects the standard error — varies across outcomes depending on how much historical data are available for the outcome. For state test scores, historical data are not available for as many school years, so the NGA schools that started earlier, and thus do not have data for four baseline cohorts, are excluded from the analysis. Also note that in a CITS design, the MDE is larger for later follow-up years (that is, larger for estimated effects in Year 3 compared with Year 1), because the reliability of trend projections decreases with the distance in time for which the projection is being made.[4]

Supplemental Baseline Information

Appendix Table A.3 presents the eighth-grade characteristics and outcomes of students in the three follow-up cohorts. This table shows that the ninth-grade students enrolled in the NGA

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[4]Bloom (1999).

Appendix Table A.2

**Minimum Detectable Effects for Ninth-Grade Student Outcomes,
by Follow-Up Cohort and Sample**

	Number of Schools		Minimum Detectable Effect (10% level)		
	NGA	Comparison	Follow-Up	Follow-Up	Follow-Up
Outcome	Schools	Schools	Cohort 1	Cohort 2	Cohort 3
Credits earned in core subjects					
(as % needed to graduate)	27	16	2.28	3.08	3.87
Proficient on ELA state test (%)	25	14	3.35	4.36	4.99
Proficient on math state test (%)	25	14	3.67	4.40	5.28
GPA in core subject areas (out of 4.0)	27	16	0.13	0.14	0.16
Attendance rate (%)	27	16	2.09	2.60	2.98
Received an in-school suspension (%)	27	16	7.43	8.43	10.56
Received an out-of-school suspension (%)	27	16	4.67	5.50	6.65
Were expelled (%)	27	16	0.08	0.10	0.11

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.
   A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Ninth-grade outcomes are measured in students' first year of high school. The minimum detectable effects in this table are calculated by multiplying the standard error of the estimated effects by 2.5. A statistical significance level of 10 percent is assumed.

schools and in the comparison schools had similar baseline characteristics and academic performance as they entered high school.[5]

Appendix Tables A.4 and A.5 show the estimated baseline intercept and baseline slope, respectively, from the impact model described earlier in this appendix. In the impact model, each school has its own baseline intercept and slope. Therefore, to estimate the *average* intercept and slope across all NGA schools and comparison schools, the school-level slopes (ϕ_j) and intercepts (γ_j) from the regression model are weighted by the precision of the estimated slope for each school.[6]

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[5]As an effect size, all baseline differences are less than 0.25, which is the criterion used by the What Works Clearinghouse (2014) to determine baseline equivalence.
   [6]The precision of a school-level slope is the squared inverse of the standard error of the slope.

Appendix Table A.3

Eighth-Grade Characteristics and Outcomes of Ninth-Grade Students in the Follow-Up Cohorts

Characteristic or Outcome in 8th Grade (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Follow-Up Cohort 1				
Eligible for free/reduced-price lunch	47.3	49.1	-1.9	0.570
English language learners	6.2	6.1	0.1	0.900
Proficient on 8th-grade ELA state test	43.4	43.8	-0.4	0.882
Proficient on 8th-grade math state test	57.9	59.2	-1.3	0.626
Follow-Up Cohort 2				
Eligible for free/reduced-price lunch	46.9	48.9	-2.0	0.570
English language learners	6.0	6.6	-0.6	0.608
Proficient on 8th-grade ELA state test	45.3	44.8	0.5	0.867
Proficient on 8th-grade math state test	60.1	59.9	0.1	0.953
Follow-Up Cohort 3				
Eligible for free/reduced-price lunch	47.9	50.1	-2.3	0.528
English language learners	6.1	6.2	0.0	0.986
Proficient on 8th-grade ELA state test	47.6	46.5	1.2	0.723
Proficient on 8th-grade math state test	62.3	60.0	2.4	0.452
Number of schools (total = 43)	27	16		

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts.

   A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Students' eighth-grade outcomes and charateristics are for the school year before they entered high school.

   The values in the columns labeled "NGA Schools" and "Comparison Schools" are the observed means. Rounding may cause slight discrepancies in calculating sums and differences.

   A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Appendix Table A.4

Intercept of the Baseline Trend in Ninth-Grade Student Outcomes

Outcome	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Progress toward graduation				
Credits earned in core subjects				
(as % needed to graduate)	22.74	22.50	0.24	0.197
Academic achievement				
Proficient on ELA state test (%)	36.04	33.70	2.34 ***	<0.001
Proficient on math state test (%)	62.42	57.80	4.62 ***	<0.001
GPA in core subject areas (out of 4.0)	2.16	2.23	-0.08 ***	<0.001
Behavioral outcomes (%)				
Attendance rate	94.04	93.14	0.90 ***	<0.001
Received an in-school suspension	20.61	18.33	2.27 ***	<0.001
Received an out-of-school suspension	11.66	11.87	-0.21	0.558
Were expelled	0.01	-0.01	0.02 ***	<0.001
Number of schools (total = 43)	27	16		

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.
   The values in this table are the intercept of the estimated baseline trend in outcomes based on the four or five cohorts of students who entered the study schools prior to the implementation of NGAs. A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. Ninth-grade outcomes are measured in students' first year of high school.
   Rounding may cause slight discrepancies in calculating sums and differences.
   A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Appendix Table A.4 presents the estimated baseline intercept for the NGA schools and the comparison schools. These intercepts represent the *predicted* mean outcomes for NGA schools and comparison schools in the last baseline year (in Figure 2.1, this is the predicted value of the outcome for Cohort 0). The difference between the predicted means (intercepts) of the NGA schools and the comparison schools is larger than the difference in their *observed* baseline means (Table 2.4). However, as an effect size, none of the differences in predicted means are greater than 0.25, which is the criterion used by the What Works Clearinghouse (2014) for baseline equivalence.

Appendix Table A.5

Slope of the Baseline Trend in Ninth-Grade Student Outcomes

Outcome	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Progress toward graduation				
Credits earned in core subjects				
(as % needed to graduate)	0.50	0.43	0.07	0.307
Academic achievement				
Proficient on ELA state test (%)	2.13	1.26	0.87 ***	<0.001
Proficient on math state test (%)	3.08	2.00	1.08 ***	<0.001
GPA in core subject areas (out of 4.0)	0.01	0.03	-0.02 ***	<0.001
Behavioral outcomes (%)				
Attendance rate	0.43	0.45	-0.02	0.634
Received an in-school suspension	0.21	0.35	-0.14	0.514
Received an out-of-school suspension	-0.98	-0.97	-0.01	0.959
Were expelled	0.00	-0.01	0.01 ***	<0.001
Number of schools (total = 43)	27	16		

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.

The values in this table are the estimated baseline slope in outcomes based on the four or five cohorts of students who entered the study schools prior to the implementation of NGAs. A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. Ninth-grade outcomes are measured in students' first year of high school.

Rounding may cause slight discrepancies in calculating sums and differences.

A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Appendix Table A.5 presents the slope of the baseline trends of the NGA schools and the comparison schools. The values in this table represent the average annual change in each outcome during the baseline period, or the slope of the baseline trends. Positive slopes indicate that the outcome's value was increasing during the baseline period, while negative slopes indicate that the outcome's value was decreasing. With the exception of expulsions, the direction of the slopes for all outcomes is the same for the NGA schools and the comparison schools (both are positive, or both are negative).

Standard Deviations

Appendix Tables A.6, A.7, and A.8 provide standard deviations for the baseline characteristics and outcomes discussed in the study for the schools and students in the study. Appendix Table A.6 presents the standard deviations for students' eighth-grade outcomes for the last baseline cohort and the first three follow-up cohorts. Appendix Table A.7 presents the standard deviations for the last baseline cohort's ninth-grade outcomes. Appendix Table A.8 presents the standard deviations for school characteristics from the Common Core of Data in the last baseline school year before the NGAs were created. Note that the standard deviations for student characteristics and outcomes (Appendix Tables A.6 and A.7) are *student-level* standard deviations, which is preferable for making effect sizes comparable across students.[7] For school characteristics from the Common Core of Data (Appendix Table A.8), standard deviations are at the *school level* by definition. Standard deviations are shown for the NGA schools and comparison schools separately, and for both groups of schools pooled together.

Sensitivity Analyses

As explained in Chapter 4, several sensitivity analyses were conducted to explore whether the comparison schools provide the right counterfactual and whether the findings are rigorous. The results of these analyses are presented in Appendix Table A.9 (for academic outcomes) and Appendix Table A.10 (for behavioral outcomes).

For there to be convincing evidence of positive effects, the estimated effect of the NGAs on a particular outcome should be in the right direction across all the sensitivity analyses and for all follow-up cohorts, as well as statistically significant. In addition, the estimated effect for the *last baseline cohort* of students (in the "design validation" analysis) should be small and not statistically significant, because this cohort was enrolled before the NGAs were implemented.

Overall, the sensitivity analyses find no evidence that the NGAs in the study improved student outcomes. Although there is a statistically significant reduction in expulsions for Cohorts 2 and 3 in the "design validation" analysis, the estimated effect of NGAs on this outcome for the last baseline cohort of students is also statistically significant, which is not plausible. This suggests that the estimated effects on expulsions for Cohorts 2 and 3 in the "design validation" analysis are not credible. Similarly, although the NGAs have a statistically negative effect on students' performance on math state tests in the main analysis and in one of the sensitivity analyses, this result does not hold in the other two sensitivity analyses.

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[7]What Works Clearinghouse (2014).

Appendix Table A.6

Standard Deviation of the Eighth-Grade Characteristics and Outcomes of Ninth-Grade Students in the Study Cohorts

Characteristic or Outcome in 8th Grade (%)	NGA Schools	Comparison Schools	All Schools
Last Baseline Cohort			
Eligible for free/reduced-price lunch	49.6	49.9	49.8
English language learners	23.2	24.3	23.7
Proficient on 8th-grade ELA state test	49.7	49.5	49.6
Proficient on 8th-grade math state test	49.4	49.7	49.6
Follow-Up Cohort 1			
Eligible for free/reduced-price lunch	49.9	50.0	50.0
English language learners	24.5	24.5	24.5
Proficient on 8th-grade ELA state test	49.6	49.5	49.6
Proficient on 8th-grade math state test	49.3	49.3	49.3
Follow-Up Cohort 2			
Eligible for free/reduced-price lunch	49.9	50.0	50.0
English language learners	24.5	25.3	24.9
Proficient on 8th-grade ELA state test	49.8	49.6	49.8
Proficient on 8th-grade math state test	48.9	49.1	49.0
Follow-Up Cohort 3			
Eligible for free/reduced-price lunch	49.9	50.0	50.0
English language learners	25.4	24.3	24.9
Proficient on 8th-grade ELA state test	50.0	49.9	49.9
Proficient on 8th-grade math state test	48.2	49.0	48.6
Number of schools	27	16	43

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts.

   A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The last baseline cohort is the cohort of students who entered the study schools immediately prior to the implementation of the NGA. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGA was launched. Students' eighth-grade outcomes and characteristics are for the school year before they entered high school.

   The values in this table are the student-level standard deviation of the outcome or characteristic for each group of schools.

Appendix Table A.7

Standard Deviation of the Ninth-Grade Outcomes of the
Last Baseline Cohort of Ninth-Grade Students

School Characteristic	NGA Schools	Comparison Schools	All Schools
Progress toward graduation			
Credits earned in core subjects			
(as % needed to graduate)	10.25	9.98	10.12
Academic achievement			
Proficient on ELA state test (%)	47.83	47.73	47.78
Proficient on math state test (%)	48.95	49.38	49.16
GPA in core subject areas (out of 4.0)	1.01	1.01	1.01
Behavioral outcomes (%)			
Attendance rate	10.14	9.80	9.98
Received an in-school suspension	40.46	41.42	40.93
Received an out-of-school suspension	34.21	31.88	33.14
Were expelled	1.67	1.11	1.43
Number of schools	27	16	43

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts; GPA = grade point average.

    A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The last baseline cohort is the cohort of students who entered the study schools immediately prior to the implementation of the NGA. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGA was launched. Students' ninth-grade outcomes are measured in students' first year of high school.

    The values in this table are the student-level standard deviation of the outcome or characteristic for each group of schools.

Appendix Table A.8

Standard Deviation of School Characteristics in the Last Baseline Year

School Characteristic	NGA Schools	Comparison Schools	All Schools
Eligible for free/reduced-price lunch (% of all students)	13.9	12.5	13.2
Racial-ethnic composition (% of all students)			
Black	29.2	17.8	24.0
Hispanic	11.7	7.7	9.8
White	26.3	20.1	23.2
Other	2.4	1.9	2.1
Ninth-grade enrollment	173.8	153.9	166.7
Pupil-teacher ratio (all grades)	1.5	2.9	2.3
Title I status (% of schools)	19.2	32.0	26.4
Location (% of schools)			
City	19.2	19.2	19.1
Rural	19.2	19.2	19.1
Number of schools	27	16	43

SOURCE: Common Core of Data.

NOTES: The last baseline year is defined as the school year immediately prior to the implementation of NGAs.

   The values in this table are the school-level standard deviation of the characteristic for each group of schools.

Appendix Table A.9

Estimated Effect of NGAs on School Progress and Academic Achievement in Ninth Grade, by Sensitivity Analysis

Outcome	Main Sample	Design Validation[a]	Adjusted for School Characteristics[b]	Propensity Score Matching[c]
Progress toward graduation				
Credits earned in core subjects				
(as % needed to graduate)				
Last baseline cohort		-0.08		
Follow-Up Cohort 1	-0.42	-0.84	-0.55	-0.78
Follow-Up Cohort 2	-0.16	-0.98	-0.27	-0.50
Follow-Up Cohort 3	-1.31	-1.84	-1.10	-0.94
Academic achievement				
Proficient on ELA state test (%)				
Last baseline cohort		-0.25		
Follow-Up Cohort 1	-0.32	-0.51	0.42	-1.67
Follow-Up Cohort 2	0.80	-0.65	1.05	0.03
Follow-Up Cohort 3	1.65	0.30	1.85	-1.35
Proficient on math state test (%)				
Last baseline cohort		-1.16		
Follow-Up Cohort 1	-2.68 *	-3.02	-2.50 *	-1.31
Follow-Up Cohort 2	-2.70	-3.33	-2.76 *	0.53
Follow-Up Cohort 3	-2.15	-3.13	-2.40	-1.89
GPA in core subject areas (out of 4.0)				
Last baseline cohort		-0.04		
Follow-Up Cohort 1	0.05	-0.05	0.05	0.03
Follow-Up Cohort 2	0.07	-0.05	0.07	0.01
Follow-Up Cohort 3	0.03	-0.14 *	0.05	-0.04
Number of schools	43	41	43	43

(continued)

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Appendix Table A.9 (continued)

SOURCE: Student records from the Florida Department of Education.

NOTES: ELA = English language arts.

   A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The last baseline cohort is the cohort of students who entered the study schools immediately prior to the implementation of the NGAs. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Ninth-grade outcomes are measured in students' first year of high school.

   The values in the "Estimated Effect" column are the differences between NGA schools and comparison schools with respect to their deviations from baseline trend. A two-tailed t-test was applied to estimated differences between NGA schools and comparison schools. The statistical significance of estimated effects is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

   [a]The selection of comparison schools was conducted using the same process as for the main study sample, but in this case pretending that NGA schools' *last baseline cohort* was the first cohort to be affected by the NGA. If the study design and matching approach are sound, then the "effect" for the last baseline cohort should be *close to zero in magnitude* and not statistically significant, and impacts in the follow-up years should be similar to impacts for the main sample.

   [b]The impact estimates are adjusted for the characteristics of schools (percentages of students by racial/ethnic group, ninth-grade enrollment, pupil-teacher ratio) in the school year when each cohort entered the study schools, as well as the eighth-grade characteristics of each cohort of students (percentage of English language learners, percentage with an individualized education plan, percentage eligible for free or reduced-price lunch, percentage proficient on the ELA and math state tests).

   [c]Comparison schools were chosen using propensity scores as an overall measure of the difference between schools, rather than the Euclidean distance.

Appendix Table A.10

Estimated Effect of NGAs on Behavioral Outcomes in
Ninth Grade, by Sensitivity Analysis

Outcome (%)	Main Sample	Design Validation[a]	Adjusted for School Characteristics[b]	Propensity Score Matching[c]
Attendance rate				
Last baseline cohort		-0.09		
Follow-Up Cohort 1	-0.54	-0.95	-0.64	-1.21
Follow-Up Cohort 2	-0.71	-1.26	-0.69	-1.52
Follow-Up Cohort 3	-0.38	-0.96	-0.34	-1.82
Received an in-school suspension				
Last baseline cohort		-4.29		
Follow-Up Cohort 1	1.15	-2.88	1.35	0.75
Follow-Up Cohort 2	-0.47	-5.97	-0.53	-2.04
Follow-Up Cohort 3	-3.21	-7.18	-3.61	-2.47
Received an out-of-school suspension				
Last baseline cohort		-2.89		
Follow-Up Cohort 1	-0.27	-1.96	-0.23	2.23
Follow-Up Cohort 2	-1.34	-3.89	-1.33	1.97
Follow-Up Cohort 3	-2.13	-4.26	-2.02	2.61
Were expelled				
Last baseline cohort		-0.06 *		
Follow-Up Cohort 1	-0.02	-0.05	-0.02	0.01
Follow-Up Cohort 2	-0.05	-0.09 **	-0.05	-0.01
Follow-Up Cohort 3	-0.06	-0.09 **	-0.06	-0.02
Number of schools	43	41	43	43

(continued)

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Appendix Table A.10 (continued)

SOURCE: Student records from the Florida Department of Education.

NOTES: A ninth-grade cohort is defined as a group of students who enter a high school in the same school year. The last baseline cohort is the cohort of students who entered the study schools immediately prior to the implementation of the NGAs. The follow-up cohorts are the first three cohorts of students who entered the study schools after the NGAs were launched. Ninth-grade outcomes are measured in students' first year of high school.

The values in the "Estimated Effect" column are the difference between NGA schools and comparison schools with respect to their deviations from baseline trend. A two-tailed t-test was applied to estimated deviations and estimated differences between NGA schools and comparison schools. The statistical significance of estimated effects is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

[a]The selection of comparison schools was conducted using the same process as for the main study sample, but in this case pretending that NGA schools' *last baseline cohort* was the first cohort to be affected by the NGA. If the study design and matching approach are sound, then the "effect" for the last baseline cohort should be *close to zero in magnitude* and not statistically significant, and impacts in the follow-up years should be similar to impacts for the main sample.

[b]The impact estimates are adjusted for the characteristics of schools (percentages of students by racial/ethnic group, ninth-grade enrollment, pupil-teacher ratio) in the school year when each cohort entered the study schools, as well as the eighth-grade characteristics of each cohort of students (percentage of English language learners, percentage with an individualized education plan, percentage eligible for free or reduced-price lunch, percentage proficient on the ELA and math state tests).

[c]Comparison schools were chosen using propensity scores as an overall measure of the difference between schools, rather than the Euclidean distance.

NGA Components and Support Services in the Last Baseline Year

Appendix Tables A.11 and A.12 look at the percentages of schools that were implementing the NGA structural components and support services in the school year before the NGAs were created. As shown in Appendix Table A.11, as one would expect, none of the study schools had a dedicated administrator or space the year before the NGAs were created. Some of the NGA schools and comparison schools did have a dedicated faculty and teaching teams; this is also to be expected, because these strategies can be used outside of NGAs. For similar reasons, some of the NGA schools and comparison schools were also offering different types of support services in the last baseline year (Appendix Table A.12). However, as noted in Chapter 3, the percentage of schools offering these services was greater in the follow-up period (Table 3.2) than in the baseline period (Appendix Table A.12) among both the NGA schools and the comparison schools.

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Appendix Table A.11

Core Structural Components of NGAs in Place in the Last Baseline Year

Structural Component (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Dedicated space	0.0	0.0	0.0	1.000
Dedicated administrator	0.0	0.0	0.0	1.000
Dedicated faculty	29.6	64.6	-35.0 **	0.039
Teaching teams	3.3	15.3	-12.0	0.192
Schools with all four core components	0.0	0.0	0.0	1.000
Number of schools (total = 43)	27	16		

SOURCE: Administrator Survey.

NOTES: The "last baseline year" is defined as the school year before the NGAs were created. The values in the columns labeled "NGA Schools" and "Comparison Schools" are the observed means. Rounding may cause slight discrepancies in calculating sums and differences.

 A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Appendix Table A.12

**Curricular and Student Support Services for Ninth-Grade Students
in the Last Baseline Year**

Type of Support (%)	NGA Schools	Comparison Schools	Estimated Difference	P-Value
Curricular and instructional support				
Career planning curriculum	14.8	11.0	3.8	0.714
College awareness curriculum	11.1	11.1	0.0	1.000
College preparation curriculum	22.2	0.0	22.2 ***	0.007
Curriculum for closing grade gaps	37.0	29.3	7.7	0.539
Opportunities for catch-up during school day	25.9	29.6	-3.7	0.745
Curriculum for study/social skills	29.6	18.1	11.5	0.345
Flexible scheduling for student regrouping	11.1	18.8	-7.7	0.497
Student support				
Summer bridge or orientation program	7.4	7.4	0.0	1.000
Extracurricular help in core subjects	48.1	32.8	15.4	0.250
Data-driven response to academics and behavior	22.2	45.3	-23.1	0.153
Recognition of positive behavior/achievement	40.7	13.8	26.9 **	0.038
Number of schools (total = 43)	27	16		

SOURCE: Administrator Survey.

NOTES: The "last baseline year" is defined as the school year before the NGAs were created. The values in the columns labeled "NGA Schools" and "Comparison Schools" are the observed means. Rounding may cause slight discrepancies in calculating sums and differences.

   A two-tailed t-test was applied to differences between NGA schools and comparison schools. The statistical significance of estimated differences is indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Appendix B

Beyond the Sunshine State: Ninth Grade Academies in Other School Districts

MDRC sought to go beyond its evaluation of Ninth Grade Academies (NGAs) in Florida. This appendix reports the results of a supplementary study, a qualitative investigation into efforts to create NGAs in nine other school districts, shown in Appendix Table B.1, located across the country.[1] Eight of the nine school districts were included because they were awarded funding through the 2010 Smaller Learning Communities (SLC) grant competition sponsored by the U.S. Department of Education. A review of the abstracts of the proposals that the districts submitted to the department indicated that Ninth Grade Academies (also referred to as Freshman Academies, or FAs) were a prominent feature of the SLC high school reforms that were planned for 16 high schools across these eight districts.[2] The ninth district is the District of Columbia, which undertook a major new initiative to implement NGAs in its nine comprehensive high schools beginning in the 2013-2014 school year.

In March and April 2016, MDRC researchers conducted interviews ranging in length from 45 to 70 minutes with personnel in all nine districts to learn about their efforts in response to the grants; a total of 14 interviews were completed. The interviews revealed that all but one district that proposed to implement an NGA as part of its 2010 SLC grant actually did so.[3] The experiences of the eight districts that did, and of the 23 schools discussed in district interviews, provide a useful counterpoint to those of the Florida schools and districts that are the focus of the larger report.[4]

In brief, the interviews confirm the findings of the larger study that implementing all four of the components of an NGA that were described in the body of the report is challenging, and that consistent support and oversight by individuals in positions of authority is needed to ensure maximum effectiveness. Turnover among administrators and competing priorities have interfered with and sometimes upended academy functioning. At the same time, however, the interview results suggest that, even without all four components, NGAs can

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[1]For convenience, the term "school districts" in this appendix includes the Hawaii State Department of Education and the West Orange (NJ) Board of Education. "District X" in the table requested anonymity.

[2]All 2010 SLC grantees whose proposal abstracts clearly pointed to plans to implement NGAs are included in the study.

[3]West Orange Board of Education, the SLC grantee that that did not implement the proposed NGA, did put in place other support services for freshmen, including a summer "bridge" program for rising ninth-graders with low academic skills, a half-year "freshman seminar" course incorporating organizational and study skills, and mentoring by students in the upper grades. In addition, one District of Columbia high school that began to implement an NGA did not do so to the satisfaction of district administrators, and the special funding for the NGA that the school received was eliminated after one year.

[4]The 23-school figure excludes West Orange High School, where an NGA was never implemented. The Hawaii State Department of Education's SLC grant involved five high schools; the study obtained information about four of these.

Appendix Table B.1

Characteristics of NGAs in the Supplementary Study

School District or Agency and Participating Schools	Year NGA Began	Still in Existence as of Spring 2016	Components			
			Dedicated Space	Dedicated Administrator	Teaching Teams[a]	Dedicated Faculty[b]
Fairbanks North Star Borough School District (AK)						
Lathrop High School	2006	No	0	X	X[c]	X
Woodland Joint Unified School District (CA)						
Woodland High School	2007	No	X[d]	X	X	X
Pioneer High School	2011	No	0	X	0	X
Hawaii State Department of Education						
Castle High School	2011	Yes	0	X	X	X
Kapa'a High School	2011	Yes	X	X	X	X
Maui High School	2005	Yes	0	X	X	X
McKinley High School	2005	Yes	0	X	X	X
Beverly Public Schools (MA)	2011	Yes	X[d]	X	X	X
Springfield School District 19 (OR)						
Springfield High School	2011	Yes	0	X	0	X
Thurston High School	2011	Yes	0	X	X[c]	X
Bradley County/Cleveland City Schools (TN)						
Bradley Central High School	2008	Yes	X	X	X	X
Walker Valley High School	2008	Yes	X	X	X	X
Cleveland High School	2007	No	X	X	X	X

(continued)

Appendix Table B.1 (continued)

School District or Agency and Participating Schools	Year NGA Began	Still in Existence as of Spring 2016	Components			
			Dedicated Space	Dedicated Administrator	Teaching Teams[a]	Dedicated Faculty[b]
District X						
Unnamed high school	2011	Yes	X	X	X	X
District of Columbia Public Schools (DC)						
Anacostia High School	2013	Yes	X	X	X	X
Ballou High School	2013	Yes	X	X	X	X
Cardozo High School	2013	Yes	X	X	X	X
Coolidge High School	2013	Yes	X	X	X	X
Dunbar High School	2013	Yes	X	X	X	X
Eastern High School	2013	Yes	X	X	X	X
Roosevelt High School	2013	Yes	X	X	X	X
Wilson High School	2013	No	X	X	X	X
Woodson High School	2013	Yes	X	X	X	X

SOURCE: Interviews with school district or agency personnel.

NOTES: X = School is implementing the component. All districts except the District of Columbia were awarded funding from the U.S. Department of Education's 2010 Smaller Learning Communities grant program.

[a]An NGA is considered to have a teaching team if the team consists of teachers in the four core subjects (English, mathematics, social studies, and science), with exceptions as noted.

[b]Dedicated faculty is defined as teachers who teach ninth-graders primarily or exclusively.

[c]The NGA does not include math teachers.

[d]Science labs are not located within the NGA's dedicated space.

create more personalized environments for students.[5] A number of interview respondents, too, noted that student outcomes at their schools had improved after NGAs were put in place. While it cannot be concluded that the NGAs *produced* these better outcomes — rigorous research methods would be needed to establish such a causal connection — they give reason to believe that the impact story contained in this report may not be the final or definitive one. Further evaluation of the NGA approach would seem to be in order.

The next section of this appendix describes the characteristics of the schools included in this scan and of the NGAs that were implemented in these settings. The final section summarizes key points and lessons emerging from the interviews.

Characteristics of Schools and NGAs Included in the Scan

The 23 high schools with NGAs varied in a number of ways. They were located in large urban centers and suburban and rural settings and ranged in size from 433 to 1,980 students. Over half (13 of the 23, or 56 percent) were schools serving large proportions of low-income students and receiving federal funding under Title I. Ninth-grade retention rates ranged from zero to 38 percent.[6]

Appendix Table B.1 shows that the schools receiving SLC grants began to implement their NGAs by 2011. The interviewers learned that several schools had begun implementing NGA-like structures before receiving the 2010 grants; in these cases, the grants were generally used to expand the NGAs to include all ninth-graders (not just some of them) and to support professional development for NGA teachers and administrators.

Only 16 of the 23 schools' NGAs included a separate physical space, an academy administrator, and teachers in the four core subject areas (English, mathematics, social studies, and science) who taught ninth-graders primarily or exclusively. Some NGAs appeared to be functioning effectively in the absence of one or another of these elements; the section that follows elaborates on this point.

The NGAs differed in whether they included students repeating ninth grade. For example, all the NGAs in the District of Columbia excluded repeaters as a matter of policy, while at a high school in another district where the number of repeaters is low, students were reassigned to the NGA but with a different group of teachers from the preceding year.

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[5]For one thing, some NGAs have been subdivided into smaller substructures (sometimes called "houses" or "teams") comprising 90 to 100 students who take their classes together and share the same group of core-subject teachers.

[6]Data on school size and Title I status come from the Common Core of Data for the 2013-2014 school year. Statistics on ninth-grade retention rates are based on U.S. Office of Civil Rights data for the 2011-2012 school year.

At the time of the interviews, 11 of the 15 NGAs in the study that were supported in part through the SLC grants, along with 8 of the 9 original NGAs in the District of Columbia, continued to operate. The following section considers the factors that led NGAs to be sustained over time or, conversely, that led to their demise.

Principal Findings from the Interviews

- **Some elements of the program model appear to be more important than others to a well-functioning NGA: While a separate space in which all ninth-grade classrooms are located may be helpful to forging a separate sense of ninth-grade identity, it does not appear to be essential, and some teams have functioned well without a faculty dedicated to the ninth grade in all four core subject areas.** Some schools could not locate all the ninth-grade core subject classrooms together. A couple of respondents, for example, noted that while other ninth-grade classes could be housed together, science labs, with their special equipment, could not readily be moved to a different place in the building. In another district, the former project director for an NGA effort that appears to be operating successfully in two schools remarked that moving the NGA teachers into a separate space would have "upset the apple cart." The NGAs in that district do not include math teachers, since ninth-graders are enrolled in many different math classes.

- **Common planning time for teachers is essential, according to interview respondents; in the NGAs that were studied, this time has primarily been devoted to discussions of individual students and how to help them, but it has also been used to consider ways to make instruction deeper and more engaging.** NGA teachers typically met during their common planning time once or twice a week. In these meetings, they identified students who were struggling and talked about how to assist them in dealing with both academic and socioemotional issues through extra attention, in-school and after-school tutoring, and coordination of other services. Conversation also centered on strengthening instruction, planning field trips and interdisciplinary units, and setting high and consistent expectations.

- **Friction has been reduced when it has been possible to select NGA teachers who enjoy working with ninth-graders and are open to working in teams.** Tensions have been evident when teachers have not had a voice in their assignments, especially when they do not understand the rationale behind NGAs. In the District of Columbia, where teachers placed in the NGAs had no prior exposure to the concept, the rate of NGA teacher

turnover in the first year was 66 percent. On the other hand, teachers who have made a choice to be part of an NGA have generally been happy with this assignment. As one administrator commented, the teachers in the NGA at her school, most of whom volunteered to teach there, regard it as "Shangri-La." She noted that the teachers enjoyed the teamwork; they also appreciated the NGA's orderly, respectful environment.

- **The presence of a school administrator charged with overseeing the NGA has been important to smooth NGA functioning.** Administrators — often assistant principals — have had broad oversight responsibilities for the NGAs. They attend the teacher meetings held during common planning time and help make sure that the time is used productively.

- **Most NGAs that were studied benefited from receiving technical assistance from an outside organization.** The schools contracted with outside organizations to provide assistance on a variety of issues, from helping teachers work together in teams to enhancing instructional rigor and relevance. It may not be reasonable to expect school districts on their own to provide all the kinds of support that administrators and teachers may need to implement NGAs with maximum effectiveness.

- **Backing from the district or the superintendent, as well as from the school's principal, has been critical for sustaining and strengthening the NGA over time.** The NGA, like any innovation, benefits greatly from a champion who understands it and pushes it forward. NGAs that have continued and thrived have generally been able to count on the support of the district administrator — especially critical after the initial grants expired and the additional costs associated with the NGA (common planning time for teachers, for example) have had to be supported through district funds. At the school level, supportive principals have helped ensure that the NGA's staffing and scheduling needs have been met.

- **In explaining why the NGAs at their schools were disbanded, respondents cited conflicting priorities and a lack of continuing support from teachers and administrators, sometimes because of leadership turnover.** Some schools eliminated their NGAs (or, in one case, never implemented an NGA in the first place) because district and school administrators saw them as too restrictive of students' choices of courses and electives. At one school, teachers of upper-level classes and electives lobbied against the NGA because they felt that it had negative effects on the master schedule. Then, too,

when new district administrators and others who had not been associated with the NGAs' initial implementation took over, they often questioned the decisions of their predecessors.

- **Most schools with NGAs — including some in which the NGAs were discontinued after the initial funding expired — have seen improved student outcomes.** Although those interviewed did not cite improvements in ninth-grade students' academic achievement, they frequently noted that after NGAs were implemented, the students registered higher rates of promotion to tenth grade and lower rates of truancy and discipline problems. While better outcomes cannot, in and of themselves, be seen as an *effect* of the NGAs, the results of this supplementary study suggest that additional rigorous evaluation of the NGA concept may be warranted.

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