

# REVIEW PROTOCOL FOR STUDIES OF INTERVENTIONS TO SUPPORT THE TRANSITION TO COLLEGE VERSION 3.2

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## TOPIC AREA FOCUS

This protocol guides the review of research that informs What Works Clearinghouse (WWC) intervention reports in the area of the transition to college. This review-specific protocol is used in conjunction with the [\*WWC Procedures and Standards Handbook \(Version 3.0\)\*](#).

This review focuses on interventions for middle and high school students that aim to promote successful transitions into postsecondary education, with a primary focus on increasing postsecondary access and enrollment.

Enrolling in postsecondary education and completing a degree or certificate is one of the primary pathways for economic success and is increasingly required for employment in a variety of fields. Yet, large numbers of qualified students fail to apply to and enroll in college (e.g., Avery, 2013; Hoxby & Avery, 2012) and those who do apply and enroll are often unprepared (Adelman, 2004). A number of programs and practices are available for the middle and high school levels that aim to improve college readiness and access and support the transition to college. Interventions relevant to this topic area are diverse in the sense that they can involve a variety of programmatic strategies and target students of different ages and with different demographic and academic characteristics. While the WWC is interested in interventions to support students from disadvantaged backgrounds, minority students, and first generation college students, the review is not restricted to students from these populations and will include students from all backgrounds ranging in age from middle school age up to enrollment in postsecondary education.

**Eligible Approaches for Supporting the Transition to College.** For this review, transition to college interventions that focus on middle school and high school age groups must be *primarily focused on increasing the number of students who transition into postsecondary education, as opposed to simply raising the academic performance of students while in middle or high school*. That is, interventions for middle and high school students reviewed under this protocol must be explicitly oriented toward increasing college readiness, increasing college access, or smoothing the transition to college to be eligible for review. Interventions are not required to be delivered in physical institutions to be eligible for review under this protocol. Interventions delivered by institutions that operate wholly or partially online are eligible for review if they meet the other requirements specified in this protocol.

Within this framework, a number of broad intervention strategies are relevant, as follows:

- **Interventions to increase the proportion of students who complete the necessary steps required to be eligible and ready for college.** To be eligible to enroll in college, and particularly four-year institutions, middle school and high school students must complete a series of important steps. These vary from state to state, but are roughly as follows: take middle school classes that are

appropriate for the high school college preparatory sequence; take the high school college preparatory course sequence; take (and pass) the required college preparatory curriculum in the state; take (and do well on) any required college entrance exams; complete the Free Application for Federal Student Aid (FAFSA); apply to a college; respond after being accepted and pay any registration fees; and, finally, show up on campus. Many studies have identified gaps in this process, wherein students complete some but not all of these steps. A variety of interventions have been developed to increase the proportion of students accomplishing many of these steps, including combinations of the various steps.

- **Interventions to increase knowledge about college.** Many middle and high school students appear to be misinformed about even the basics of college attendance and enrollment (e.g., Avery & Kane, 2004). Students greatly overestimate the price of higher education (Horn, Chen, & Chapman, 2003) and often think that entrance requirements are more stringent than they actually are. Students tend to think that the most difficult thing about college is getting in, when in fact the vast majority of students attend their first choice institution, but many do not complete their first year (i.e., staying in college is harder than getting into college). Well-qualified students from low-income families tend to underestimate their ability to be accepted to and pay for selective institutions. To address this misinformation, interventions have been designed to provide students with accurate information about all of these areas and, by changing student perceptions, increase the likelihood that students will both enroll in college and attend an appropriate postsecondary institution (e.g., Avery & Kane, 2004; Hoxby & Turner, 2013).
- **Dual enrollment and Advanced Placement programs.** In many communities, academically qualified students may enroll in college courses or earn college credits while in high school. The Advanced Placement program allows students to enroll in college-level courses while in high school and receive credit for those courses if they attain a qualifying score on a standardized exam. Dual enrollment programs are an extension of these efforts and involve taking college-level courses through a postsecondary institution while still enrolled in secondary school. Dual enrollment programs are based on the premise that once high school students know what college is actually like, they should be more likely both to enroll in and succeed in college once they have graduated from high school.
- **Immediate enrollment programs.** Many studies have shown that even a slight delay in the time to college enrollment beyond the normal summer to fall delay appears to lower the probability of initial attendance and eventual success. Various interventions have been designed to ensure that high school seniors enroll in higher education immediately after school instead of delaying enrollment.

See the section “Specific Intervention Operational Definitions,” below, for the operational definitions for interventions that are the subject (or potentially are the subject) of WWC reviews.

A systematic review of the evidence in this topic area addresses the following questions: Does the reviewed intervention appear to be effective for increasing graduation and reducing dropout from high school, increasing postsecondary access and enrollment, enrollment persistence, credit accumulation and attainment, improving academic achievement in college, and/or improving labor market outcomes? Is the reviewed intervention more or less effective for certain subgroups of students (including first-generation college students, racial/ethnic minorities, academically underprepared students, students from low socioeconomic status backgrounds (e.g., Pell Grant recipients), and/or community college students)?

## **IDENTIFYING STUDIES FOR REVIEW**

The *WWC Procedures and Standards Handbook* discusses the general procedures for conducting a literature search. For the transition to college topic area, a broad search was conducted to identify potentially relevant intervention studies. In addition, for each intervention report under this topic area, a secondary search will be performed to identify any studies of the intervention that were not identified in the initial search. Further, once interventions have been identified as being targets for an Intervention Report, the WWC supplements the electronic database search with targeted searches of government and non-government agency websites, relevant non-profit organizations that might fund research on the intervention, and via reviewing the bibliographies of literature reviews, meta-analyses, and primary studies of the intervention under review.

The review team will search the WWC database of previously reviewed studies to identify studies that have met standards in prior reviews. Those studies will be re-reviewed using the eligibility criteria and evidence standards described in this protocol. The team will also identify studies that have been rated as ineligible in prior reviews and will confirm that they are ineligible for this review based on the criteria described in this protocol.

The broad search for the transition to college topic area is detailed in Appendix A. Each Intervention Report's secondary search will be described in Appendix B.

## **ELIGIBILITY CRITERIA AND EVIDENCE STANDARDS**

Studies must meet several criteria to be eligible for review under the transition to college topic area. These relate to the population that was sampled, the study design that was used, the outcomes that were measured, and when the study was conducted. Each of these is discussed below.

### **Populations to be Included**

To be eligible for review under this protocol, a study must include students in middle or high school in the United States or Canada. If the sample is not clearly identified as a middle or high school sample, the average age of the students in the study must be at least 12. If a study includes primary school students in the sample, the average age of the sample must be at least 12 or the majority (> 50%) of the sample must be attending a middle school. Studies for which neither the grade level nor the age of the sample is specified are not eligible for review. The upper age boundary for this review includes interventions or strategies if they occur up to a student's first enrollment at a postsecondary institution.

Studies with samples of students who have enrolled in postsecondary institutions at the beginning of the intervention are not eligible under this review protocol, but are reviewed under the Review Protocol for Studies of Interventions to Support Postsecondary Success, which focuses on interventions for postsecondary students designed to promote success in postsecondary institutions.

In general, the WWC determines a study rating based on average intervention effects and will report subgroup analyses only for groups that are identified in the protocol as being of theoretical, policy, or practical interest. For studies reviewed under this protocol, the default subgroups include: (a) gender (*e.g., male*), (b) potential first-generation college students, (c) racial/ethnic minorities, (d) students from low socioeconomic status backgrounds (*e.g., those participating in the Free and Reduced-Price Lunch program*), and (e) academically underprepared students (*e.g., students whose scores on state assessments suggest that they will be placed into developmental education in college*). To be eligible for review as a subgroup analysis, impact estimates must be available for all groups in a subgroup analysis (*e.g., results for both males and females are required, not just males or females*) and a test of the interaction between subgroup membership and intervention condition must be reported or derivable from reported statistics (using, for example, techniques described in Altman & Bland, 2003).

As discussed in the *WWC Procedures and Standards Handbook* (v. 3.0, see Section III.B.4, p. 17), if a study presents findings separately for several groups of students without presenting an aggregate result, the WWC will query authors to see if they conducted an analysis on the full sample of students. If the WWC is unable to obtain aggregate results from the author, the WWC averages across subgroups within a study to use as the primary finding and presents the subgroup results as supplemental analyses.

### **Types of Studies to be Reviewed**

In order to be eligible for review, a study must be a primary analysis of the effects of an intervention. If a study does not examine the effects of an intervention, or if it is not a primary analysis (*e.g., if it is a meta-analysis or other literature review*), then it is not eligible for review.

In addition, the study must have an eligible design. Eligible study designs include randomized controlled trials and well-controlled quasi-experimental designs (defined as studies using a well-matched comparison group). In addition, studies using regression discontinuity designs or single-case designs will be eligible under this topic area; should any studies with these designs be located for review, the pilot standards described in the *WWC Procedures and Standards Handbook* will be used.

### **Types of Comparisons to be Included**

Studies reviewed under this protocol for Intervention Reports must use “business as usual” comparison groups that are generally similar to each other across studies. “Business as usual” comparison groups are those in which students may attend the same or similar schools as the intervention students and/or they may receive the usual services offered to students in the setting (*e.g., advising, tutoring*). Comparison groups must not involve explicit assignment of students to other putatively effective interventions or variations of the same intervention that is delivered to

the intervention group. Studies for which the type or nature of the comparison group is not clearly “business as usual” should be referred to the review team leadership for consultation, to ensure that comparison conditions are similar across studies.

Studies to be reviewed under this protocol for Quick Reviews, Single Study Reviews, and Department of Education funding competitions may include comparison groups that receive other or similar interventions as well as “business as usual” comparison groups.

## **Eligible Outcomes**

To be eligible for review, a study must also report outcomes from a relevant outcome domain. These may include outcomes measured prior to attending a postsecondary institution while students are in middle or high school or outcomes measured while students are transitioning to or attending postsecondary institutions. The following postsecondary outcome domains are eligible: (a) access and enrollment, (b) credit accumulation and persistence, (c) academic achievement, and (d) attainment. The following middle or high school outcome domains are eligible: (a) academic achievement, (b) staying in school, (c) progressing in school, and (d) completing school. Operational definitions for each outcome domain are provided below.

The content expert is responsible for grouping outcomes into domains. These are defined as follows:

### *Middle and High School Outcomes*

- **General academic achievement (middle school)** in middle school, which assesses the extent to which students master academic content. Examples of ways that academic achievement might be operationally defined in studies include: (a) standardized achievement tests including the ACT and SAT as well as state-mandated tests and (b) high school grade point averages. Individual course grades or exam scores from middle or high school courses are not eligible under this domain.
- **General academic achievement (high school)** in high school, which assesses the extent to which students master academic content. Examples of ways that academic achievement might be operationally defined in studies include: (a) standardized achievement tests including the ACT and SAT as well as state-mandated tests and (b) high school grade point averages. Individual course grades or exam scores from middle or high school courses are not eligible under this domain.
- **Attendance (middle school)**, refers to outcomes that measure attendance rates or absenteeism at school. Ways that attendance might be operationalized include the number or proportion of days absent or in attendance during a school term, proportion of students with excessive absences, referrals for truancy, and the like. Objective measures of attendance, such as those from school administrative records are preferred, but student reported measures are acceptable if a more objective measure is not available.
- **Attendance (high school)**, refers to outcomes that measure attendance rates or absenteeism at school. Ways that attendance might be operationalized include the number or proportion of days absent or in attendance during a school term, proportion of students with excessive absences, referrals for truancy, and the like. Objective measures

of attendance, such as those from school administrative records are preferred, but student reported measures are acceptable if a more objective measure is not available.

- **College readiness**, refers to outcomes that measure student progress on preparedness to enter postsecondary education. Examples of ways that college readiness might be operationally defined in studies include: (a) meeting specific minimal coursework requirements for entry into postsecondary institutions (e.g., *A-G requirements* for incoming freshmen of the University of California or the California State University systems), (b) completing other key milestones required for entry into postsecondary institutions such as applying for college or completing the Free Application for Federal Student Aid (FAFSA), or (c) completing college requirements in high school, particularly scores or passage rates for Advanced Placement or International Baccalaureate.
- **Staying in high school**, refers to outcomes that measure whether the student has dropped out of school or whether the student is still enrolled in school.
- **Progressing in high school**, refers to outcomes that assess the number of high school course credits the student has earned, whether the student was promoted to the next grade, and the highest grade the student has completed.
- **Completing high school**, refers to outcomes that measure whether the student has earned a high school diploma or GED.

#### *Postsecondary Outcomes*

- **College access and enrollment** refers to the process of applying to, actually enrolling, and attending a postsecondary institution. Examples of ways that enrollment might be operationally defined in studies include: (a) actual enrollment in college, (b) number and/or selectivity of admitted and/or enrolling institutions, (c) enrollment by institution type (2 year vs. 4 year), (d) intensity of enrollment (full time vs. part time), and (e) timing of enrollment (e.g., immediate vs. delayed enrollment after high school). On a case-by-case basis, the WWC may accept measures of intentions to enroll, though measures of actual enrollment are preferred when both types are available.
- **College attendance**, refers to outcomes that measure attendance rates or absenteeism at school. Ways that attendance might be operationalized include the number or proportion of days absent or in attendance during a school term, proportion of students with excessive absences, and the like. Objective measures of attendance, such as those from school administrative records are preferred, but student reported measures are acceptable if a more objective measure is not available.
- **Credit accumulation** and persistence refers to progress toward the completion of a degree, certificate, or program. Examples of ways that credit accumulation might be operationally defined in studies include: (a) number of college-level credits earned, (b) number of terms of continuous enrollment, and (c) enrolled vs. did not enroll the next semester. The number of non-college level credits earned (e.g., developmental credits) is not an eligible measure of credit accumulation. On a case-by-case basis, the WWC may accept measures of intentions to persist, though measures of actual persistence are preferred when both types are available.
- **General academic achievement (college)** refers to the extent to which students master academic content. As such, eligible measures of academic achievement are those that

arise naturally from student educational experiences. Examples of ways that academic achievement might be operationally defined in studies include (a) final grade in a single college-level course, (b) grade point average in college-level courses, and (c) the ratio of college-level courses passed vs. failed. Scores on professional or industry exams (e.g., the GRE and the NCLEX-RN) are also eligible. With the exception of department-wide final exams, measures that exist below the final course grade level are not eligible (e.g., average test score, score on a particular assignment or project). Also ineligible are measures of academic achievement that do not directly contribute to student grades (e.g., a math test that is given after an experimental manipulation, the performance on which has no implications for a student's performance in a specific course).

- **Degree attainment (college)** refers to the completion of a degree, certificate, or program. Examples of ways attainment might be operationally defined in a study include (a) certificate completion rates and (b) degree completion rates.
- **Labor market** refers to outcomes related to employment after the postsecondary experience. Examples of ways that labor market outcomes might be operationally defined in studies include (a) employed vs. not, (b) employed full-time vs. employed part-time, (c) employed in field of study vs. not, and (d) income earned.

### *Outcomes Measured at Different Points in Time*

For most outcomes in the postsecondary domain, the longest follow-up period available for a variable is selected as primary; findings from any earlier time points are included in the supplemental tables. In the access and enrollment domain (defined above), the *first* measure of enrollment (e.g., enrolled vs. not enrolled) is selected as primary. Measures of enrollment that occur *after* the first semester or year of college would fall under the credit accumulation domain and the longest follow-up period is selected as the primary measure.

### **Timeframe for Studies**

Studies must have been published or reported in 1994 or later to be eligible for review under this protocol.

### **Operational Definitions for Each Intervention/Strategy<sup>1</sup>**

#### **Academic Tutoring**

Academic tutoring refers to instruction in reading, writing, study skills, mathematics, science, and other subjects, typically conducted one-on-one or in small groups of students with a tutor. It is sometimes referred to generically as supplemental instruction. Tutors may be peers, staff, faculty, or external contributors. Tutoring practices include coaching and support for academic tasks such as completing homework, understanding lecture material, or review of written work. Tutoring interventions vary in length and the types of curricular and instructional tools and practices used (Ritter, Barnett, Denny, & Albin, 2009). Tutors may be professionals or volunteers and are not required to be affiliated with a school. Tutoring programs may be face-to-face or online, may involve 1:1 relationships between tutors and tutees or small groups, and may be tailored to individual students or to the needs of the group.

#### **College Counseling for Middle or High School Students**

College counseling provides students who have not yet matriculated into college with information about higher education and the essential preparatory actions needed to enter college. College counseling is intended to affect students' aspirations, achievement, and financial aid knowledge and, therefore, to improve college readiness and increase college enrollment, especially among individuals traditionally underrepresented in postsecondary education. College counseling can take place in-person, but may also use social media or other electronic methods. Counseling might include individualized guidance, group counseling, the use of peers, or be embedded in pre-collegiate outreach/college preparation intervention programs (e.g., College Access, Legacy, Say Yes to Education). Counseling may occur in middle or high school, during the academic school year, or during the summer months; and, counseling may focus on high school course selections, college entrance requirements, college choice, financial aid, as well as the college application process itself.

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<sup>1</sup> This section of the protocol will be updated as the WWC starts new reports summarizing the research on interventions to support the transition to college. Subsequent versions of the protocol will have different version numbers and will indicate what changes have been made.



### **College Preparation Programs**

College preparation programs are designed to provide the “skills, knowledge, and general college preparation needed to enter and succeed in college” (Watt, Huerta, & Lozano, 2007, p. 187). Many college preparation programs specifically target disadvantaged students, such as minority students, students from low socioeconomic status backgrounds, and students who would be first generation college students. Programs may include high quality instruction, special services such as tutoring or mentoring, or redesigned curricula (Watt, Huerta, & Lozano, 2007). College preparation programs are offered to students in middle school and /or high school and are intended to ensure that students are eligible and prepared for college, graduate high school, and successfully transition into higher education (Hooker & Brand, 2009; IES, 2010, Lozano, Watt, & Huerta, 2009; Watt, Huerta, & Lozano, 2007).

### **Credit Recovery Programs**

Credit recovery programs are programs that permit high school students to take high school courses they may have missed or failed in the high schools they attend. Such programs are billed as a method for promoting early or on-time graduation from high school or as an alternative to summer school for currently enrolled middle and high school students. In addition, credit recovery programs may also be available to students who have dropped out of high school and are seeking a diploma. Credit recovery programs may be offered before or after school in brick-and-mortar settings, but are increasingly offered online. As such, credit recovery programs may employ a variety of instructional formats, including traditional instruction (e.g., lectures), one-on-one instruction or tutoring, or independent study.

### **Dual Enrollment Programs**

In many communities, academically qualified students may enroll in college courses while in high school. Dual enrollment or early college programs involve having qualified high school students take college-level courses through or at a postsecondary institution. Dual enrollment programs are based on the premise that once high school students know what college is actually like, they should be more likely both to enroll in and succeed in college once they have graduated from high school. Dual enrollment programs are also intended to accelerate the time to degree attainment by allowing students to earn college credit while still in high school.

### **Mentoring programs**

Mentoring programs involve a pairing between a more experienced, skilled, or knowledgeable person (e.g., older student, instructor, or community member) and a less-experienced student. Mentoring may take place in educational or other community settings. Typically, the mentor receives training or support to maintain a reciprocal, personalized relationship with the student, and provides information, support, and guidance to the mentee (Cannata, Garringer, MacRae, & Wakeland, 2005; Crisp & Cruz, 2009). Mentoring programs may focus on interpersonal skills, self-esteem, career maturity and development, psychological and emotional support, as well as academic planning, troubleshooting academic assignments, or tutoring in problem areas (Cannata et al., 2005; Crisp & Cruz, 2009; DuBois, Holloway, Valentine, & Cooper, 2002; DuBois et al., 2013). Typical mentoring programs are characterized by a 1:1 relationship between the mentee and mentor and occur over a period of time (i.e., more than one session). However, group formats in which one or more mentors meets with a small group of students may also be used. Mentoring programs generally involve mentors in a non-professional helping capacity. For

example, professional staff who counsel students at a counseling center would not be considered mentors, though these same individuals could serve as mentors outside the counseling center in a non-professional capacity.

### **Test Preparation or Coaching Programs**

Test preparation programs are designed to help students improve their test performance on college entrance exams such as the SAT and ACT. Test preparation, which is also referred to as coaching, is often defined as “the utilization of an aid or tool by a test-taker to acquire information and techniques for the purpose of attaining the highest score possible on a test” (Stockwell, Schaeffer, & Lowenstein, 1991, p. 3). These programs can be delivered in-person or online, and in whole class settings or individually. Test preparation activities generally include a combination of test familiarization, drill and practice with feedback, training strategies for specific item formats and general test taking, subject-matter review, and/or skill development exercises (Scholes & Margaret, 1997).

### **Review of Studies Against WWC Standards**

All studies will be reviewed against the WWC Evidence Standards, using version 3.0 of the *Procedures and Standards Handbook*. Generally, these standards assess outcome reliability and validity, attrition, baseline equivalence, and similar methodological and statistical issues. This review determines the overall WWC study rating (see the *Procedures and Standards Handbook Version 3.0* for further details). Details relate to sample attrition in RCTs and baseline equivalence in QEDs and high-attrition RCTs are further articulated in this protocol.

#### *Sample Attrition*

The *WWC Procedures and Standards Handbook* discusses the sample attrition standards used by the WWC.

This review uses the liberal boundary for attrition. The selection of this boundary was based on the assumption that most attrition in studies of interventions focused on the transition to college is due to factors that are not strongly related to intervention status.

#### *Baseline Equivalence*

If the study design is a randomized controlled trial or regression discontinuity design with high levels of attrition, or a quasi-experimental design, the study must demonstrate baseline equivalence of the intervention and comparison groups for the analytic sample.

If demonstration of baseline equivalence is required for a study, the following pre-intervention (or baseline) characteristics should be used:

- A pre-intervention measure of the outcome (i.e., a pretest) or a close proxy. In some cases, pretests on the outcomes are not available. When pretests or a close proxy are not available, studies must demonstrate baseline equivalence on the following two domains:

- A continuously-scaled baseline measure of academic achievement (e.g., high school grade point average, SAT/ACT scores), and
- A baseline measure of student socioeconomic status [SES] (e.g., FAFSA expected family contribution, family income, free- or reduced-price lunch status, parent education levels, Pell grant eligibility)

In cases where multiple baseline measures of SES and/or academic achievement are available, the content expert is responsible for selecting the variable(s) to be used in the baseline equivalence assessment prior to the equivalence assessment being performed. For example, if both math and verbal scores on a college entrance exam are available, and the primary outcome is whether or not students passed their first college level math course, then the content expert may decide that the score on the math portion of the entrance exam is the only achievement measure on which baseline equivalence should be assessed. However, if the primary outcome is attainment, then the content expert might decide to assess balance on both the math subtest and the verbal subtest.

*Procedures for Statistical Adjustment for Studies with Baseline Covariate Imbalance*

These procedures apply to all studies for which baseline equivalence must be demonstrated (i.e., RCTs with high attrition and all quasi-experimental studies)

If a pretest is available for an outcome and the difference between conditions at baseline is shown to be within the range that requires statistical adjustment, the statistical adjustment is only needed for that outcome. For example, if vocabulary, reading comprehension, and reading fluency are available as pre- and post-intervention measures, and the pre-intervention difference in reading comprehension requires statistical adjustment, only the analysis of reading comprehension must adjust for baseline differences in reading comprehension.

For outcomes that do not have a pretest or close proxy, if the difference between conditions at baseline on one of the required covariates is shown to be within the range that requires statistical adjustment, then adjustment is required only for the covariate in the adjustment range. For example, if academic achievement is judged to be within the range that requires statistical adjustment and SES is very closely balanced (i.e., it is not in the adjustment range), then all outcomes without pretests must adjust for the measure of academic achievement, and adjustment for baseline SES is not required.

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**APPENDIX A—LITERATURE SEARCH STRATEGY FOR THE BROAD SEARCH OF THE TRANSITION TO COLLEGE TOPIC AREA**

**Search Terms**

The following table presents the search terms used for the electronic database search:

<p>“control group*” OR random OR "comparison group*" OR "regression discontinuity" OR "matched group*" OR baseline OR treatment OR experiment OR intervention OR evaluation OR impact OR effectiveness OR causal OR posttest or post-test OR pretest or pre-test OR QED OR RCT OR "propensity score matching" or randomized or quasi-experiment*</p>	<p>AND</p>	<p>“financial aid” or “college admission*” or “college prep*” or “College plan*” or “college choice” or “college readiness” or “college counsel*” or “Federal student aid” or “college access” or “transition* from high school” or “Transition* to college” or “access to college*” or “educational advancement” or “ready for college” or “readiness for college” or “college ready” or “FAFSA” or “Pathway* to college” or “barrier* to college” or “postsecondary transition*” or “financing college” or “college knowledge” or “college pathway*” or “college pipeline” or “step* to college</p>
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The databases searched were:

- Academic Search Premier
- EconLit with Full Text
- Education Research Complete
- ERIC
- PsycINFO
- Education Full Text (H.W. Wilson)
- Social Sciences Full Text (H.W. Wilson)
- Education Source
- Dissertation Abstracts

The search was conducted on May 12, 2014 by the National Library of Education using the EBSCO interface.

Citations were selected from 1994 onward.

Results:

- Total hits downloaded: 15099
- Total after duplicate removal: 13405
- Removed newspaper and magazine articles and other obvious irrelevant citations (e.g., videos and editorials): 7946
- Title and abstract screening: 838

**APPENDIX B.1—SUPPLEMENTARY SEARCHES FOR COLLEGE PREPARATION PROGRAMS**

The following table presents the search terms used for the electronic database search of college preparation and test preparation programs. Results from these separate searches were combined to create one set of search results. Both abstracts and titles were searched:

Specific College Preparation Programs search:

("college prep*" OR "pipe line courses" OR "college readiness" OR "college read*" OR "academic advising" OR "career guidance" OR "college access program" OR "access intervention program*" OR "access to higher education" OR "early college" OR "precollege outreach program*" OR "Gear Up" OR AVID OR "Upward Bound" OR "Talent Search" OR EXCEL)
AND
(student* OR adolescen* OR undergrad* OR scholar* OR teen* OR "school-age*" OR "High school*" OR "secondary school*" OR "10th grade*" OR "Tenth grade*" OR "Grade* 10" OR "Grade* ten" OR "11th grade*" OR "Eleventh grade*" OR "Grade* 11" OR "Grade eleven*" OR "12th grade*" OR "Twelfth grade*" OR "Grade 12" OR "Grade* twelve" OR "prospective student" OR incoming*) OR (freshman OR freshmen OR sophomore* OR junior* OR senior*) N/5 ("high school*" OR "secondary school*")
AND
("control group*" OR random OR "comparison group*" OR "regression" OR "matched group*" OR baseline OR treatment OR experiment* OR intervention* OR evaluat* OR impact* OR effectiveness OR causal OR posttest OR post-test OR pretest OR pre-test OR QED OR RCT OR "propensity score matching" OR randomized OR "quasi-experimental" OR outcome* OR result* OR predict* "randomi*ed controlled trial")

Specific Test Preparation Programs search:

("test prep*" OR "SAT test prep*" OR "ACT test prep*" OR "admission test*" OR "entrance exam" OR "college read* exam" OR "ACT intervention" OR "SAT intervention" OR "SAT prep*" OR "ACT prep*" OR "SAT scores" OR "ACT scores")
AND
("High school*" OR "secondary school*" OR "10 <sup>th</sup> grade*" OR "Tenth grade*" OR "Grade* 10" OR "Grade* ten" OR "11 <sup>th</sup> grade*" OR "Eleventh grade*" OR "Grade* 11" OR "Grade eleven*" OR "12 <sup>th</sup> grade*" OR "Twelfth grade*" OR "Grade 12" OR "Grade* twelve" OR undergrad* OR student* OR adolescen* OR "young people*" OR "young person*" OR youth* OR scholar* OR teen* OR "school-age*")
AND
("Control group*" OR random* OR "comparison group*" OR regression OR "matched group*" OR baseline OR treatment OR experiment OR evaluation OR impact OR effect* OR causal OR intervention OR posttest OR post-test OR pretest OR pre-test OR QED OR quasi* OR RCT OR propensity OR affect OR investigat* OR outcome* OR result* OR predict* OR improve* OR examin* OR "randomi*ed controlled trial*" OR effect*)

The databases searched were:

- ERIC
- ProQuest Dissertations & Theses Full Text
- ProQuest Education Journals
- ProQuest Psychology Journals
- ProQuest Social Science Journals
- PsycARTICLES
- PsycINFO

PsycINFO Limits on the search were:

- Date range of 1994–2015
- Excluded newspaper articles

The search was conducted on September 3, 2015 using ProQuest Central.

Results:

- Total hits downloaded: 9,875
- Total after duplicate removal (including duplicates of materials previously identified via other sources—e.g., websites): 5,565
- Title and abstract screening: 350

In addition, the bibliographies of all studies screened for review for the first year experience intervention report were mined for additional relevant studies not identified in either the broad of the targeted search.

Finally, the following websites were reviewed for potentially relevant studies:

- National Bureau of Economic Research (NBER)
- National Center for Postsecondary Research
- National Center for Postsecondary Improvement
- Center for the Study of Higher Education and its related – Higher Ed in Review
- MDRC
- Rand
- Mathematica
- Cornell Higher Education Research Institute working papers
- WISCAPE working papers
- Stanford Center for Education Policy Analysis (CEPA)
- Center for the Study of Higher Education at Berkeley (CSHE)

The hand search and reference harvesting activities generated an additional 13 potentially eligible citations.

In total, 363 citations were retrieved in full-text form and screened for eligibility.

**APPENDIX B.2—SUPPLEMENTARY SEARCHES FOR COLLEGE COUNSELING FOR HIGH SCHOOL STUDENTS**

The following table presents the search terms used for the electronic database search. Both abstracts and titles were searched:

("control group*" OR random OR "comparison group*" OR "regression discontinuity" OR "matched group*" OR baseline OR treatment OR experiment OR intervention OR evaluation OR impact OR effectiveness OR causal OR posttest OR post-test OR pretest OR pre-test OR QED OR RCT OR "propensity score matching" OR randomized OR quasi-experiment* OR "logistic regression" OR variable* OR "predicted probability*" OR longitudinal OR "program effectiveness" OR "enrollment influences")
AND
("High school*" OR "secondary school*" OR "middle school*")
AND
(counsel* OR advis* OR guidance OR outreach OR coach* OR "peer mentor*" OR "summer support" OR "case manage*" OR "text message*")
AND
("higher education" OR college or university OR postsecondary OR post-secondary)

The databases searched were:

- ERIC
- ProQuest Dissertations & Theses Full Text
- ProQuest Education Journals
- ProQuest Psychology Journals
- ProQuest Social Science Journals
- PsycARTICLES

PsycINFO Limits on the search were:

- Date range of 1994–2015
- Excluded newspaper articles

The search was conducted on September 11, 2015 using ProQuest Central.

In addition, the following websites were reviewed for potentially relevant studies:

- National Bureau of Economic Research (NBER)
- National Center for Postsecondary Research
- National Center for Postsecondary Improvement
- Center for the Study of Higher Education
- MDRC
- Rand
- Mathematica
- Cornell Higher Education Research Institute working papers
- WISCAPE working papers
- Stanford Center for Education Policy Analysis (CEPA)
- Center for the Study of Higher Education at Berkeley (CSHE)