Smoothing the Transition to Postsecondary Education: The Impact of the Early College Model[1]

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[1]The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grants R305R060022, R305A110085, and R305A140361 to The University of North Carolina at Greensboro. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

ABSTRACT

Developed in response to concerns that too few students were enrolling and succeeding in postsecondary education, early college high schools are small schools that blur the line between high school and college. This article presents results from a longitudinal experimental study comparing outcomes for students accepted to an early college through a lottery process with outcomes for students who were not accepted through the lottery and enrolled in high school elsewhere. Results show that treatment students attained significantly more college credits while in high school, and graduated from high school, enrolled in postsecondary education, and received postsecondary credentials at higher rates. Results for sub-groups are included.

SMOOTHING THE TRANSITION TO POSTSECONDARY EDUCATION: THE IMPACT OF THE EARLY COLLEGE MODEL

INTRODUCTION

The changing nature of the U.S. economy has fostered concerns that too few students are successfully completing postsecondary education (Achieve, 2004). An estimated three quarters of those who enter high school graduate within four years, with approximately 70 percent of those graduates enrolling immediately in some form of postsecondary education (Ross et al., 2012). Of those who do attend, a little less than half (49%) of beginning postsecondary students attain some sort of a postsecondary credential within six years of enrolling (Ross, et al., 2012). As a result, there have been numerous initiatives to increase the number of students who graduate from high school prepared to enroll and progress in postsecondary education. One approach is the Early College High School (early college) model, small schools that blur the line between high school and college.

Early colleges are a comprehensive model of schooling explicitly focused on college readiness for all (Edmunds, 2012). The schools are designed to incorporate characteristics that have been associated with increased enrollment and success in postsecondary education. The early college provides a de-tracked academic program in which all students take a curriculum that includes the courses necessary for entrance into a four year university (Finkelstein & Fong, 2008). Students are given early access to college courses, which has been associated in some studies with improved postsecondary outcomes (Allen & Dadgar, 2012; An, 2012). Teachers receive support in implementing instructional strategies designed to prepare students for the level of thinking they will encounter in college (Conley, 2011). Students also receive explicit instruction and assistance in navigating the college admissions and financial aid process

(Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2009; Tierney, Bailey, Constantine, Finkelstein, & Hurd, 2009).

Early colleges are a rapidly expanding model; at least 280 schools were started in 31 states and the District of Columbia under the National Early College Initiative, supported by the Bill & Melinda Gates Foundation. Although this initiative has ended, early colleges have continued to expand and are of high interest to policymakers. For example, the 2014 National Early College Conference had over 700 attendees, some from as far away as Japan. Through 2014, the U.S. Department of Education had awarded approximately $60 million under its Investing in Innovation program to four grants seeking to implement early colleges in multiple settings.

This paper presents results from the first ever longitudinal, prospective experimental study examining the impact of early colleges on students' outcomes in high school and in postsecondary education. The findings reported here are related to high school outcomes associated with a successful transition to college and to postsecondary outcomes. Results are presented overall and for different subgroups of students, including the populations targeted by the initiative.

THEORETICAL BACKGROUND

Many researchers and policymakers conceptualize education as a pipeline with various stages and transitions that ultimately lead to postsecondary education and/or the world of work (The National Center for Public Policy and Higher Education, 2004). There is a chance at every stage and transition in the pipeline for students to change their academic trajectory, either positively or negatively (Benner & Graham, 2009). This section first provides an overview of the literature regarding college access and success, focusing on the high school components of the educational pipeline. It then describes the early college model in terms of the components that are expected

to have an impact on college access and success, concluding with a brief overview of the research on early colleges.

Factors Associated with College Access and Success

Student characteristics associated with lower college enrollment and success include being the first in the family to attend college, being a member of specific minority groups or being low-income (Grodsky & Jackson, 2009; Ross, et al., 2012). Additionally, research suggests that many students do not enroll in college due to inadequate academic preparation and not completing the logistical steps associated with applying for college and financial aid (Castleman, Owen, & Page, 2015; Tierney, et al., 2009). Schools can influence the second set of factors, pertaining to preparation, but not the first set of factors, which are demographic. Because this paper explores the role of a high school reform model in improving college preparation and postsecondary outcomes, this section provides a brief review of those aspects of college readiness and success over which a school has some level of control.

Academic preparation: Many colleges require that students complete a specific set of courses to be eligible to apply. If students do not take these courses at the beginning of high school, it can be extremely challenging to complete them by the time they graduate from high school. For example, one study of students' transcripts in California found that, of the students who had **not** completed Algebra I by the end of the 9th grade, only an estimated six percent completed the courses they needed to go to college (Finkelstein & Fong, 2008). Additionally, correlational studies have shown that one of the strongest predictors of success in college is the extent to which students take the more advanced courses that are seen as being necessary for college (Adelman, 2006; Adelman, Daniel, & Berkovits, 2003). As a result, researchers recommend creating a coherent academic program that will allow high school students to be

prepared for college (Conley, 2005; Tierney, et al., 2009).

In addition to a core set of courses, college success requires that students possess a certain set of intellectual skills, such as critical thinking and writing (Conley, 2008). Therefore, policy organizations have made calls for high schools to help students develop these skills through rigorous classroom instruction and a more intellectually-focused school culture (Achieve, 2004; Conley, 2011).

Early access to college credit-bearing courses. Offering students early access to college courses, either through Advanced Placement or dual enrollment options, has been a long tradition in America's high schools. Initially limited to the most academically proficient students, AP and dual enrollment courses have been expanding dramatically under the belief that these programs will provide students with a goal of increasing students' readiness for college and decreasing the time to a postsecondary degree (Iatarola, Conger, & Long, 2011; Speroni, 2011a). Researchers have examined the association of taking these college credit-bearing courses with postsecondary outcomes and have found mixed results, with some studies finding positive associations with postsecondary enrollment and performance and other studies finding no relationships. For example, a study of the College Now program in New York looked at students who had taken at least one college course in high school compared to students who had not taken any, controlling for pre-existing differences in achievement and other measures, and found that taking college courses in high school was associated with a higher college GPA and higher credit attainment in college (Allen & Dadgar, 2012). Other studies using a similar approach with national data found that dually enrolled students were more likely to be college ready and had higher first-year college GPAs (An, 2012; An & Taylor, 2015). In contrast, an analysis of Washington State's Running Start program found that taking dual enrollment courses had a

positive impact on attaining an associate's degree but negative impacts on high school graduation and four-year college enrollment (Cowan & Goldhaber, 2015). All of these previous studies utilized regression models that attempted to control for baseline characteristics. A study that used a rigorous regression discontinuity design to determine the impact of dual enrollment on students who were just above the GPA cutoff for eligibility of participation found no overall impact on enrollment in or completion of postsecondary education with the exception of a large impact on postsecondary attainment for those students who barely met the GPA eligibility requirement for College Algebra (Speroni, 2011b).

College-going culture: Students are more likely to attend college when they are in a school environment that views college attendance as a priority. In a longitudinal correlational study of college-going among Chicago students, the single most important predictor of a student's enrollment in college was the extent to which the high school had a college-oriented culture, including whether the staff encouraged students to go to college, if they worked to help students be prepared, and if they assisted students in completing college applications. This was particularly important for students with lower academic qualifications and those of Latino background (Roderick, Nagaoka, Coca, & Moeller, 2008). Other studies have found that students who are in a school environment that values academics and college do better in school and have better postsecondary outcomes (Koyama, 2007; Mehan, Hubbard, & Villanueva, 1994).

In addition to having an academic emphasis, a supportive school environment is associated with increased college attendance. For example, an extensive ethnographic study of students in a college-oriented high school suggested that an ethic of caring, represented by teachers who want students to do well academically and socially, was important, particularly for minority students (Knight-Diop, 2010).

Logistical preparation: The actual process of applying to college includes multiple steps that students are often unable to navigate, such as taking appropriate placement exams, identifying colleges that are a good match for them, and completing applications (Roderick, et al., 2008). This can lead to otherwise well prepared students not enrolling in college (Castleman, et al., 2015). Many students face economic challenges to attending college (Bozick & DeLuca, 2011) and research has shown that providing explicit guidance in seeking out and applying for financial aid can result in increased enrollment in college (Bettinger, et al., 2009). For these reasons, the *IES Practice Guide on Helping Students Navigate the Path to College* (Tierney, et al., 2009) recommends that high schools have processes in place to help students through these steps.

Much of the research described above has been done on individual strategies (such as taking dual credit courses) or a small combination of them. The early college model is different in that it combines these different strategies to create a learning environment focused on college readiness and in the fact that it has been studied using a rigorous, experimental design. The next section describes how early colleges incorporate these strategies and others to work toward the goal of increasing the number of students enrolling and succeeding in college.

The Early College Model

The early college is a comprehensive school reform model that focuses explicitly and purposefully on preparing all of its students for college. Early colleges provide students with concurrent high school and college experiences, substantially minimizing the transition between these two stages of education. The remainder of this section describes the early college model as implemented in North Carolina, the site of this study, and summarizes existing research on it.

Primarily located on the campuses of two- or four- year colleges and universities, early colleges are targeted at students who are underrepresented in college. The goal is to minimize

challenges in the transition to postsecondary education for those students for whom that access has historically been problematic. In North Carolina, the targeted populations include students who (1) are the first in their family to go to college, (2) come from low-income families, and/or (3) are members of racial and ethnic groups underrepresented in college.

Early colleges are expected to provide an academically rigorous course of study with the goal of ensuring that all students graduate with a high school diploma and two years of transferable college credit or an associate's degree. In order for students to accomplish this goal, the early college must develop, in collaboration with their higher education partner, an aligned, seamless curriculum plan offering the high school and college courses that students need to take to complete both degrees, including dual-credit courses. Some schools are structured as four-year schools but most allow students five years to complete the curriculum because they have recognized that students who are members of the target population may not always be able to complete all of the credits in only four years.

Each early college is also expected to implement and exhibit a specific set of principles, known as Design Principles, developed by North Carolina New Schools (the public-private partnership managing these schools in North Carolina) that represent characteristics of high quality high schools. These Design Principles are as follows: (1) Ensuring that students are ready for college; (2) Instilling powerful teaching and learning in schools; (3) Providing high student/staff personalization; (4) Redefining professionalism; (5) Leadership and (6) Implementing a purposeful design (North Carolina New Schools, 2013).

These Design Principles incorporate practices that are associated with increasing the number of students going to college. In particular, the College Ready Design Principle is intended to ensure that each school has a purposeful goal of preparing all its students for college, which is

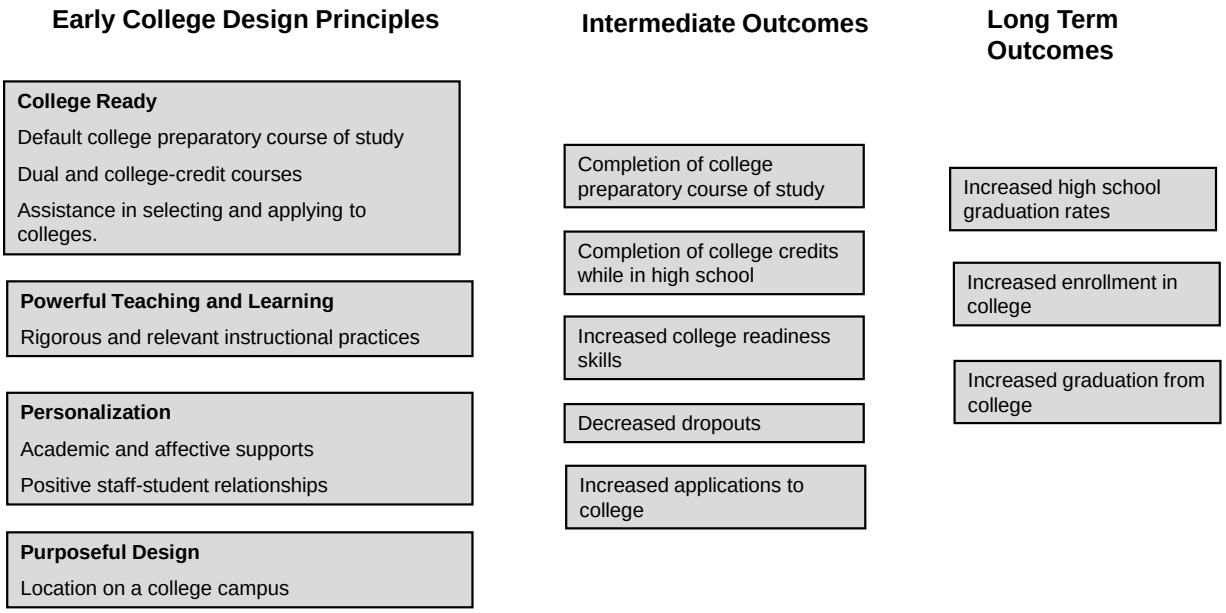
implemented by having a clearly articulated curriculum that could lead to students' receiving all of their high school credits and two years of college credit by the end of high school. All students are expected to take a default college preparatory course of study such that by the time they graduate from high school, they will have all of the courses required for entrance into the University of North Carolina system. All students are also expected to take college courses; for most students, this starts in the 9th grade[2] when they might take courses such as physical education or college success skills, often in early college student-only classes. In 10th grade, most early colleges have students begin to take core academic course with regular college students. By 11th and 12th grade, students take the majority of their courses on the college campus with regular college students.

In addition to college preparatory coursetaking and accumulating college credits while in high school, the College Ready Design Principle includes an emphasis on continuing college past the early college experience. Early colleges provide visits to other colleges and universities and support students in navigating the college admissions process. For example, students in many early colleges are required to complete applications to postsecondary institutions.

Other Design Principles provide supports designed to prepare students for college. The Personalization Design Principle focuses on providing the academic and social supports that students need to succeed in a strongly academically-oriented environment. The Powerful Teaching and Learning Design Principle includes instructional strategies that provide the type of rigorous and relevant instruction that students will likely encounter in college classes. The principle of Purposeful Design entails locating the early colleges on the campus of two- and four-year colleges. This allows students to directly experience the college enviroment and to be a college student while still in high school. The other two Design Principles focus on the

professional working environment and provide more indirect support to the goal of college readiness. Figure 1 provides a conceptual model of the early college components that are theorized to most directly have an impact on students' enrollment and success in college.

Figure 1: Early College Theory of Change Relative to College Readiness



Research on early colleges

Although early colleges are present in ever-growing numbers, they are a relatively recent phenomenon with a limited research base. One of the first studies was a national evaluation of the model, comissioned by the Bill & Melinda Gates Foundation, that focused on describing implementation and outcomes for early college high schools across the country. According to the evaluation, most early colleges were new schools located on the campus of and working with community colleges. Results showed the model serving its intended population with approximately two thirds of students being racial or ethnic minorities and 59 percent from low income households. The national evaluation also found that early college students did better

overall than other students in the district in which the early colleges were located, although the original research design was unable to control for alternative hypotheses such as incoming achievement or motivation (American Institutes of Research & SRI International, 2009).

Much of the research on early colleges has been primarily small-scale descriptive or qualitative studies (including a number of dissertations) investigating aspects of the early college experience. For example, studies have concluded that the early college is a personalized learning environment (Thompson & Onganga, 2011), providing students with care, support, and high expectations (Bruce, 2007).

This paper presents an experimental examination of the impact of early colleges on student outcomes. Another experimental study, supported by the Bill & Melinda Gates Foundation, utilized a retrospective experimental design and used a sample consisting of 10 sites across the country that used lotteries to select their students and included students who entered 9th grade in 2007-2008 or earlier. The study found a positive impact on achievement in English Language Arts, no impact on mathematics achievement, and a five percentage point impact on high school graduation rates (Berger et al., 2013). There were also positive impacts on postsecondary enrollment. By the end of the sixth year after high school, 80.9% of early college students had enrolled at least once in postsecondary education (including enrollment in dual credit courses in high school) compared to 72.2% of the comparison group (Berger, Turk-Bicakci, Garet, Knudson, & Hoshen, 2014).

The study reported in this paper is a prospective, longitudinal, experimental study of the early college model as implemented in North Carolina. Funded by three consecutive grants from the Institute of Education Sciences, our study has tracked students in real time starting with 9th grade. As reported elsewhere, we have found that early college students were more likely to be

progressing in core college preparatory classes, particularly in mathematics; they also had better attendance, lower suspension rates, and were more likely to remain in school (Authors, 2012). The study has also found that early college students reported more positive learning experiences than the control students, including higher expectations, better relationships with their teachers, more rigorous and relevant instruction, and more frequent support (Authors, 2013).

Our study has several advantages that allow us to make a significant contribution to the research on early colleges and, more broadly, to the research on programs and reforms seeking to boost postsecondary preparation and enrollment. First, this study is based on a well-planned and implemented lottery-based experimental design, which yields results with strong internal validity. Second, tracking students as they progress through high school allows us to capture a rich array of outcomes at both the high school and college levels, only a small portion of which can be included in this paper. Third, we utilize established administrative data sources that allow us to capture these outcomes reliably and consistently over time. Finally, our study's full sample includes students who enrolled in 9th grade in the years 2005-2006 through 2010-2011; this means that our data come from schools in their first year of implementation all the way to schools in their fifth year of implementation; thus we are able to include more mature schools. More detail is provided on the methodology in the next section.

METHODOLOGY

This study is based on a multi-site randomized field trial designed to examine the impact of early colleges on a variety of student outcomes. The specific research questions addressed in this paper include the following:

1. What is the impact of the early college model on high school outcomes associated with students' success and enrollment in college, including college credits earned while in high

school, and high school graduation rates?

2. What is the impact of the early college model on key postsecondary outcomes, including students' enrollment in post-secondary education and their attainment of postsecondary credentials?
3. Does the impact significantly vary for different sub-groups, including students who are low-income, the first in their family to go to college, members of underrepresented racial or ethnic groups, or not prepared for 9th grade?

To answer these questions, the study uses extant data for students who applied to and were randomly selected to attend the early college. More specifically, early colleges included in this study utilized a lottery to select students from an applicant pool, and the study compares the students assigned to the treatment group (early college) with students assigned to the control group (generally the traditional high school in the district or "business as usual").

Sample

This paper reports on results from 12 early colleges, including all schools that had enrolled in the study by the 2008-2009 school year. These schools are located in rural and urban settings from all regions of North Carolina. On average, the schools are much smaller than the traditional schools in their county but they serve students similar to the student population in their district relative to eligibility for free and reduced price lunch and race/ethnicity. The early colleges do have much lower enrollments of students with disabilities and they enroll students with higher initial levels of achievement. While early colleges and traditional high schools have similar teacher turnover rates, early colleges are much more likely to have teachers who are in their first three years of teaching. Table 1 presents characteristics of the early colleges included in this study and the high schools located in the same districts.

Table 1: Characteristics of Participating Early Colleges, Traditional Schools, and Non-participating Early Colleges

Characteristics		Early Colleges Participating in Study	Traditional Schools in Same Districts as Participating Early Colleges	Early Colleges Not Participating in Study
School	Size	142.1	971.5	131.5
Student	% Eligible for Free and Reduced Price Lunch	50.8%	45.7%	46.4%
	% Minority	40.0%	44.4%	39.0%
	% Special Education	3.9%	9.2%	3.5%
	% Academically gifted	17.6%	17.5%	18.0%
	Incoming achievement % passing End of Grade 8 math	83.0%	65.8%	82.6%
	Incoming achievement %passing En d of Grade 8 English exam	86.8%	78.6%	88.2%
Teacher	Teacher Turnover Rate	17.0%	13.9%	15.8%
	% Novice Teachers	30.2%	17.2%	31.4%

Note: The characteristics of schools in the study include students who are not in the randomized sample and were accepted to the school under another process. As a result, these percentages may differ from those in Table 2.

The student sample analyzed for this paper includes a total of 1,651 students who applied to 12 different early colleges and enrolled in 9th grade in the 2005-2006, 2006-2007, 2007-2008, and 2008-2009 school years. These 12 schools enrolled a total of 18 cohorts of students, with five schools enrolling multiple cohorts. To participate in the study, schools had to have more applicants than available slots and had to agree to use a lottery to randomly assign students. Schools could set aside slots for students whom they wanted to accept, such as siblings. Any student who did not go through the lottery was excluded from the analysis. Schools entered the

study on a rolling basis and, as long as they continued to use the lottery, could continue to contribute cohorts of students to the study. Because we use extant administrative data (more detail is provided in the measures section), we are able to include almost all students from the original lottery samples in our analyses. Table 1 also includes data showing how the early colleges in our study compared to the early colleges in North Carolina that were not in our study.

In a lottery conducted for an early college, each applicant who met the school's eligibility criteria was assigned a random number and the list of students was ordered from lowest to highest, with the lowest numbers being selected into the early college until all available slots were filled. Starting with the 2007-2008 cohort, the research team began conducting the lotteries. Two schools in the first two cohorts conducted the lottery themselves.

We examined baseline characteristics of the treatment and control students included in the analytic sample, to determine if there was statistical balance on observable characteristics between the two groups. Table 2 shows the 8th grade demographic characteristics of the full sample. As seen, the treatment and comparison groups are statistically comparable on all of the examined characteristics, with the exception of being retained in elementary or middle school. All of the variables displayed in Table 2 were used as covariates in the regression model used to estimate impacts, which is described below.

Measures

The data used in the analyses reported in this paper come from administrative data collected by three primary sources: the North Carolina Department of Public Instruction (NCPDI), the National Student Clearinghouse (Clearinghouse), and the North Carolina Community College System. The North Carolina Education Research Center at Duke University merged these data with the data collected by the study team from lottery applicants and de-identified the resulting

Table 2: Sample Characteristics, by Treatment Status

	Whole Sample (N=1651)	Treatment Group (N=938)	Control Group (N=713)	T-C Difference		
	Mean	Mean	Mean	Difference	P-Value	Effect Size
Race & Ethnicity						
Black	26.7%	27.9%	25.0%	2.9%	0.21	0.09
Hispanic	8.1%	8.6%	7.3%	1.3%	0.35	0.11
White	60.6%	59.0%	62.7%	-3.7%	0.13	-0.09
Gender						
Male	40.9%	40.6%	41.3%	-0.7%	0.62	-0.02
Socioeconomic Background						
First Generation College	40.7%	40.8%	40.5%	0.4%	0.88	0.01
Free/Reduced Price Lunch Eligibility	50.5%	51.1%	49.7%	1.4%	0.55	0.04
Exceptionality						
Disabled/Impaired	2.9%	2.5%	3.5%	-1.0%	0.25	-0.20
Gifted	14.9%	14.0%	16.1%	-2.2%	0.29	-0.10
Retained	3.9%	3.0%	5.0%	-2.0%	0.03*	-0.33
8th Grade Achievement						
Math - Z score	0.00	-0.03	0.04	-0.07	0.21	-0.07
Reading - Z score	0.00	-0.02	0.03	-0.05	0.39	-0.05
Math – pass	80.4%	81.9%	78.3%	3.7%	0.07	0.14
Reading – pass	79.7%	79.4%	80.0%	-0.6%	0.77	-0.02

Notes:
[a] The proportions are weighted by students' probability of being selected into the ECHS.
[b] This is the core analytic sample used for many outcomes and excludes students who could not be found in the 9th grade administrative data and students missing demographic data. Only students in Pilot 1 through Cohort 2 are included.
*Statistically significant at p<.05

data set for analyses. The specific outcomes examined include the following:

College credits earned while in high school. One of the main theories of change underlying the early college high school is that early exposure to college courses will make students more likely to succeed in college. This is based on research that shows that show an association between receipt of college credits and positive postsecondary outcomes (Adelman, 2006; An, 2012; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007).

While access to college courses is embedded in the design of the early college model, students in comprehensive high schools also have access to college credits through dual enrollment courses and through Advanced Placement exams. For purposes of this study, a student was identified as receiving college credit if they took a college course and received at least a "D" in the course because this is the minimum grade required for receipt of college credit. Students who took an Advanced Placement exam and received at least a "3" on the exam were also considered as attaining college credit; although highly selective institutions may not grant college credit for a "3", there are many state and local institutions that do. We included all college courses—those that were transferrable and those that were vocational in nature—with the exception of remedial or developmental courses that would not contribute to a student's attainment of a postsecondary credential. The data for this outcome come from the North Carolina Community College system, which provided data on courses taken and grades received for students enrolled in a community college while in high school. This does mean that we did not include any credits earned through four-year colleges; however, our data show that the number of our sample enrolled in 4-year colleges was so small that it should not influence the results we report here. Data on AP exam performance come from NCDPI and first became available in 2009-10 and following years. Although many early colleges are five-year programs, to ensure a similar comparison with students in traditional schools, we examine the number of college credits completed through the end of 12th grade. The sample for this outcome is 1,437 students and excludes students who could not be matched originally to the NCDPI data, who transferred to a private school or another school out of state, or who were missing (i.e., could not be matched to the administrative data) in any grade. Students who dropped out or graduated early were kept in the analyses.

Graduation from high school. For this study, we report five-year graduation rates because the majority of early colleges are five-year programs and even early colleges that are four years by design do allow some students to take five years to graduate. We recognize that this gives students in the traditional high school an extra year to graduate, which has the potential to depress our overall impact estimates, but this is the time point that provides the fairest comparison. We included only those students who were indicated as having received a regular high school diploma (certificates and GEDs were not included). The graduation data come from the Graduate Data Verification System, which is designed to collect the names, demographic information, course of study and postgraduate intentions of North Carolina high school graduates, and to provide each Local Education Agency (LEA) with an authoritative list of graduates. Only students who have graduated are included in the file. Students who were verified as having moved to another school system (either home-schooled, private, or out of state) were removed from the sample. All other students who were not present in the graduate file were considered to have not graduated.

The sample for this analysis includes all students who applied to the early college and were originally linked to the North Carolina administrative data and did not transfer out of state or to a private school (N=1,594). Students who were originally matched to the data but were later missing remain in the analyses and are counted as not graduating. Students who were documented as transferring out of state or to a private school were excluded from the analyses. This is consistent with the approach that NCDPI uses to calculate its cohort graduation rate.

Enrollment in postsecondary education. The unique design of the early college poses a challenge in identifying appropriate postsecondary outcomes and comparisons, given that early college students are enrolled in high school and college at the same time. In selecting appropriate

measures for this study, we have sought to identify outcomes and measures that serve as fair and meaningful comparisons between the treatment and control groups. For example, looking enrollment in postsecondary education while only in high school did not seem to be an outcome that provides a fair comparison, given that early college students are required to take college classes and regular high school students are not. This could thus be seen as an outcome that is overly aligned with the treatment. On the other hand, examining enrollment in postsecondary education only after graduation from high school would discount all the postsecondary experience gained by students while in the early college and would not include results for students who attained their two-year degree while in high school. The outcome we report in this paper is whether a student was ever enrolled in any type of postsecondary education (part-time or full-time). This enrollment could occur at any point over the time period from 9th grade through the fall semester of the sixth year since the start of high school. This approach acknowledges the nature of the early college design while also giving students in the control group time to "catch up."

The source of this outcome is the National Student Clearinghouse (Clearinghouse). The Clearinghouse collects data representing approximately 94 percent of students enrolled in postsecondary institutions in the United States and provides information about enrollment by semester, institution in which a student is enrolled, and type and data of any degrees received. The Clearinghouse linked our applicant data to their files using name and birth date.

Our analyses assume that, if a student is not present in the Clearinghouse data, he/she is considered as not enrolled in postsecondary education. A student could be absent from the Clearinghouse data for several reasons: 1) the student did not attend a postsecondary institution at all; 2) the student attended a postsecondary institution that does not report to the

Clearinghouse; 3) the student opted out of having his/her data shared, or 4) the name and/or birthdate used for matching with Clearinghouse records was incorrect (Dynarski, Hemelt, & Hyman, 2015).

Our outcome measure as constructed would underestimate postsecondary enrollment under scenarios 2 through 4. In North Carolina, scenario 2 does not appear to be very likely as the Clearinghouse covers 96 percent of four-year institutions and 99 percent of two-year institutions in the state (National Student Clearinghouse Research Center, 2013), although it is possible that students could enroll out of state in an institution that does not report to Clearinghouse. The third scenario is a possibility. In North Carolina, less than 1 percent of students in two-year institutions but approximately 10-12 percent of students in four-year institutions opted out of having their data shared (National Student Clearinghouse Research Center, 2012). We attempt to mitigate this concern by resubmitting the same list of names for multiple years since students' permissions can change over time (Dynarski, et al., 2015). We also have no reason to believe that treatment and control students differ in their likelihood to opt out of providing their data. Similarly, scenario 4 is also a possibility, especially given the fact that an exact match on name and birthdate is required to produce a "hit" in the Clearinghouse data. To reduce this possibility, we engaged in various strategies including double checking our application data against the NCDPI data and submitting common variations in spellings of the same name (e.g., John, Jon, Jonathan, Jonathon, etc.). Because we used the same strategies for checking names for both our treatment and control groups, we do not believe that students in either group would be more or less likely to be absent from the database because of incorrect names or birthdates. Despite the fact that we are using the same approaches for both treatment and control groups to minimize the impact of reasons 3 and 4, numerically more treatment students may be affected by these reasons

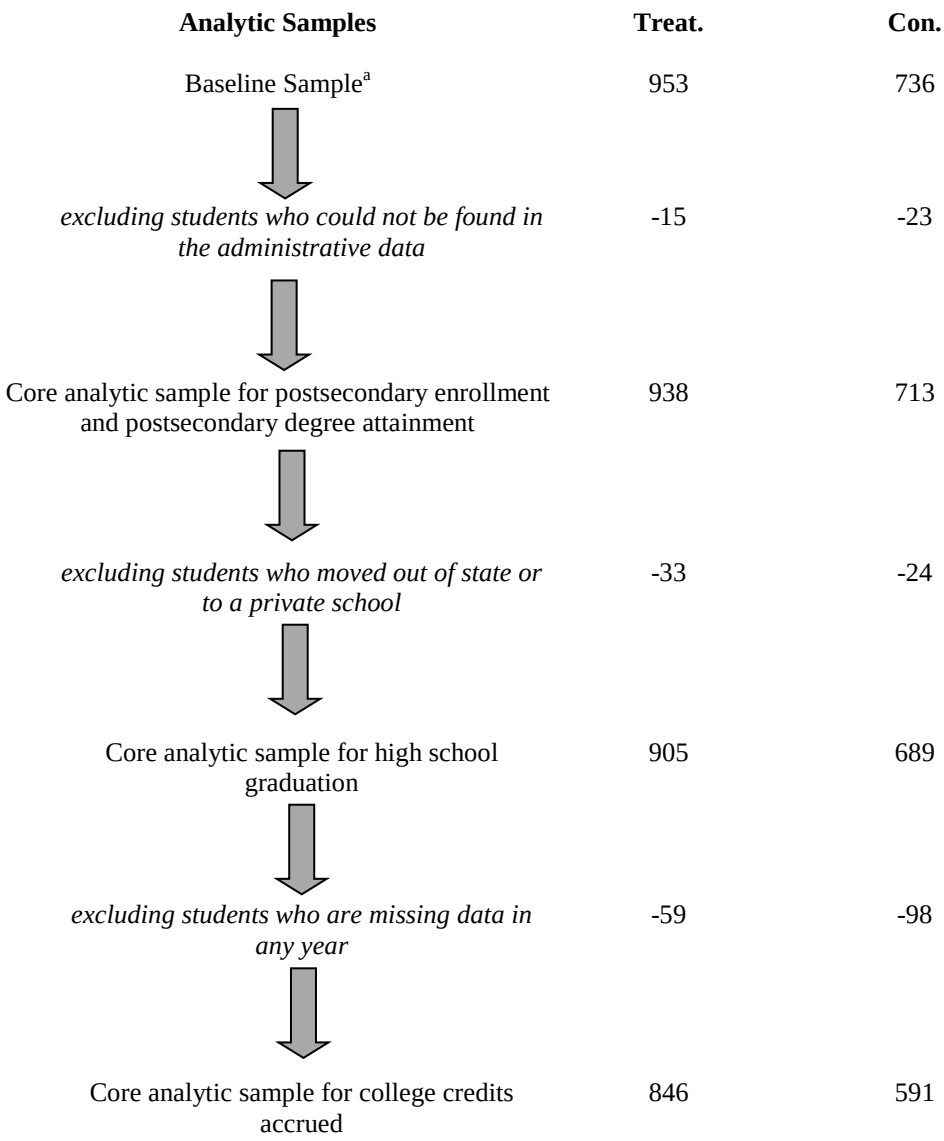
if, as we expect, more treatment students enroll in postsecondary education. As a result, any impact estimates may be considered conservative.

The sample for this analysis includes all students who applied to the early college and were linked to the NCDPI data (N=1,651).

Postsecondary degree attainment. One of the long-term goals of the early college is to increase the number of students who receive a postsecondary degree. Ideally, we would examine this for both two and four-year institutions at a point in time that is at least 10 years after entering high school (four years of high school plus an additional six years to attain a Bachelor's degree). However, our current sample only goes through students' sixth year after entrance into high school or through two years after what would be a student's graduation from high school if they graduated on time in four years. This would allow students in two-year institutions two years to complete their degree. We report two sets of outcomes. The first is attainment of any type of postsecondary credential—including Associate's degree, technical credential, or bachelor's degree. We also separately analyze obtaining a degree in each of the three specific categories of credential. It should be noted that attainment of a bachelor's degree is not necessarily an expected outcome of the program at this point as it would reflect an extremely accelerated timeline. The data for this outcome also comes from the Clearinghouse and the sample for this outcome is the same as for the postsecondary enrollment outcome.

Figure 2 tracks the sample from random assignment through the different outcomes.

Figure 2: Sample Tracking Diagram, by Outcome



[a] This sample includes all students who applied to enroll in an early college and participated in the random assignment except those who were retained in the 8th grade (n=4).

Subgroups. In these analyses we focus on four theoretically relevant subgroups, three of which are target populations for the initiative. The four subgroups we examine are:

1. Underrepresented minority. The early colleges have a specific goal of increasing the postsecondary attainment of students who are members of racial and ethnic groups

underrepresented in college. In North Carolina, this includes students who identify as African-American, Hispanic/Latino, or Native American. Students who are White, Asian, or Multiracial are not considered as underrepresented.

2. First generation college-goers. A primary target population of North Carolina's early colleges, this subgroup includes students who are the first in their family to go to college. Any student whose parents enrolled for any length of time in a two- or four-year college is considered as non-first generation.
3. Low-income students. The third target population is low-income students, defined here as those students who qualify for free and reduced-price lunch. Because high school students are less likely to enroll in free lunch programs (Riddle, June, 2011), we use students' 8th grade free and reduced price lunch classifications to define this subgroup.
4. Not prepared for 9th grade. While students in this subgroup are not specifically targeted by the initiative, it is important to examine whether they are differentially affected. Many practitioners have concerns over whether students who are lower performing can succeed in a model that accelerates them quickly into college courses; these students may even be screened out of some early colleges in North Carolina and elsewhere. Therefore, we present results for students who are not prepared for 9th grade, defined as not passing (receiving a Level III or IV) the 8th grade North Carolina standardized reading exam, the 8th grade math exam or both. Thus, students in the not prepared sample would have received a Level I or II in either reading or math or both. It should be noted that very few of these early college applicants had received a Level I and would be considered substantially low-performing.

Analysis

The impacts of early colleges on these outcomes were estimated within an Intent-To-Treat

(ITT) framework, in which a student's initial experimental status as a treatment or control student, rather than actual participation in an early college, served as the treatment contrast. Intent-to-treat is the standard for educational policy evaluations (Institute of Education Sciences, 2005) and maintains the integrity of the initial random assignment (Hollis & Campbell, 1999).

All of the applicants who applied to an individual early college within an individual year were considered participants of a "lottery." We calculated impact estimates using multivariate linear regression models that include lottery indicators (or lottery fixed effects), interaction of the treatment indicator with the lottery indicators (which yield lottery-specific impact estimates), and baseline student characteristics including demographic characteristics such as gender, race/ethnicity, age, free/reduced price lunch status, whether a student was retained prior to 8th grade, and 8th grade academic performance. We have included the fixed treatment-by-lottery interaction terms rather than a random effect for the treatment indicator to reflect that our sample was purposefully selected and then we are not seeking to generalize the results to a broader population (Raudenbush, Martinez, & Spybrook, 2007; Schochet, 2008). In addition, we did not perform any additional adjustments for clustering of students in high schools or postsecondary institutions as the level of analysis and the level of treatment assignment were the same. This approach has also been used in other large-scale lottery-based studies (Bernstein, Dun Rappaport, Olsho, Hunt, & Levin, 2009; Bloom, Thompson, & Unterman, 2010; Constantine et al., 2009; Gleason, Clark, Tuttle, & Dwyer, 2010).

The equation below represents a prototypical regression model for a continuous outcome,[3]

$$Y_{ij} = \sum_{j=1}^{J} \beta_{1j} T_{ij} S_j + \sum_{j=1}^{J} \beta_{2j} S_j + \sum_{n=1}^{N} \beta_{3n} X_{nij} + \varepsilon_{ij}$$

where:

Y_{ij} is the outcome of interest for student i in lottery j,

T_{ij} is the treatment indicator for student i in lottery j ($T_{ij} = 1$ if student i is assigned to the treatment group; $T_{ij} = 0$ otherwise),

S_j is a lottery indicator equal to 1 for students who participated in lottery j and to 0 otherwise (j = 1...J),

β_{1j} is the estimated average ITT treatment effect for lottery j,

β_{2j} is the fixed effect for lottery j (i.e., the average outcome of the control students from lottery j),

X_{nij} is the n-th characteristics of student i in lottery j, which is included as a covariate,

β_{3n} represents the relationship between the n-th student characteristic and the outcome Y

ε_{ij} represents a random error term for student i in lottery j, independent and identically distributed across students.

We calculated an overall ITT impact estimate by weighting the lottery-specific effects (β_{1j} s) proportional to the total number of students (treatment and control) participated in each lottery. This yielded an impact estimate representing the impact on the average student in our sample. We conducted a number of sensitivity analyses that implemented alternative weighting schemes (e.g., inverse variance weighting) and model specifications (e.g., logistic models for binary outcomes) and none of these analyses yielded substantially and substantively different results than those presented here. For all outcomes, we present the adjusted impact estimate, the unadjusted control mean, and an adjusted mean for the treatment group that is calculated by adding the adjusted impact to the unadjusted control mean.

The subgroup analyses were conducted by estimating a similar impact model for each subgroup of interest and the rest of the sample (i.e., separate impact models were run for first generation college-goers and not-first generation college goers). Following Bloom and Michalopoulos (2010), we also report whether the impact for a given subgroup is statistically significantly different than the impact for the rest of the sample.

RESULTS

The results show significant, positive impacts on most of the outcomes examined for the full analytic samples as described above. We present the results for the full analytic samples first and

then for the subgroups. Table A.1 in the appendix shows the unadjusted means and standard deviations for all outcome measures analyzed in this paper separately for the treatment and control groups.

Impact on core outcomes. Analyses show a very large difference in the number of college credits earned by the two groups of students while they were in high school. Specifically, Table 3 shows that by the end of 12th grade, the treatment students had earned an average of 25.5 college credits compared to an average of 3.1 credits earned by the control group ($p<0.001$). This indicates that, on average, the treatment students had successfully completed approximately 8 college-level courses, or a full year's worth of college, compared to approximately one course on average for the control group.

The impact on five-year high school graduation rates is positive and a statistically significant 3.7 percentage points ($p\leq.05$). This is similar to the impact estimates generated by AIR's study, which found a statistically significant impact of five percentage points (Berger, et al., 2013).

By the beginning of the sixth year after entering 9th grade, 90 percent of the treatment group had ever enrolled in postsecondary education (including enrollment while in high school), compared to 75 percent of the control group, a statistically significant impact of 15 percentage points ($p\leq.001$). When we look at the breakout by two-year and four-year institutions, we see that the largest impact is on enrollment in two-year institutions. This is because the majority of early colleges in this study are located on community college campuses. It is possible that the increased enrollment in two-year institutions could come at the expense of enrollment in four-year institutions (see Cowan & Goldhaber, 2015); however, we also see a positive, although not statistically significant, impact on enrollment in four-year institutions. Table 3 includes the percentage of students ever enrolled in postsecondary institutions, by level.

Table 3: Impact Estimates, Full Analytic Sample

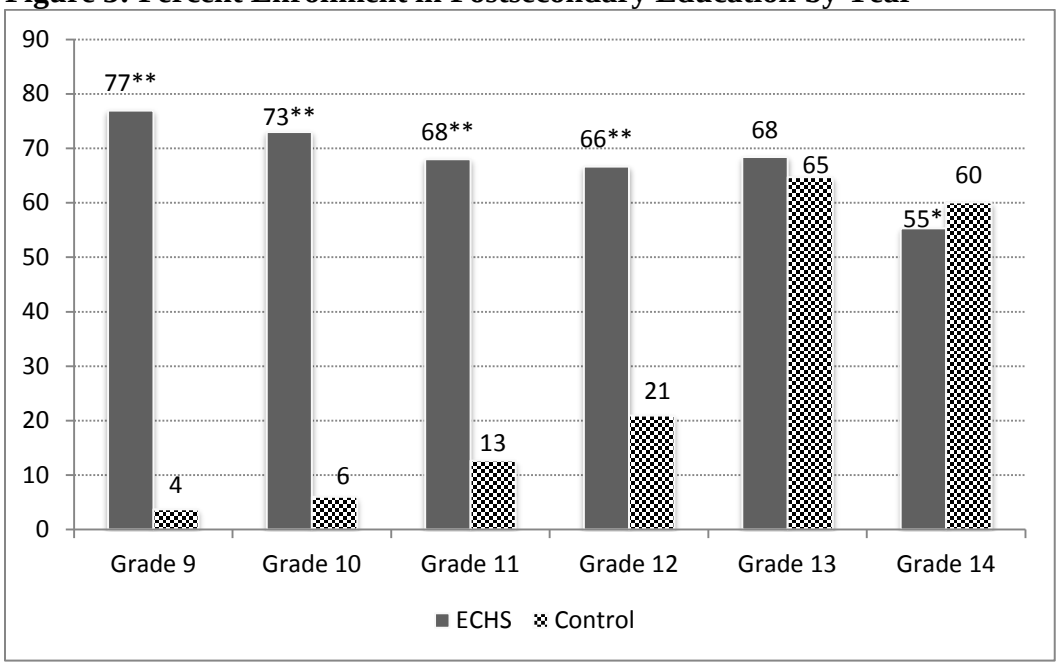
	N	Adjusted Treatment Mean	Unadjusted Control Mean	Impact Estimate
College Credits Attained while in High School	1437	25.5	3.1	22.4**
Graduation from High School	1594	85.4%	81.7%	3.7%*
Ever enrolled in Postsecondary education	1651	89.8%	74.9%	14.9%**
Ever enrolled in 2-year institution		88.37	57.8	30.6**
Ever enrolled in 4-year institution		37.10	32.5	4.5
Attainment of any Postsecondary credential	1651	29.4%	4.4%	25.0%**
Attainment of Associate's degree		27.7	3.2	24.5*
Attainment of technical credential		1.8	1.3	0.5
Attainment of Bachelor's degree [a]		0.8	0	0.8*

******Statistically significant at p<.001.
*Statistically significant at p<.05.
[a] Statistical inference based on Fisher's exact test.

Because we count postsecondary enrollment while in high school, we also present enrollment with yearly snapshots. Figure 3 shows the enrollment patterns from grades 9 through the beginning of the sixth year after grade 9. As it shows, a large proportion of the impact of attending an early college is being driven by the experiences while in high school. Unlike the "ever enrolled" outcome, which is cumulative in nature, this outcome is cross-sectional showing students' enrollment only in the given grade.

The final outcome examined is postsecondary attainment (Table 3). By six years after entering 9th grade, results show that 27.7 percent of the treatment group had attained an Associate's degree compared to 3.2 percent of the control group, a statistically significant impact ($p \leq .001$). 0.8 percent of the treatment group had attained a bachelor's degree compared to 0 percent of the control group ($p \leq .001$).

Figure 3: Percent Enrollment in Postsecondary Education by Year



Note: The measure used to construct this graph is cross-sectional, not cumulative. The ECHS or Control bars for a given grade represent the percentage of students enrolled in postsecondary education in that grade.
**Statistically significant at p<0.01.
*Statistically significant at p<0.05.

Impacts for sub-groups. We examined each of the core outcomes for the four populations of interest. We calculated impact estimates separately for each sub-group, which include both the targeted population and the non-targeted population. For example, we looked at results for first generation college-goers and students who were not first generation college-goers. We then statistically compared the differences to determine if any gap between the sub-groups was narrowing or widening. Table 4 presents the impact estimates for the core set of outcomes by sub-group as well as the outcomes for members of the non-targeted population. The table also includes the difference between the two impacts and an indication of whether that differential impact was statistically significant. A positive differential impact indicates that members of the targeted population benefitted **more** than members of the non-targeted population while a negative differential impact indicates that members of the targeted population benefited **less** than members of the non-targeted population.

Table 4: Impact Estimates, Overall and by Subgroups (continued)

	N	Adjusted Treatment Mean	Unadjusted Control Mean	Impact Estimate	Difference in Subgroup Impacts
Panel C: Ever Enrolled in Postsecondary Education					
Overall	1651	89.9	74.9	14.9**	
Underrepresented	568	86.6	74.1	12.5%**	-3.5%
Not Underrepresented	1061	91.3	75.2	16.1%**	
First Generation	643	88.7	67.1	21.6%**	10.8*
Not First Generation	950	91.1	79.9	11.2%**	
FRPL Eligible	790	86.6	66.21	20.4%**	11.7*
FRPL Ineligible	773	92.0	83.3	8.7%**	
Not Prepared for 9th Grade	473	84.6	66.4	18.2%**	5.2
Prepared for 9th Grade	1088	93.5	80.5	13.0%**	
Panel D: % Received any postsecondary credential					
Overall	1651	29.4	4.39	25.01**	
Underrepresented	568	17.6	.87	16.7**	-12.9**
Not Underrepresented	1061	35.5	5.9	29.6**	
First Generation	643	22.01	2.8	19.2**	-10.1**
Not First Generation	950	34.9	5.6	29.3**	
FRPL Eligible	790	20.7	1.76	18.9**	-11.7*
FRPL Ineligible	773	37.4	6.75	30.6**	
Not Prepared for 9th Grade	473	10.5	1.41	9.1**	-23.2**
Prepared for 9th Grade	1088	37.9	5.6	32.3**	

**Statistically significant at p<.001.
*Statistically significant at p<.05.

Table 4 shows statistically significant and large impacts for all sub-groups on the number of college credits attained. The differential impacts show that students who were not members of the target population gained numerically more credits than students who were members of the targeted populations. For example, treatment students who were underrepresented minority (African-American, Hispanic, and Native American) gained 17.9 credits more than their counterparts in the control group while non-underrepresented minority (white, Asian, or multiracial) treatment students gained 24.8 credits more than their counterparts in the control group, a difference that was statistically significant.

The results for high school graduation rates show that the overall statistically significant impact on graduation rates appears to be driven primarily by higher impacts for students who are not members of the targeted groups. For example, there is a larger impact on students who are not members of underrepresented minority groups compared to students who are members of underrepresented minority groups. The differential impacts for this outcome are negative for three of the populations, although none of those differences are statistically significant.

The impact on postsecondary enrollment is actually reversed, with higher impacts for students who are members of the targeted populations in three of the groups examined. For example, the early college had an impact almost twice as large for students who were first generation college-goers and those who are eligible for free or reduced price lunch compared to those who were not members of the targeted populations (both differential impacts are statistically significant). Relative to attainment of a postsecondary credential, there was a positive impact on all subgroups with the impact being statistically significantly larger for the non-targeted population in all four of these groups.

DISCUSSION

This paper shows that early colleges are having overall positive impacts on outcomes associated with a successful transition to college, including more college credits, increased high school graduation rates, increased postsecondary enrollment rates and increased attainment of degrees.

Treatment students gained significantly more college credits during high school than the control group (22 more credits by the end of 12th grade on average), given them the equivalent of a full year's worth of college credit. The early access to college credit is certainly a key part of the intervention and the findings for this outcome show that the treatment was successfully

implemented. However, high school students in comprehensive high schools are also able to enroll in college courses, through both dual enrollment and Advanced Placement options. This study suggests that many students, even those who are theoretically interested enough in college to apply to an early college, do not have access to or, for some reason, do not choose to enroll in college credit-bearing courses during their experience in a regular comprehensive high school. Many of these early colleges are located in rural areas, which historically give students lower access to courses such as Advanced Placement (Handwerk, Tognatta, Coley, & Gitomer, 2008). Early colleges may be particularly valuable in these settings because they can demonstrate an approach to expanding access to college credit-bearing courses in these rural communities.

The study also shows an overall positive impact of 3.7 percentage points on students' graduation from high school, similar to the AIR study, which found an impact of approximately 5 percentage points (Berger, et al., 2013). This relatively small impact may be seen as somewhat disappointing given that early colleges are implementing many of the aspects of school design that are seen as promoting students' desire to stay in school such as increased personalization, a challenging curriculum, and more rigorous and relevant instruction (Author, 2013). Placing these findings in the context of other research, however, shows that increasing high school graduation rates is very challenging and only a small number of interventions have shown positive impacts on graduation rates, particularly when the sample is regular high school students. Out of the five interventions listed on the What Works Clearinghouse website as having statistically significant positive impacts on completing high school, four were focused on students who had already dropped out of high school. The other intervention with a similar population to the early colleges reported impacts on completing school that included both GED attainment and traditional high school graduation rates. Experimental studies on other whole school reform efforts such as

Career Academies (Kemple, 2008) have found no positive impacts on graduation rates. On the other hand, a study of the small schools effort in New York City found a 6.8 percentage point impact on graduation rates (Bloom, et al., 2010) where 68.7% of treatment students graduated compared to 61.9% of the control group. A follow-up with an additional cohort of students found the positive impact on graduation rates increasing to 8.6 percentage points (Bloom & Unterman, 2012). Early colleges thus had impacts approximately half the size of the small schools, although it should be noted that the control groups in early colleges had a much higher graduation rate (81.7%) than the New York City control group (61.9% in the original cohort and 59.3% in the follow-up cohort).

There is also an increase in early college students' enrollment in postsecondary education, driven primarily by exposure to college courses in high school. These results show that, as is inherent in its design, the program is successful in providing early access to college. For some students, this access to college appears to be the end point and they no longer seek postsecondary education after graduating from the early college. As the cross-sectional analyses (Figure 3) show, the actual percentage of students enrolled in college two years after completing high school is lower in the treatment group than in the control group. Some of those students (approximately 15%) have attained a two-year degree at the same time as their high school diploma and it is likely that they have directly entered the workforce. Descriptive analyses of the characteristics of early college graduates who did not continue on to further education found that these students had some characteristics that one might expect—when compared to students who continued their education, they were statistically significantly more likely to be first generational college-goers, had higher absences in high school, and completed the courses needed for college at a lower rate (although a very high percentage—83%—of these students had successfully

completed the courses needed for college). They were also less likely to have completed an Associate's degree than students who continued on. We have collected qualitative data on reasons why students do not continue on to further education after graduating from the early college and many students commented that they were "tired of school" or "wanted a break" while others noted that their work plans did not require them to get any further education. It is possible that the control students with similar characteristics or attitudes to the students in our treatment group will leave their college experience before completing it. We will test these hypotheses in future analyses of postsecondary completion rates.

Results show a very large impact on attainment of an Associate's degree. Because completion of an Associate's degree is a goal of the early college program, we might expect higher proportions of students to attain these degrees; however, the extremely low percentage of control students attaining an Associate's degree, even when given two years after high school, was not anticipated. We will continue to follow these students over time to see if they are able to attain these credentials after an extra year.

While the positive impacts on postsecondary readiness, enrollment, and attainment can likely be primarily attributed to early access to college courses, there are other components of the model that may support students in increasing their enrollment in college. Figure 1 lays out the components of the model that are theorized to be connected to increased enrollment and success in college. We have reported results elsewhere that indicate that early college students experience higher levels of most of these components including higher expectations, more rigorous and more relevant instruction, and higher levels of academic and affective support (Author, 2013). It is possible that these factors, combined with the access to college courses free of charge to the student, contribute to the overall positive outcomes. In addition the positive

impact on four-year enrollment may be highly influenced by the fact that students have already received a significant number of college credits meaning that they can complete their four-year degree in less time and at less expense than students who might otherwise graduate from a traditional high school.

When looking at the results for sub-groups, there are positive impacts for almost all groups on the outcomes related to postsecondary experiences, including college credits, enrollment in postsecondary education and postsecondary degree attainment. However, the study shows non-significant impacts for all four targeted populations on high school graduation. One possible reason may be that students who are in these populations may face some challenges when they enroll in college courses; as a result, they may be more likely to leave the early college and return to a regular high school or drop out. Preliminary analyses around students' exposure to the early colleges show that students who leave the early college in their second and third years (when they begin taking college courses) are more likely to be minority students, those who are low-income, and those who entered high school below grade level. Future plans include conducting analyses linking the years of attendance in the early college to outcomes such as high school graduation so that we can further explore this theory.

Although most of the impacts are positive for the sub-groups of interest, we see mixed results when we compare the impact for those targeted populations with the results for members of the non-targeted population. For example, the impact on postsecondary enrollment is larger for the target populations but the impact on graduation and postsecondary attainment is lower for those groups, when compared to the non-targeted population. The impact on college credits accrued is also lower for the targeted populations than for the non-targeted populations. It should be noted, however, that, in both the treatment and control groups, members of the targeted populations also

had lower numbers of college credits than the members of the non-targeted populations. When we consider the ratio of the number of courses taken by the treatment group and the number taken by the control group by subgroup, members of the targeted populations gained proportionally more than the members of the non-targeted populations. For example, treatment students who were not prepared for 9th grade earned 15.3 times as many credits as the not prepared students in the control group did; this can be compared to the prepared treatment students who earned 7.8 times as many credits as the prepared students in the control group.

Despite the positive impacts, some readers may be tempted to discard the findings related to college enrollment while in high school, giving primary weight to those findings that are relevant to postsecondary enrollment after graduation from high school. When considering the results from this study, it is important to recognize that early colleges are actually a new model of schooling. Education is traditionally broken into different stages—Pre-K, K-12, Postsecondary—stages that might have some slight crossover or overlap (e.g. Advanced Placement courses) but that are almost always treated as unique and distinct entities. Early colleges do not fit into that traditional compartmentalization; instead, they merge the high school and college experiences such that these two stages happen concurrently. As a result, many students receive their Associate's Degree at the same time as their high school diploma. At this point, we have no reason to believe that receiving an AA or AS at this point in a student's academic career should be seen as any less valuable or important than receiving an AA or AS degree two years after graduating from high school. It could mean, in fact,that students who are seeking a two-year degree as their terminal degree can go into the workforce at least two years sooner.

LIMITATIONS

This study has many strengths, including a strong lottery-based experimental design that

results in high internal validity. Because this is a prospective study, we are also able to capitalize on a rich set of data that allows us to look at a number of outcomes and that results in very low attrition rates of less than two percent for many outcomes. However, the study does face some limitations, particularly related to questions of generalizability. As noted in the sample section, the schools that participated in the study had to be oversubscribed and had to be willing to use a lottery. This could lead to concerns about whether these schools are representative of the other early colleges in the state. According to data collected by North Carolina New Schools, approximately 87% of the 78 early colleges in North Carolina were over-subscribed such that they accepted 75% or less of their applicant pool. Only two schools in the entire state accepted all of their students and both were located in small, rural counties. During the time of the study, all early colleges using a lottery in the state were also participating in the study; the remainder of over-subscribed schools used a process that involved rating students on various criteria using a rubric. It is possible that schools that use a lottery may be different than schools that do not on unobservable factors such as a potential willingness to work with students who they have not picked and who might be more challenging.

A final limitation is that the lottery was conducted on students who applied to the early college; as a result, the impact estimates should be considered as applying only to students who would be interested enough to apply to the early college.

CONCLUSION

Overall, this study has found the early college is succeeding in its goal to increase the number of students who are graduating from high school and enrolling in postsecondary education. Our positive findings are consistent, both in direction and magnitude, to findings from the AIR retrospective experimental study (Berger, et al., 2014; Berger, et al., 2013). These two

studies together provide an increasing body of evidence that early colleges are a valid and effective intervention worth replicating. Indeed, there are federally supported efforts to replicate the early college both as the small school model presented in this paper as well as by implementing early college strategies within traditional, comprehensive high schools. Evaluations of this work will determine whether the model works in these varying settings.

Notes

[1]Award citation.

[2]Most colleges require students to pass a placement exam before taking specific college courses; students who fail may be able to take developmental (remedial) courses, whose successful completion will allow enrollment in college courses. Early college students must meet the same conditions and not all do so. Early colleges can struggle to serve students who are not allowed to take college courses. In some cases, these students transfer to traditional high schools.

[3] We use linear probability models for binary outcomes as well because they produce more easily interpretable results. We checked the robustness of these results using logistic regressions, which yield similar impact estimates.

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Appendix A

Table A.1 Descriptive statistics for the outcome measures

Outcomes	Treatment			Control		
	Unadjusted Mean	SD	N	Unadjusted Mean	SD	N
College Credits Accrued While in High School						
All Students	25.33	22.48	846	3.08	8.54	591
Underrepresented	20.29	19.79	300	1.66	6.04	194
Not Underrepresented	28.18	23.31	531	3.64	9.14	392
First Generation	21.87	21.58	331	1.49	5.39	222
Not First Generation	27.56	22.77	487	4.16	10.02	354
Free/Reduced-Price Lunch Eligible	21.32	21.51	405	1.86	6.08	275
Free/Reduced Price Lunch Ineligible	29.19	22.88	400	4.09	10.21	299
Not Prepared for Ninth Grade	14.13	15.93	217	.92	3.5	170
Prepared for Ninth Grade	29.62	23.18	587	3.85	9.53	397
Percent of Students Who Graduate from High School within Five Years						
All Students	86.93	33.73	905	81.7	38.7	689
Underrepresented	88.12	32.41	322	83.44	37.25	224
Not Underrepresented	86.22	34.5	566	80.65	39.55	460
First Generation	82.03	38.45	356	77.61	41.76	267
Not First Generation	90.47	29.39	516	85.6	35.15	399
Free/Reduced-Price Lunch Eligible	83.55	37.12	434	75.21	43.24	333
Free/Reduced Price Lunch Ineligible	92.11	27	417	88.13	32.4	332
Not Prepared for Ninth Grade	81.29	39.08	241	77.51	41.85	208
Prepared for Ninth Grade	90.41	29.47	608	84.38	36.35	451
Percent of Students Who Were Ever Enrolled in College, by Type						
Any Type	90.19	29.75	938	74.88	43.4	713
Two Year	87.46	33.13	938	57.79	49.42	713
Four Year	38.05	48.58	938	32.56	46.89	713

Percent of Students Who Were Ever Enrolled in College, by Subgroup						
Underrepresented	89.05	31.27	338	74.07	43.92	230
Not Underrepresented	91.21	28.33	583	75.24	43.2	478
First Generation	88.83	31.54	369	67.05	47.09	274
Not First Generation	92.23	26.8	534	79.9	40.12	416
Free/Reduced-Price Lunch Eligible	89.35	30.89	450	66.21	47.37	340
Free/Reduced Price Lunch Ineligible	91.81	27.45	427	83.29	37.36	346
Not Prepared for Ninth Grade	86.13	34.63	260	66.39	47.35	213
Prepared for Ninth Grade	92.73	25.99	620	80.49	39.67	468
Percent of Students Enrolled in College Courses by Grade						
Grade 9	76.52	42.41	938	3.74	19	713
Grade 10	72.48	44.69	938	5.99	23.74	713
Grade 11	67.58	46.83	938	12.78	33.41	713
Grade 12	66.12	47.36	938	20.68	40.53	713
Grade 13	68.39	46.51	938	64.68	47.83	713
Grade 14	55.29	49.74	938	60.06	49.01	713
Percent of Students who earned a Postsecondary Credential						
All Students	29.95	45.83	938	4.39	20.5	713
Underrepresented	19.71	39.84	338	.87	9.33	230
Not Underrepresented	35.54	47.9	583	5.91	23.6	478
First Generation	22.8	42.01	369	2.81	16.55	274
Not First Generation	34.78	47.67	534	5.67	23.16	416
Free/Reduced-Price Lunch Eligible	22.94	42.09	450	1.76	13.17	340
Free/Reduced Price Lunch Ineligible	37.41	48.45	427	6.75	25.12	346
Not Prepared for Ninth Grade	11.07	31.44	260	1.41	11.82	213
Prepared for Ninth Grade	38.18	48.62	620	5.61	23.04	468