The Forgotten Summer:
Does the Offer of College Counseling the Summer After High School Mitigate Attrition Among College-Intending, Low-Income High School Graduates?

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Abstract

Despite decades of policy intervention to increase college entry among low-income students, considerable gaps by socioeconomic status remain. To date, policymakers have overlooked the summer after high school as an important time period in students' transition to college, yet recent research documents high rates of attrition among college-intending high school graduates. We report on two randomized trials investigating efforts to mitigate this summer attrition. We find that offering college-intending graduates 2-3 hours of additional summer support increased enrollment by four percentage points overall, and eight percentage points among low-income students, at a cost of $100 - $200 per student.

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I. Introduction

The summer after high school graduation occupies a treasured place in American culture. Popular movies and music portray recent graduates spending lazy days on the beach and nervously anticipating first phone calls (or Facebook chats) with new roommates to plan what each should bring for the dorm room. But does this conception of the post-high school summer accurately capture the experience of low-income, college-intending high school graduates? Previous academic literature has documented the phenomenon of "summer fadeout," where children, especially those from families with low incomes, may suffer achievement declines between the end of one school year and the start of the next one (Cooper, Nye, Charlton, Lindsay & Greathouse, 1996; Entwisle, Alexander & Olson, 1997). Yet, prevailing psychological and sociological theories of college choice and retention neglect to consider any possibility of changes in plans during the summer after high school (cf: Hossler & Gallagher, 1987; Tinto, 1993).

Even after students have been accepted to and have decided to attend college, however, successful matriculation is contingent on students completing a number of tasks during the summer, at a time when they no longer have access to high school guidance counselors and have yet to access support resources at their intended college. For instance, colleges typically require students to take placement tests and complete an abundance of paperwork, including housing and medical forms, over the summer months. Completing these tasks may be particularly daunting for low-income and first-generation college-bound students whose family members may lack experience with the college-going process. In addition, it is only in the summer after high school graduation when students must confront the reality of paying the first college term bill, which often includes unanticipated costs, such as required health insurance coverage. For college-intending students, successfully navigating the post-high school summer thus requires a level of financial and college literacy that may be unrelated to their ability to succeed in the classroom. As a result, students who have already surmounted many obstacles to college enrollment and

who would potentially earn high returns to postsecondary education may, nonetheless, fail to matriculate.

In previous empirical work drawing on data from the Education Longitudinal Study of 2002, we estimated a national summer attrition rate of approximately 10 percent overall, with higher rates among students of low socioeconomic status (Castleman & Page, 2011). These findings are consistent with descriptive evidence from the Chicago Public Schools (Roderick et al, 2008) and from qualitative interviews indicating that low-income students especially struggle with evaluating financial aid offers and completing all necessary requirements to enroll after paying a deposit to a particular college in the spring (Arnold et al, 2009).

Motivated by these empirical results, we conducted a pilot experimental study of summer college counseling for college-intending students in a network of innovative high schools in Providence, RI (Castleman, Arnold, & Wartman, 2012). The results were quite striking: treatment group students (who were explicitly offered summer assistance from their high school counselors) were 14 percentage points more likely to enroll immediately in college than students in the control group. Despite the pilot study's small sample size, these effects were large enough to achieve statistical significance. In addition, the cost of summer counseling in this pilot study was less than $200 per student, suggesting that summer support may be a cost-effective intervention for promoting college enrollment among low-income students.[1]

In this paper, we report the results of two larger scale experiments designed to determine whether summer counseling can increase college enrollment rates among high school graduates from large urban public school districts. In the summer of 2011, we collaborated with uAspire, a college access organization headquartered in Boston, MA, and Fulton County Schools (GA) to conduct related experiments to investigate the model of college counseling used in the Providence pilot study. Like the pilot study, the cost of summer outreach and counseling was about $100 – $200 per student. Across the sites, the offer of summer counseling increased the probability of fall college enrollment by nearly four percentage points; this effect represents a 20 percent reduction in summer attrition from the college-going pipeline. These impacts persisted into the spring semester, suggesting that summer support can promote more stable enrollment beyond the first semester. In Fulton County, where we were able to observe student-level

[1] By comparison, the financial aid literature has consistently found that $1,000 in need-based grant aid increases enrollment by 3 – 6 percentage points (Dynarski, 2003; Kane, 2003).

free/reduced price lunch status (FRL), summer outreach and the offer of support increased immediate enrollment by approximately eight percentage points among FRL students. This effect represents a 28 percent reduction in summer attrition among FRL students and suggests that summer outreach and support many be particularly beneficial among college-intending students from low-income backgrounds.

We structure the remainder of the paper into several sections. In Section II, we review the literature pertinent to summer barriers to college enrollment. In Section III, we describe our research design. In Section IV, we present our results. Finally, we conclude with a discussion of the implications for policy and research in Section V.

II. Literature Review

The economic and non-monetary benefits of higher education are substantial, and are particularly pronounced for low-income students (Dale & Krueger, 2002; Goldin & Katz, 2008; Oreopoulos & Salvanes, 2011). Becker's (1964) model of human capital investments assumes that students are aware of these benefits, and suggests that students will pursue a college education if the present discounted value (PDV) of the benefits of higher education exceeds the PDV of the costs of going to college. The Becker calculation is less likely to lead low-income students to pursue higher education, however, given the higher effort costs they face to complete applications and access financial aid. A number of studies document how informational barriers at early stages in the college and financial aid application processes can lead students to make sub-optimal decisions about whether to enroll in college (Avery & Kane, 2004; Dynarski & Scott-Clayton, 2006; Bettinger, Long, Oreopoulos & Sanbonmatsu, 2012). Informational barriers continue to be problematic during the summer months, even for those students who have gained acceptance into a college or university. Students receive a considerable volume of required paperwork from their intended college or university over the summer months. Particularly for students and families lacking college and financial literacy, it may be difficult to complete these forms properly (Arnold et al., 2009).

Furthermore, recent behavioral research casts doubt on whether individuals undergo the rational cost-benefit calculation implied by the Becker model. These studies suggest that short-term costs weigh heavily in individuals' analyses, even if these investments would result in long-term gain (see for example, Chabris, Laibson & Schuldt, 2008). Even minor cost barriers may

deter students from completing key stages of the college application or choice processes (Pallais, 2009), and the tuition bills students receive the summer after high school often contain unanticipated charges that are particularly likely to trigger this cost aversion. For instance, Massachusetts state law (G.L. c.15A, § 18) requires all colleges and universities in the state to enroll students in their institution's health insurance plan by default.[2] If students are covered by their parents' insurance, they can opt out of the college plan but must submit a waiver to do so. If students do not submit a waiver, the tuition bill that they must pay in July or August can be anywhere from $500 to $2,000 higher than students expected, since health insurance typically is not included in published estimates of the cost of attendance nor in the financial aid award letters that students receive in the spring.[3] This unanticipated expense may sufficiently increase short-term costs to the point where students on the margin of enrolling decide not to matriculate.

In short, economic theory suggests a variety of reasons why low-income, college-intending students may change or abandon their postsecondary plans during the summer months. Nevertheless, there are several reasons why the summer after high school is potentially an ideal time for policy intervention to help students achieve their postsecondary plans. First, students who have been admitted and paid a deposit to a college have already surmounted several key obstacles to college access; the remaining obstacles are relatively easy to address in comparison. In particular, among those with relatively low to moderate levels of unmet financial need, a moderate amount of counseling and support could help most students access their college's web portal or properly waive the cost of their college's health insurance plan if already covered by their parents' policy. Second, students may be more responsive to outreach and support over the summer months. Whereas college may have seemed light years away in the waning days of high school, students may feel a greater sense of urgency when they receive their tuition bill during the summer. Third, there is an ample supply of high school counselors to assist students in the summer, since many of them are employed formally by their school districts only for the academic year.

[2] Retrieved from http://www.mass.gov/eohhs/consumer/insurance/more-programs/student-health-insurance.html on January 8, 2012.
[3] We thank the advisors at uAspire for highlighting this issue.

III. Research Design

During the summer of 2011, we collaborated with two educational agencies, uAspire and Fulton County Schools, to conduct summer counseling interventions. uAspire is a Boston-based, non-profit organization that provides college financial aid advising and scholarships to high school students.[4] Fulton County Schools (FCS) is a large urban school district in the metro-Atlanta area of Georgia with more than 90,000 students in 100 schools.[5]

uAspire sample and staffing structure

One of the primary programs that uAspire operates is its High School Advising Program, which places financial aid advisors in every high school in the Boston Public Schools. uAspire advisors spend at least one day per week working individually with students in their assigned school(s) for the entire school year. During the 2010-2011 academic year, out of 4,212 seniors enrolled in Boston public high schools, 2,564 students participated in a uAspire-hosted group workshop, and 2,976 students met individually with an advisor at least once.[6]

uAspire also operates a scholarship program, "The Last Dollar Scholarship" (LDS), to help Boston students pay for college costs that are not met by their final financial aid packages (including federal, state, institutional and other support). Each year, uAspire provides grant funds to all students who fall within a designated "awardable range" of unmet financial need.[7] During summer 2011, 929 students applied for the LDS Scholarship, and uAspire awarded 111 LDS grants ranging in value from $500 to $5000. We included 927 of the 929 applicants in the sample for this study, excluding two who were eligible for other summer supports.[8] Across applicants from the graduating classes of 2007, 2008 and 2009, approximately 80 percent of students qualified for a need-based federal Pell Grant.[9]

uAspire assigned 11 advisors to staff the intervention and divided them into four teams for the purposes of pairing experienced and novice advisors and providing backup counseling

[4] More information about uAspire can be found at www.accessboston.org.
[5] More information about the Fulton County Schools can be found at: http://portal.fultonschools.org/About_Fulton/Pages/Fulton_Facts.aspx
[6] Of students who met with an advisor, the average number of meetings during the school year was three.
[7] The awardable range varies from year to year, depending on the volume of applications and the LDS budget for that given year, with priority given (typically) to students with lower levels of unmet need.
[8] These LDS applicants are class of 2011 graduates from 42 different high schools within the Boston Public School district, including traditional comprehensive high schools, exam schools, charter schools, and district pilot schools.
[9] Expected Family Contribution and Pell eligibility were not available for the class of 2011 LDS applicants.

options during the summer vacations for each of the advisors. We matched each of the 927 LDS applicants to a team of advisors (matching applicants to teams with the advisor who had worked with them before wherever possible). We then randomized students to treatment and control groups within advising team.[10] The uAspire intervention ran from June 27th, 2011 through August 10th, 2012.

FCS sample and staffing structure

In selecting FCS high schools to participate in summer outreach and counseling, we took into consideration the geographic distribution of the district's 14 traditional high schools. The district is physically bisected by the City of Atlanta and the Atlanta Public Schools, creating two distinct regions which differ substantially in socioeconomic and demographic enrollment. We selected for participation the three high schools in the southern region of the district and the three high schools in the northern region of the district with the highest estimated rates of summer attrition among 2010 college-intending high school graduates.

We used student responses to the FCS Senior Exit Survey administered to 12th graders in May 2011 to target students for participation in the intervention. Specifically, we included students who reported they 1) planned to pursue postsecondary education following high school, 2) had applied to at least one postsecondary institution, and 3) had been accepted to at least one postsecondary institution.[11] A total of 1,446 students met these criteria. Of these, we randomly selected 80 students from each school to receive proactive outreach from FCS counselors, for a total of 480 students assigned to the treatment group. The remaining 966 students not selected for proactive outreach comprised the control group.

FCS district leadership worked with the head school counselor in each school to select two counselors to staff the intervention. FCS counselors spend only a small portion of their time during the academic year on the college-application and college-choice processes, so we

[10] For each advisor, uAspire identified a maximum summer counseling caseload, ranging from 10 to 47 students, depending on advisors' other summer work responsibilities. If an advisor's caseload was not sufficient to include all treatment group students with whom that advisor had worked during the academic year, then some of those students were assigned to another advisor.

[11] In order to meet a target of 80 treatment group students at each school, at two of the intervention schools the third criterion (accepted to at least one postsecondary institution) was expanded to include students reporting they were still waiting to hear about their acceptance. Across the six high schools, 96 percent of students meeting these criteria were class of 2011 district graduates, with 4 percent of students failing to graduate at the time of spring high school graduation.

provided counselors with supplemental training on how to help students apply for federal and Georgia-specific financial aid.[12] The FCS intervention ran from June 6th, 2011 through July 22nd, 2011.

Intervention design

We randomly selected treatment group students to receive proactive outreach from a uAspire advisor or FCS counselor over the course of the summer, while the control group students did not receive outreach.[13] Nevertheless, in both sites, counselors were instructed not to deny support to any control group student who actively sought help. Counselors made multiple attempts to contact each treatment group student to offer support and used a variety of outreach methods: phone, email, and text and Facebook messaging.[14] Upon reaching students, uAspire advisors offered each a $25 gift card incentive to attend an in-person meeting; we were not able to incorporate student incentives in the FCS experiment.[15] uAspire advisors primarily met with students at the uAspire Center for College Affordability (CCA) in Boston's city center, while FCS counselors who met with students in person primarily used the school from which they were working. Most consultations in Boston occurred in person, while in FCS, counselors depended on phone conversations to provide most of their support.

We provided uAspire advisors with a protocol for the outreach and support they were to provide. During the first in-person meeting, counselors completed a college-assessment protocol which we designed to achieve three purposes. First, counselors reviewed the student's financial aid award letter and provided guidance based on the student's level of unmet financial need. Second, counselors briefed the student on the calendar of key summer deadlines at the college the student planned to attend and helped the student understand and complete paperwork the student had already received from that college. Finally, the counselor assessed whether the student faced social or emotional barriers to college enrollment in the fall.[16]

[12] The latter training topic was particularly important, since at the time of the experiment, students who maintained high GPAs in high school qualified for up to a full scholarship at in-state public institutions and up to $4000 at in-state private institutions through the Georgia HOPE and Zell Miller Scholarship programs.

[13] In Boston, treatment and control group students alike were told prior to the start of the intervention that individualized counseling would be available from uAspire over the summer. In FCS, students were not made aware of the program prior to its commencement. Control group students who initiated contact with uAspire/FCS received the same level of support as those in the treatment group.

[14] We use the term "counselor" to refer generally to both FCS guidance counselors and uAspire advisors.

[15] uAspire advisors reported that while students were grateful to receive a gift card, it did not appear to be the primary driver for students deciding to take up the offer of a one-on-one advisor meeting.

[16] Materials we developed to guide counselors' interactions with students are available upon request.

At the conclusion of the assessment meeting, counselors helped students create a list of personalized tasks they needed to complete in order to start college that fall. Throughout the rest of the summer, counselors followed up with students individually to check on their progress in completing these tasks. Subsequent to the initial assessment meeting, much of the communication between counselors and students happened via phone, email, and text, though counselors also conducted in-person follow-up meetings with students when they felt it important to do so.

In contrast, counselors in the FCS experiment were encouraged to use an "Intake Form" which listed numerous tasks required for college enrollment during their initial contact with students but were not provided with specific protocols for outreach or support. Rather, we urged the counselors to follow their existing professional protocols for working with students as they were expected to do during the academic year.

Counselors in both sites kept detailed logs of their interactions with students (both treatment and control), documenting when each interaction happened, what kind of help the student sought, and how advisors intervened. According to these logs, 54 percent of meetings in Boston addressed informational questions, such as how to access a college's web portal or how to complete required paperwork, while 40 percent of meetings addressed financial aid. Approximately 30 percent of meetings in FCS addressed financial aid, while 24 percent addressed general questions students (or their families) had about the college-choice and matriculation processes.

Data Sources and Descriptive Statistics

In this study, we rely on four primary sources of data, which we have matched at the student level: (1) uAspire's student database; (2) FCS administrative records; (3) counselors interaction logs; and (4) college enrollment records for the fall of 2011 and the spring of 2012 from the National Student Clearinghouse (NSC).[17]

In Tables 1 and 2, we present descriptive statistics for the Boston and FCS samples, respectively. In Boston (Table 1), students of color comprise more than 90 percent of the sample

[17] The National Student Clearinghouse is a non-profit organization that houses student degree and enrollment information for colleges and universities in the United States. At the time of our writing, approximately 94 percent of colleges and universities nationwide participated in the NSC. For more information, see www.studentclearinghouse.org.

(32 percent of students are black; 24 percent are Latino; and 20 percent are Asian).[18,19] In addition, 86 percent of the sample completed the FAFSA. Perhaps the most striking demographic feature is that 65 percent of sample students are female. This is not necessarily surprising, however, given a decades-long trend of females enrolling in college at considerably higher rates than males (Goldin, Katz & Kuziemko, 2006). Of students reporting a specific intended postsecondary institution on the LDS application (94 percent of the sample), 85 percent intended to enroll at a four-year institution, and 51 percent intended to enroll at a public institution.

The FCS sample (Table 2) includes lower proportions of students of color (61 percent). The sample is also more balanced on gender than the Boston sample (54 percent female). Approximately 78 percent of the FCS sample reported completing the FAFSA. While a similar proportion of the FCS sample intended to enroll at four-year institutions (87 percent), a considerably higher proportion intended to enroll at public institutions (82 percent). While we lack academic achievement data in Boston, for the FCS sample we have students' math and English language arts scaled scores on the Georgia High School Graduation Test (GHSGT), taken at the end of 11th grade. For the class of 2011, GA state law required that students pass these examinations in order to graduate from high school. The FCS students in our sample are relatively high performing. For example, the sample mean English Language Arts (ELA) score of 249.54 corresponds to a proficiency rating of Advanced Proficiency.[20] Further, nearly three-quarters of the FCS sample falls in the top two proficiency categories, compared to 55 percent of students who took the 11th grade ELA assessment in spring of 2010 statewide.[21] Finally, 37 percent of students qualified for free / reduced price lunch (FRL).

For at least two reasons, we anticipate FRL status to be a particularly important covariate in our FCS analyses. First, financial barriers to enrollment are more likely to be a binding constraint for these students; by helping students acquire additional grant aid, waive costs like health insurance, or maximize their borrowing from federal and state sources, summer outreach may help students reduce costs to the point where college becomes affordable. Second, it is plausible that students from low-income backgrounds are more likely to be the first in their

[18] These percentages correspond roughly to the Boston Public School population as a whole: of which 87 percent are students of color (Boston Public Schools, 2012).
[19] Seven percent of LDS applicants did not report race or ethnicity information.
[20] The rating system includes the following four categories: below proficiency, basic proficiency, advanced proficiency and honors.
[21] See http://www.doe.k12.ga.us/Curriculum-Instruction-and-Assessment/Assessment/Pages/GHSGT-Statewide-Scores.aspx for state-level summaries of GHSGT performance.

family to go to college, and therefore more likely to lack access to family resources to help with completing required paperwork and other summer tasks. Offering these students professional guidance may therefore have a larger impact on whether they successfully matriculate in college.

In Table 3, we assess the baseline equivalence of the treatment and control groups in the Boston and FCS samples. In each sample, we separately regress each baseline covariate described in Tables 1 and 2 on a dummy variable for assignment to treatment and the appropriate set of fixed effects. For Boston, we include fixed effects for advising team, and for FCS, we include fixed effects for high school. In the Boston sample, we fail to reject the null hypothesis of average baseline equivalence for each covariate and therefore conclude that randomization was successful. In the FCS sample, however, we do find some evidence of baseline imbalance on several variables that were not available at the time of randomization. Specifically, in FCS, treatment group students scored an average of 2.6 points higher on the 11th grade Georgia High School Graduation Test (GHSGT) in mathematics and 4.3 points higher on the 11th grade GHSGT in language arts than their control group peers. These represent differences of approximately 0.10 and 0.14 standard deviations, respectively. In addition, treatment group students were approximately five percentage points more likely to have intentions to enroll in a four-year (as opposed to a two-year) postsecondary institution. While the statistical significance of these differences could simply reflect the accumulation of Type I error from conducting multiple tests, they are nonetheless a concern given the probable correlation of both test scores and college intentions with students' postsecondary outcomes.

We conducted additional analyses to probe the detected imbalance.[22] Specifically, we investigated whether the imbalance in students' math and language arts test scores was concentrated at particular segments of their respective score distributions by dividing the test score distributions into approximate five-percentile bins. We then compared average scores of treatment and control students by regressing test scores within each bin on an indicator for treatment, along with school fixed effects. We present results of these regressions for both mathematics and language arts test scores in Table 4. Within-bin differences in test score averages are represented by the coefficients associated with the treatment indicator. While parameter estimates associated with the treatment indicator largely fail to achieve statistical significance, we observe that the largest test score differences are indeed concentrated in the tails

[22] We thank Chris Avery for helpful suggestions related to exploring and handling baseline covariate imbalance.

of the test score distributions. For example, in the upper- and lower-most bins of the language arts score distribution, treatment group students outscore their control group counterparts by approximately 4 points. In contrast, differences in other segments of the distributions are very close to zero.

Given these patterns of imbalance, we trimmed the Fulton sample by removing students who scored in the top or bottom five percent of the test score distributions in either math or language arts. We then reassessed baseline equivalence for the trimmed sample overall and within subgroups defined by FRL status (Table 5). The results presented in Table 5 reveal that with few exceptions, baseline equivalence is attained across all covariates in the trimmed sample. Exceptions include a statistically significant difference in the overall share of students classified as multiracial in the sample overall (column 2) and in the overall share of students classified as multiracial in the non-FRL sample (column 4). Because there are so few students in this category, we do not consider these differences of practical importance. An additional exception is imbalance in the share of treatment students who intend to enroll in a public institution within the non-FRL sample both before and after trimming the sample (columns 3 and 4). In our analyses, we examine the extent to which this imbalance affects our interpretation of the intervention impacts for non-FRL students. Further, we examined whether the experimental groups were equivalent at baseline within the subset of students who qualify for free / reduced price lunch—the population of students we anticipate being particularly impacted by the offer of additional outreach. As we demonstrate in Table 5 (columns 5 and 6), baseline equivalence holds for all covariates in the trimmed FRL sample. Based on these results, we focus our impact analyses on the students in this trimmed sample where baseline equivalence is better satisfied.

Measures

To evaluate the impact of the interventions on students' on-time college enrollment in the year after high school graduation, we focus on the following dichotomous enrollment outcome variables: (1) enrollment in college in the fall immediately following high school graduation; (2) enrollment in either the fall or spring semester in the year following high school; (3) enrollment in college continuously for the fall and spring semesters after high school graduation; (4) enrollment at a four-year institution; (5) enrollment at a two-year institution; and (6) enrollment at the institution at which students intended to enroll at the time of high school graduation. This

final outcome allows us to assess the impact of the intervention on a different dimension of the stability of students' plans: whether the offer of summer counseling increased the probability that students were able to follow through on their postsecondary plans from senior year in high school.

The primary predictor of interest for each intervention is *TREATMENT*, an indicator for student assignment to the treatment group or the control group. To increase the precision of our experimental estimates, across both sites we include controls for students' gender, race/ethnicity, FAFSA completion status, and intentions to enroll at a two-year institution, a four-year public institution or a four-year private institution. Our models include fixed effects for advising team in Boston and high school in FCS, as we randomly assigned students within these units. When we fit models to the FCS data only, we also include controls for FRL status and 11th grade math and language arts achievement scores.[23]

Empirical Strategy

In order to investigate the impact of the treatment offer on the binary outcomes of interest, we utilize a set of probit models and focus primarily on results based on models fit to data pooled across the two sites. The pooled sample includes all observations from Boston and the trimmed sample from FCS. In addition, we examine certain results separately for FCS and by FRL status, so that we are able to investigate impacts particular to students from lower-income backgrounds. With a first set of models, we obtain Intent-to-Treat (ITT) estimates of the effect of offering summer counseling to students. These models take the following basic form:

$$(1) \qquad Y_{ij} = \alpha_j + \beta_1 TREATMENT_{ij} + \beta_2 X_{ij} + \varepsilon_{ij},$$

where for student *i* assigned to advising team *j*, Y_{ij} represents a dichotomous college enrollment outcome; α_j is a fixed effect for advising team in Boston or high school in FCS; and X_{ij} is a vector of student-level covariates. Here, the primary coefficient of interest is β_1, which represents the causal impact of the treatment offer on the outcome of interest. We consider variation in the treatment effect by whether students qualify for FRL, by fitting model (1) separately for FRL-eligible students and non-eligible students.[24]

[23] We account for missing values of baseline covariates with indicators for missingness in our analyses.

[24] We prefer fitting separate models over a single model that includes a treatment-by-FRL status interaction based on preliminary analyses which revealed that parameter estimates associated with baseline covariates also differed significantly by FRL status such that a fully interacted model would be most appropriate.

Next, we utilize instrumental variables (IV) estimation to assess local average treatment effects (LATE) for the impact of communicating with a counselor on each enrollment outcome. Because a student's willingness to communicate with a counselor is potentially endogenous to other student characteristics that could determine college enrollment outcomes, we use random assignment to treatment as an IV for whether a student communicated with a counselor (Murnane & Willett, 2011). We fit the following two-stage least squares (2SLS) model:

(2) $COMMUNICATE_{ij} = \alpha_j + \delta_1 TREATMENT_{ij} + \delta_2 X_{ij} + \varepsilon_{ij}$,

(3) $Y_{ij} = \alpha'_j + \gamma_1 COMMUNICATE_{ij} + \gamma_2 X_{ij} + v_{ij}$.[25]

In the first stage (equation 2), we use the treatment indicator to isolate the variation in whether students communicated with a counselor (*COMMUNICATE)* that was exogenously determined by treatment assignment. In the second stage (equation 3), we use predicted values of *COMMUNICATE* to identify the causal effect of communicating with a counselor on each college enrollment outcome, making the exclusion restriction assumption that the intervention impacted postsecondary enrollment outcomes only for those students induced to communicate with a counselor by virtue of random assignment to treatment. λ_1 represents the causal effect of communicating with a counselor on each enrollment outcome. As the exclusion restriction implies, this effect is identified only for those who would communicate with a counselor as a result of being randomly assigned to the treatment group (commonly referred to as "compliers") (Angrist, Imbens & Rubin, 1996). We include the same set of covariates in both the first and second stages of the model. As with the ITT estimates, we present results for the pooled samples in addition to examining differential impacts of communicating with a counselor by FRL status in the FCS sample.

IV. Results

Our results indicate that college-intending high school graduates are responsive to the offer of summer counseling. Further, among these students, the offer of summer counseling support has a strong, positive impact on immediate college enrollment for students overall and a particularly pronounced impact for FRL-eligible students in FCS. In Table 6, we present uncontrolled intervention take-up rates for treatment and control group students separately by

[25] In equations (3) and (4), α_j and α'_j are advising team or high school fixed effects. We differentiate notation in the first- and second-stage models, as we expect different coefficients on the fixed effects in the first and second stages.

site, given that the available information on treatment take-up differs across the two sites. Among students in the control group in Boston, approximately four percent initiated contact with a uAspire advisor, and two percent actually met with an advisor. In contrast, more than 75 percent of students in the treatment group communicated with an advisor (column 1). Not all of these students opted to meet with an advisor, and some scheduled meetings but did not show up. Just over half (52 percent) of students in the treatment group had at least one in-depth meeting with a uAspire advisor (column 2), with an average of about 1.5 meetings per student among those who did meet with an advisor. One possible explanation for the gap between communication with an advisor and actual meetings is that a number of students stated at the time of outreach that they felt confident in their college plans, and did not need to meet with an advisor. According to the uAspire advisors, however, this confidence was often unfounded; students who initially said they had everything in order frequently noted substantial barriers to their enrollment in later conversations with advisors.

In FCS, district counselors reached out to nearly all treatment group students, but a much smaller proportion of students (approximately 35 percent) had any communication with a district counselor (column 1). As the final two columns in Table 6 indicate, however, FRL students were more than twice as responsive to counselor outreach; while approximately 25 percent of non-FRL students in the FCS treatment group communicated with a counselor, nearly 54 percent of FRL students did so.

In Table 7, we present ITT effects of the summer intervention on postsecondary enrollment for the pooled sample of students in Boston and FCS. We present results associated with immediate (fall) enrollment (columns 1 and 2), enrollment in either the fall or spring semester (columns 3 and 4), and continuous enrollment in both semesters of the academic year (columns 5 and 6). For each outcome, we present the uncontrolled main effect of treatment on enrollment and the effect of treatment after controlling for baseline covariates.

Across outcomes and regardless of covariates, results are very stable. Controlling for baseline covariates, the offer of summer counseling increased immediate postsecondary enrollment by 3.6 percentage points for students in the treatment group relative to students in the control group (Table 7, column 2). This represents approximately a 20 percent reduction in the rate of summer attrition experienced by control group students.[26] The treatment coefficients for

[26] Control group rates reported are predicted rates at average values of all baseline covariates included in model.

both immediate enrollment and for whether students enrolled in either the fall or spring are nearly identical (columns 3 and 4). This suggests that the intervention was not simply inducing students to enroll earlier in college. The treatment had a somewhat larger impact on whether students enrolled continuously throughout their freshman year in college. Controlling for baseline covariates, students targeted for proactive outreach were 4.4 percentage points more likely to be enrolled in college for both the fall and spring semesters immediately after high school graduation (column 6).[27] Taken together, these results indicate that proactive counselor outreach improved not only immediate postsecondary enrollment but also first-year college persistence.

In Table 8, we present the analogous results for the FCS trimmed sample alone, by FRL status. The column organization is identical to Table 7. The offer of additional counseling had a large impact on FRL students, increasing immediate enrollment by 8.3 percentage points (column 2), corresponding to a 28 percent reduction in the rate of summer attrition among FRL students in Fulton County Schools. Once again, this estimate is essentially identical to the treatment impact on enrollment in either the fall or spring semesters (column 4). FRL students in the treatment group were over five percentage points more likely to remain continuously enrolled than their control group counterparts, though this impact is not statistically significant. By contrast, we find no impact of the treatment on non-FRL students, for any of the enrollment outcomes we consider. These results lend support to our hypothesis that proactive summer outreach should have a more pronounced impact on students qualifying for FRL.

In Tables 9 and 10, we return to the pooled analyses and examine the impact of the treatment on whether students enrolled at two- versus four-year institutions or on whether they kept their postsecondary plans from the end of high school. In Table 9, we present results by institution type for immediate enrollment (columns 1 and 4), enrollment in either the fall or spring semesters (columns 2 and 5), and continuous enrollment during freshman year (columns 3 and 6). The intervention increased enrollment at both two- and four-year institutions by approximately two percentage points, though only the two-year enrollment impacts are statistically significant. While the magnitude of the treatment effect is similar by institution type, it represents a particularly substantial increase over the control group enrollment rate of five

[27] The more pronounced impact on continuous enrollment is a function of treatment group students who enrolled in the fall returning for the spring semester at higher rates than control group students who also enrolled in the fall.

percent at two-year institutions. In Table 10, we find among those students for whom specific postsecondary plans were documented, the treatment offer had a significant impact on whether they followed through with their stated plans. Treatment group students were 5.4 percentage points more likely to enroll in their intended college immediately after high school (column 1), 5.9 percentage points more likely to enroll at their intended college at some point during the year after high school (column 2), and 5.5 percentage points more likely to remain enrolled at their intended institution throughout the first year of college (column 3).

Finally, using instrumental variables estimation, we use the treatment indicator as an instrument for communicating with a counselor and estimate that students with whom counselors were able to make contact were 6.2 percentage points more likely than their control group counterparts to enroll on-time, 6.8 percentage points more likely to enroll any time during the first year after high school, and 7.4 percentage points more likely to enroll for the full year after high school graduation. Among those FRL students in FCS who communicated with a counselor as a result of proactive outreach, we estimate that communicating with an FCS counselor increased immediate enrollment by 17.0 percentage points, enrollment any time during the first year of college by 17.7 percentage points; and continuous first-year enrollment by 12.4 percentage points. As with the ITT estimates, the continuous enrollment effect is imprecisely estimated and is not statistically significant. Additionally, the impact of communicating with an FCS counselor among non-FRL students is essentially zero.[28]

V. Conclusions

The results of these experimental studies demonstrate that, for populations of college-intending graduates from urban public high schools in Boston and Fulton County, GA, proactive outreach during the summer months leads to substantially higher rates of on-time college enrollment. Fall college enrollment rates were nearly 4 percentage points higher for students across the sites and 8.3 percentage points higher for FRL-eligible students in the Fulton County Schools treatment group. The treatment also improved students' rates of continuous enrollment through the spring semester of freshman year and the extent to which they followed through on their postsecondary plans from the end of high school. Specifically, members of the treatment group were more than 4 percentage points more likely to be continuously enrolled in both the fall

[28] Tables presenting the 2SLS results are available upon request.

and spring semesters and, among those whose intentions were documented, more than 4 percentage points more likely to enroll at their intended college or university. In short, proactive outreach and the offer of college counseling helped students to achieve greater stability in realizing and persisting in their college plans.

Our finding that the offer of summer counseling increased the rates at which students remained continuously enrolled through freshman year is particularly noteworthy. A general concern with college access interventions is that they improve rates of initial enrollment among students who ultimately have a low probability of collegiate success. One could argue that students who struggle to access and complete required paperwork during the summer are unlikely to possess the skills, either academic or problem-solving, necessary to succeed in the classroom and persevere in college. While our conclusions will be strengthened by observing students over a longer time frame, our initial finding suggests that the challenges students encounter over the summer may not relate directly to their ability to persist in college.

In additional analyses (not presented in the paper), we find that the substantial increase in enrollment at two-year institutions relative to the control group was driven primarily by impacts specific to the Boston sample. This finding is consistent with uAspire's emphasis on college affordability. Since the cost of attendance at community colleges is much lower than the cost of attendance at four-year institutions (particularly those that are residential), advisors may have been especially encouraging of students with plans for two-year institutions. In addition, they may have also encouraged those with financially infeasible plans for an expensive four-year institution to instead consider beginning their college careers at a community college. uAspire advisors shared anecdotes of successfully persuading students who were prepared to take out large loans to attend a private institution to instead pursue a more affordable alternative.

uAspire advisors' expertise in financial aid advising, in particular, may explain why treatment group students were better able to maintain their postsecondary plans. Advisors reported a number of instances in which they were able to help students successfully appeal for additional grant aid, waive costs (like health insurance) that the student had not anticipated; or assist students in registering for tuition payment plans. Advisors' ability to lower students' costs may have helped students on the margin of matriculating at their intended institution to enroll.

When looking at FCS alone, our finding of positive treatment effects only among FRL students reinforces our hypothesis that socioeconomically disadvantaged students may be

particularly poised to benefit from summer outreach. The treatment may ease financial constraints for these students, either by reducing costs at their intended college or by helping them to pursue more affordable college options. The offer of counseling may also help fill important gaps in students' college literacy, particularly for those from low-income families who are also the first in their family to go to college.

To assess the cost-effectiveness of summer outreach, we compare the intervention's impact on immediate fall enrollment to what it would cost to obtain the same impact by giving students additional grant aid. One important difference is that the per-student costs of summer intervention are paid regardless of whether students enroll, whereas grant aid is dispersed only if students enroll. Nonetheless, consider that a variety of studies have found that $1,000 in grant aid increases enrollment by anywhere from 3 – 6 percentage points, depending on the structure and target population of the grant program (Deming & Dynarski, 2009). We will assume that offering students in our sample an additional $1,000 in aid would have an impact at the high end of this range; LDS applicants' college plans are plausibly more elastic to reductions in college costs than the average high school senior who is eligible for grant aid.[29] The cost of increasing enrollment by 4 percentage points in the pooled sample was approximately $138,000. Given a (covariate-controlled) enrollment rate in the control group of 82 percent, increasing enrollment by the same margin using grant aid would cost approximately $466,000,[30] or more than three times the cost of the summer outreach. Given the even larger treatment effects among FRL students in Fulton County, proactive outreach and summer counseling may be a particularly cost-effective strategy for increasing enrollment rates among low-income, college-intending students.

Data from the Boston and Fulton County interventions as well as the Providence pilot (Castleman et al, 2012) indicate that offering summer support is a cost-effective approach to meaningfully increasing college enrollment among low-income students. Nevertheless, there are several outstanding questions that we are exploring in current work regarding how summer outreach and counseling could be conducted most efficiently and effectively. First, we are interested in whether students would be more responsive to outreach from college staff members or even college peers. While students do not have a prior relationship with college staff, they

[29] We are grateful to Raj Chetty for making this point.

[30] To arrive at this number, we multiplied the cost of increasing enrollment by four percentage points ((4/6)*1,000) by the number of students in the treatment group who enrolled in college (.86 * 812). This calculation assumes that the increase in the probability of on-time enrollment is linear in the size of the grant.

may be more inclined to respond and engage with college staff members because the outreach is coming from the institution where the student has indicated a desire to attend. In addition, students may be particularly likely to respond to college peers to whom they may feel they can better relate. Personalized summer contact from the college may also make a student feel valued by the institution, thereby increasing the commitment to matriculating. An additional advantage of colleges and universities offering summer support is that they have access to better information about the steps students have and have not completed over the summer months. For instance, many colleges have data systems that flag students who do not attend a required orientation or have not accessed the college's web portal. Such information would allow staff members or peer mentors offering summer support to be much more targeted and efficient in their outreach efforts.

Additionally, given that many of the barriers students face are informational in nature, we currently are investigating the impact of a summer text messaging campaign on students' postsecondary outcomes. Capitalizing on cell phone and intended institution information gathered in high school exit surveys, we generated a set of text messages customized to each student's intended institution, reminding them of key summer tasks to complete. The messages are timed for delivery just before each task needs to be completed, and each message offers students the option of responding via text message to request help from a school counselor or other college advisor. The marginal cost of sending these text messages to a student is approximately $0.10 total (in addition to any cost incurred by the student by receiving the messages), so if the intervention has any discernible impact on enrollment, it would be both extremely cost-effective and very easily scalable.

Finally, we are interested in learning the extent to which college-intending students can benefit from additional help navigating critical cost-saving steps such as waiving student health insurance plans in favor of a qualifying health insurance plan in which the student was already enrolled. Anecdotal evidence from the uAspire advisors suggests that they were able to save several students from unnecessarily incurring the cost of student insurance by educating them about and assisting them with the process of waiving the student insurance plan. This issue is particularly relevant in states like Massachusetts where student health insurance is added to each student's term bill by default. An informational campaign about the conditions under which students are able to waive the insurance plan and the cost savings they would realize if they

qualify for a waiver could help to increase timely postsecondary enrollment, particularly among students whose postsecondary plans are vulnerable to unanticipated college costs.

In closing, a growing body of research indicates that college-intending, low-income high school graduates face a host of informational, financial and other barriers to enrollment that may prevent them from successfully matriculating. Encouragingly, results presented here and from a previous pilot study illustrate that students' postsecondary plans are highly responsive to the offer of support and guidance during the summer months. At a time when the private and social returns to a college education are particularly high, yet state and federal budgets are especially lean, our study suggests that summer counseling is a cost-effective approach to increasing college access among low-income students who aspire to further their education.

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Tables

Table 1. Descriptive statistics for the Boston uAspire sample

	N	Mean	Std. Dev.	Min	Max
Demographic characteristics					
White	863	0.09	0.28	0	1
Black	863	0.32	0.47	0	1
Hispanic	863	0.24	0.43	0	1
Asian	863	0.20	0.40	0	1
Multiracial	863	0.10	0.30	0	1
Other race / ethnicity	863	0.05	0.22	0	1
Female	927	0.65	0.48	0	1
Completed the FAFSA	927	0.86	0.35	0	1
Characteristics of the college/university where students intended to enroll					
Intended to enroll in a public institution	869	0.51	0.50	0	1
Intended to enroll in a four-year institution	869	0.85	0.36	0	1

Source: uAspire student database.

Notes: The sample comprises students who applied for a Last Dollar Scholarship (LDS) through uAspire in Summer 2011. FAFSA completion is based on students submitting their Student Aid Report along with their LDS application. The 49 percent of students who do not intend to enroll in a public institution intended to enroll in a private institution. Similarly, the 15 percent of students who did not intend to enroll in a four-year institution intended to enroll in a two-year institution.

Table 2. Descriptive statistics for the Fulton County Schools sample

	N	Mean	Std. Dev.	Min	Max
Demographic and prior student achievement characteristics					
White	1446	0.39	0.49	0	1
Black	1446	0.49	0.50	0	1
Hispanic	1446	0.06	0.23	0	1
Asian	1446	0.04	0.18	0	1
Multiracial	1446	0.02	0.15	0	1
American Indian /Alaska Native	1446	0.00	0.03	0	1
Female	1446	0.54	0.50	0	1
Free / reduced lunch status	1446	0.37	0.48	0	1
11^{th} grade mathematics achievement	1409	542.90	26.12	468	600
11^{th} grade language arts achievement	1409	249.54	31.14	153	350
Reported completing the FAFSA	1446	0.78	0.41	0	1
Characteristics of the college/university where students intend to enroll					
Intended to enroll in a public institution	1271	0.82	0.39	0	1
Intended to enroll in a four-year institution	1446	0.87	0.35	0	1

Source: Fulton County Schools administrative and high school exit survey records.

Notes: FAFSA completion is based on students' self-report on the high school exit survey. Among those who reported an intended institution, the 18 percent of students who did not intend to enroll in a public institution did intend to enroll in a private institution. Similarly, the 13 percent of students who did not intend to enroll in a four-year institution did intend to enroll in a two-year institution. The survey used to collect postsecondary intention information included a separate question for intention to enroll in a 2-year or a 4-year institution, and all students provided an answer to this question. Intention to enroll in a private institution was coded from the name of each student's report of intended post-secondary institution. Specific college of intention was missing for 175 students. Therefore, we are missing information on type of postsecondary institution (public versus private) for 175 students.

Table 3. Regression results for assessing balance of baseline covariates for the Boston uAspire and Fulton County Schools samples

	Boston uAspire			Fulton County Schools		
	Intercept (se)	Treatment (se)	N	Intercept (se)	Treatment (se)	N
White	0.085*** (0.013)	0.006 (0.019)	863	0.396*** (0.012)	-0.013 (0.020)	1446
Black	0.334*** (0.021)	-0.024 (0.032)	863	0.490*** (0.011)	0.014 (0.020)	1446
Hispanic	0.231*** (0.019)	0.013 (0.029)	863	0.053*** (0.007)	0.008 (0.014)	1446
Asian	0.211*** (0.018)	-0.022 (0.027)	863	0.034*** (0.006)	0.004 (0.010)	1446
Multiracial	0.097*** (0.013)	0.006 (0.021)	863	0.026*** (0.005)	-0.012 (0.008)	1446
Other	0.043*** (0.009)	0.021 (0.016)	863	--	--	--
Female	0.653*** (0.021)	-0.018 (0.032)	927	0.542*** (0.016)	0.006 (0.028)	1446
FRL	--	--	--	0.373*** (0.013)	-0.006 (0.023)	1446
11^{th} grade mathematics achievement	--	--	--	542.034*** (0.777)	2.634* (1.322)	1409
11^{th} grade language arts achievement	--	--	--	248.129*** (0.944)	4.309* (1.713)	1409
Completed the FAFSA	0.855*** (0.015)	0.007 (0.023)	927	0.776*** (0.013)	0.013 (0.023)	1446
Intend to enroll in a public institution	0.490*** (0.023)	0.043 (0.034)	869	0.828*** (0.013)	-0.037 (0.025)	1271
Intend to enroll in a four-year institution	0.858*** (0.015)	-0.018 (0.024)	869	0.845*** (0.012)	0.051** (0.019)	1446

~ p<.10 * p<.05 **p<.01 ***p<.001

Source: uAspire student database; Fulton County Schools administrative and high school exit survey records.

Notes: For each baseline characteristic, results correspond to a regression of the baseline variable on an indicator for treatment assignment and advising-team (uAspire) or school-level (Fulton County Schools) fixed effects. Robust standard errors are shown in parentheses.

Table 4. Results from regressing 11th grade achievement test scores on an indicator for treatment and high school fixed effects within 5-percentile bins defined by the test score distributions

	Language Arts			Mathematics		
Percentile bin	Intercept	Treatment	N	Intercept	Treatment	N
1	188.040***	4.382	83	492.154***	0.912	71
	(1.694)	(2.997)		(1.150)	(2.149)	
2	209.266***	-0.563	69	506.642***	0.604	74
	(0.366)	(0.662)		(0.372)	(0.681)	
3	217.579***	-0.090	86	513.774***	0.220	67
	(0.337)	(0.578)		(0.204)	(0.320)	
4	224.912***	-0.256	84	518.867***	-0.353	92
	(0.203)	(0.384)		(0.262)	(0.414)	
5	229.731***	0.166	60	522.526***	0.036	69
	(0.135)	(0.225)		(0.072)	(0.144)	
6	235	0	72	524.535***	-0.099	86
	(.)	(.)		(0.068)	(0.116)	
7	237	0	65	531	0	42
	(.)	(.)		(.)	(.)	
8	240.868***	0.073	75	535.541***	0.128	104
	(0.075)	(0.134)		(0.062)	(0.109)	
9	245	0	95	539	0	46
	(.)	(.)		(.)	(.)	
10	248.971***	0.029	96	542	0	68
	(0.026)	(0.048)		(.)	(.)	
11	--	--	0	545	0	70
				(.)	(.)	
12	253.977***	-0.065	94	549	0	84
	(0.037)	(0.075)		(.)	(.)	
13	259.947***	0.061	113	553	0	102
	(0.042)	(0.083)		(.)	(.)	
14	--	--	0	557.801***	0.211	98
				(0.088)	(0.179)	
15	266.961***	0.025	95	--	--	0
	(0.040)	(0.074)				
16	275	0	111	565	0	101
	(.)	(.)		(.)	(.)	
17	--	--	0	572.972***	-0.036	109
				(0.031)	(0.062)	
18	284.019***	-0.180*	88	--	--	0
	(0.042)	(0.085)				
19	296.755***	0.259	66	587.966***	0.035	79
	(0.217)	(0.448)		(0.030)	(0.065)	
20	328.032***	3.782	57	600	0	47
	(2.595)	(4.244)		(.)	(.)	

~ p<.10 * p<.05 **p<.01 ***p<.001

Source: Fulton County Schools administrative and high school exit survey records.

Table 5. Differences between treatment and control groups on baseline characteristics in Fulton County Schools, full and trimmed samples

	Full sample (1)	Trimmed sample (2)	Non-FRL full sample (3)	Non-FRL (Trimmed) (4)	FRL full sample (5)	FRL (Trimmed) (6)
White	-0.013 (0.020)	-0.006 (0.022)	-0.029 (0.030)	-0.013 (0.032)	0.008 (0.015)	-0.003 (0.016)
Black	0.014 (0.020)	0.018 (0.022)	0.017 (0.025)	0.012 (0.027)	0.011 (0.030)	0.034 (0.034)
Hispanic	0.008 (0.014)	0.007 (0.015)	0.020 (0.016)	0.021 (0.018)	-0.009 (0.023)	-0.014 (0.026)
Asian	0.004 (0.010)	-0.001 (0.011)	0.008 (0.015)	0.000 (0.015)	-0.003 (0.012)	-0.002 (0.047)
Multiracial	-0.012 (0.008)	-0.017* (0.008)	-0.014 (0.010)	-0.018~ (0.010)	-0.007 (0.012)	-0.016 (0.014)
Female	0.006 (0.028)	-0.001 (0.031)	0.001 (0.037)	-0.013 (0.040)	0.013 (0.044)	0.024 (0.049)
FRL	-0.006 (0.023)	-0.008 (0.025)	--	--	--	--
11^{th} grade mathematics achievement	2.634* (1.322)	0.751 (1.199)	3.011~ (1.646)	1.215 (1.518)	2.019 (2.050)	-0.327 (1.892)
11^{th} grade language arts achievement	4.309* (1.713)	0.755 (1.333)	4.956* (2.180)	0.893 (1.715)	3.248 (2.523)	0.238 (2.013)
Completed the FAFSA	0.013 (0.023)	-0.003 (0.025)	-0.002 (0.031)	-0.014 (0.034)	0.034 (0.035)	0.016 (0.037)
Intend to enroll in a four-year institution	0.051** (0.019)	0.030 (0.020)	0.026 (0.020)	0.027 (0.021)	0.085* (0.037)	0.034 (0.037)
Intend to enroll in a public institution	-0.037 (0.025)	-0.044 (0.027)	-0.055~ (0.030)	-0.066* (0.033)	-0.008 (0.043)	-.006 (0.047)

~ p<.10 * p<.05 **p<.01 ***p<.001

Source: Fulton County Schools administrative and high school exit survey records.

Notes: Each cell contains the estimated regression coefficient associated with an indicator for treatment assignment from a regression of each variable on the indicator for treatment and school-level fixed effects. Robust standard errors are shown in parentheses.

Table 6. Intervention take-up by treatment and control group students

Outcome	Communicated with an advisor (1)	Met with an advisor (2)	Communicated with an advisor (non-FRL) (3)	Communicated with an advisor (FRL) (4)
Boston uAspire				
Treatment	0.728***	0.497***	--	--
	(0.023)	(0.026)		
Control group enrollment rate	0.039	0.022	--	--
Advising team fixed effects	✓	✓		
Pseudo-R^2	0.487	0.339	--	--
N	927	927	--	--
Fulton County Schools (Trimmed sample)				
Treatment	0.346***	--	0.250***	0.518***
	(0.026)		(0.032)	(0.040)
Control group enrollment rate	0.010	--	0.007	0.015
School fixed effects	✓		✓	✓
Pseudo-R^2	0.396	--	0.384	0.404
N	1239	--	796	443

~ p<0.10 * p<0.05 **p<0.01 ***p<.001

Source: uAspire student database; Fulton County Schools administrative and high school exit survey records.

Notes: Coefficients presented are marginal effects from probit regressions. Robust standard errors are shown in parentheses.

Table 7. Impact of the offer of summer counseling on college enrollment during the year following high school for the pooled Boston uAspire and Fulton County Schools sample

	Immediate enrollment		Fall or spring semester enrollment		Continuous first-year enrollment	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.035*	0.036*	0.035*	0.037*	0.042*	0.044*
	(0.017)	(0.017)	(0.015)	(0.015)	(0.019)	(0.018)
Control group enrollment rate	0.803	0.823	0.842	0.860	0.762	0.781
Baseline covariates		✓		✓		✓
Pseudo-R^2	0.064	0.17	0.052	0.148	0.062	0.168
N	2166	2166	2166	2166	2166	2166

~ p<0.10 * p<0.05 **p<0.01 ***p<.001

Source: uAspire student database; Fulton County Schools administrative and high school exit survey records; National Student Clearinghouse.

Notes: The pooled sample includes all observations in the Boston uAspire sample and the trimmed sample from Fulton County. Coefficients presented are marginal effects from probit regressions with fixed effects. For Fulton County, fixed effects pertain to the high school. For Boston uAspire, fixed effects pertain to the advising group. Robust standard errors are shown in parentheses. Baseline covariates include indicators for race / ethnicity, gender, FAFSA completion, characteristics of intended college or university, and indicators for covariate missingness. Control group enrollment rates reported are predicted rates at average values of all baseline covariates included in model.

Table 8. Impact of the offer of summer counseling on college enrollment during the year following high school for students in Fulton County Schools (trimmed sample), by FRL status

	Immediate enrollment		Fall or spring semester enrollment		Continuous first-year enrollment	
	(1)	(2)	(3)	(4)	(5)	(6)
FRL students						
Treatment	0.088~	0.083~	0.091*	0.085*	0.064	0.051
	(0.044)	(0.045)	(0.039)	(0.037)	(0.046)	(0.049)
Control group enrollment rate	0.666	0.707	0.747	0.789	0.630	0.665
Baseline covariates		✓		✓		✓
Pseudo-R^2	0.033	0.222	0.029	0.197	0.021	0.200
N	443	443	443	443	443	443
Non-FRL students						
Treatment	0.003	-0.006	-0.004	-0.010	0.018	0.004
	(0.023)	(0.022)	(0.021)	(0.019)	(0.026)	(0.025)
Control group enrollment rate	0.900	0.920	0.912	0.915	0.857	0.862
Baseline covariates		✓		✓		✓
Pseudo-R^2	0.094	0.199	0.070	0.177	0.099	0.209
N	796	796	796	796	796	796

~ p<0.10 * p<0.05 **p<0.01 ***p<.001

Source: Fulton County Schools administrative and high school exit survey records; National Student Clearinghouse.
Notes: Coefficients presented are marginal effects from probit regressions with fixed effects for high school. Robust standard errors are shown in parentheses. Baseline covariates include indicators for race / ethnicity, gender, FAFSA completion, characteristics of intended college or university, prior performance on standardized tests of mathematics and English / language arts, and indicators for covariate missingness. Control group enrollment rates reported are predicted rates at average values of all baseline covariates included in model.

Table 9. Impact of the offer of summer counseling on enrollment in two-year and four-year institutions for the pooled Boston uAspire and Fulton County Schools sample

	Enrolled in two-year institution:			Enrolled in four-year institution:		
	Immediate enrollment	Fall or spring semester enrollment	Continuous first-year enrollment	Immediate enrollment	Fall or spring semester enrollment	Continuous first-year enrollment
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.021*	0.02	0.020*	0.015	0.016	0.023
	(0.011)	(0.013)	(0.010)	(0.023)	(0.022)	(0.024)
Control group enrollment rate	0.050	0.074	0.040	0.713	0.746	0.672
Baseline covariates	✓	✓	✓	✓	✓	✓
Pseudo-R^2	0.275	0.268	0.271	0.335	0.335	0.308
N	2166	2166	2166	2166	2166	2166

~ p<0.10 * p<0.05 **p<0.01 ***p<.001

Source: uAspire student database; Fulton County Schools administrative and high school exit survey records; National Student Clearinghouse.

Notes: Coefficients presented are marginal effects from probit regressions with fixed effects. For Fulton County, fixed effects pertain to the high school. For Boston uAspire, fixed effects pertain to the advising group. Robust standard errors are shown in parentheses. Baseline covariates include indicators for race / ethnicity, gender, FAFSA completion, characteristics of intended college or university, and indicators for covariate missingness. Control group enrollment rates reported are predicted rates at average values of all baseline covariates included in model.

Table 10. Impact of the offer of summer counseling on whether students enrolled at their intended postsecondary institution for the pooled Boston uAspire and Fulton County Schools sample

	Enrolled at intended institution (as of the end of high school):		
	Immediate enrollment	Fall or spring semester enrollment	Continuous first-year enrollment
	(1)	(2)	(3)
Treatment	0.054*	0.059*	0.055*
	(0.020)	(0.019)	(0.021)
Control group enrollment rate	0.755	0.769	0.717
Baseline covariates	✓	✓	✓
Pseudo-R^2	1959	1959	1959
N	0.141	0.136	0.136

~ p<0.10 * p<0.05 **p<0.01 ***p<.001

Source: uAspire student database; Fulton County Schools administrative and high school exit survey records; National Student Clearinghouse.

Notes: Coefficients presented are marginal effects from probit regressions with fixed effects. For Fulton County, fixed effects pertain to the high school. For Boston uAspire, fixed effects pertain to the advising group. Robust standard errors are shown in parentheses. Baseline covariates include indicators for race / ethnicity, gender, FAFSA completion, characteristics of intended college or university, and indicators for covariate missingness. Control group enrollment rates reported are predicted rates at average values of all baseline covariates included in model.