

# REVIEW PROTOCOL FOR STUDIES OF INTERVENTIONS TO SUPPORT THE TRANSITION TO COLLEGE VERSION 3.1

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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 school, high school, and postsecondary students that aim to promote successful transitions into postsecondary education, with a primary focus on increasing postsecondary enrollment and retaining students in postsecondary institutions once enrolled.

Enrolling in postsecondary institutions 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). Once in college, only 22% of students enrolled at public two-year institutions and 44% at private two-year institutions complete their programs within three years. At four-year institutions, only 37% of students at public institutions and 57% at private institutions complete their programs within five years (American College Testing, 2014). The first year of college is critical, with about 20% of first-time full-time students in 4-year institutions and over 40% of first-time full-time students in 2-year institutions failing to return for their second year (Kena et al., 2014).

## Defining the Transition to College Period

Interventions designed support a successful transition into college tend to differ for students of different ages. Therefore, this review specifies upper and lower age boundaries for the transition to college period and then categorizes eligible interventions or strategies that support the transition according to the age of the students when the support takes place (i.e., middle school, high school, or college).

**Age Boundaries.** For the *lower age boundary*, this review includes efforts that begin when students and their families might begin thinking seriously about college, i.e., around the seventh or eighth grade, or when a student is 12 or 13. Although when the “transition” to college ends and when college itself begins is not always clear, the *upper age boundary* for this review includes interventions or strategies if they occur up to or within the first period of postsecondary enrollment (i.e., the first twenty credits earned— essentially within the first year). Further, studies with postsecondary students reviewed under this protocol must be focused on traditional aged students, aged 18-24. This is when the vast majority of students experience their most intense spell of higher education. Older adults facing the transition to higher education have very different issues and are likely to be targeted by different sorts of interventions.

**Eligible Approaches for Supporting the Transition by Age/Grade.** 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 school. That is, interventions for middle and high school students reviewed under this protocol must be explicitly oriented toward increasing college access or smoothing the transition to college to be eligible for review. Transition to college

interventions for students already in postsecondary education must be primarily oriented around smoothing the transition to college, retaining students in college, and increasing degree attainment.

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 are. They 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, highly academically qualified students may enroll in college courses while in high school. In addition, the Advanced Placement program has allowed many 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. Dual enrollment programs are based on the premise that once high school students know what college is actually like, high school students should be more likely both to enroll and to succeed once they have enrolled as a college student.
- **Immediate enrollment programs.** Many studies have shown that even a slight delay in the time to 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.
- **Summer bridge programs.** Many colleges have identified student populations at risk for academic problems in their first year. To better prepare these students, some

postsecondary institutions have instituted summer bridge programs, in which eligible students enroll in the summer and are provided with a variety of resources designed to ease their transition from high school into college. These have taken a variety of forms based on the nature of the institution and the targeted student group, but often involve accelerated instruction, college readiness preparation and skills building, or options for earning college credits. These programs are similar in nature to those interventions designed to support students during the critical first year, but are implemented in the summer bridge period between high school completion and college enrollment.

- **Interventions to support students during the critical first year.** Many students arrive in higher education academically prepared, but may not have the study skills or other coping skills to deal with the learning and social environments in higher education. In addition, many students simply make poor decisions during their first year. Students do not understand the consequences of these decisions for their eventual success in college. Many interventions are designed to ensure that first-year students who are otherwise academically qualified to succeed do so. These include interventions designed to simplify the advising process; interventions designed to increase academic momentum; “study skills” courses or resources; first-year or freshman seminars; programs around social skills, including programs designed to reduce binge drinking; and, various student learning community structures (e.g., residential colleges).
- **Interventions relating to financing college.** Economists view the decision on whether or not to pay for college as a human capital investment decision. In this view, the decision to attend college is implicitly an economic one. Individuals who think that they might benefit from college in terms of their lifetime earnings decide to invest in college if the net present value of their additional lifetime earnings exceeds the net present value of their investment in higher education, which is the total of direct costs (tuition and required fees, books, and, possibly, room and board) and indirect costs (foregone income that they would have earned had they not been attending higher education). This model suggests that either an increase in the additional lifetime earnings or a reduction in price will result in an increase in students attending higher education. A variety of strategies have been developed to reduce the price of college, with variants on the form of financial aid (e.g., need or merit), loan amounts, and different combinations and “packaging” of aid.

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.

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.

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 particularly 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 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 school, high school, or within their first 20 credits in a postsecondary institution in the United States or Canada. College students must be between the ages of 18–24. If a sample of college students includes students over the age of 24, the study is eligible for review if the average age of the sample is under 25 or the 18–24 year olds make up at least 60% of the sample. If the sample includes only postsecondary students, it is permissible to include samples that have some students under the age of 18.

Studies with samples that are comprised predominantly of upper division students (juniors and seniors) or graduate students are not eligible for review under this protocol.

Studies with samples that are comprised predominantly of postsecondary students in need of developmental coursework should be reviewed under the Review Protocol for Studies of Interventions for Developmental Students in Postsecondary Education.

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, (b) first-generation college students, (c) racial/ethnic minorities, (d) students from low socioeconomic status backgrounds (e.g., Pell Grant recipients), (e) academically unprepared students (e.g., students one vs. two courses away from being college-ready), and (f) community college students. 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). The WWC currently does not have standards for some other types of quasi-experimental designs, such as the instrumental variable approach. 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 for Quick Reviews and Single Study Reviews 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 assess 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 assessed while students are transitioning to or attending postsecondary institutions. The following postsecondary outcome domains are eligible: (a) access and enrollment, (c) credit accumulation and persistence, (d) academic achievement, (e) attainment, and (f) labor market outcomes. 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. Measures of actual behavior are preferred to those that measure intentions and related constructs. When studies present both types of measures for an outcome (e.g., both intention to enroll and actual enrollment), the WWC will focus on the behavioral measure.

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

#### *Middle and High School Outcomes*

- **Academic achievement** in middle or high school, which assesses the extent to which students adequately complete expected coursework. 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.

- **Staying in school**, refers to outcomes that measure whether the student has dropped out of school and the number of days the student was enrolled in school.
- **Progressing in 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 school**, refers to outcomes that measure whether the student has earned a high school diploma or GED or whether he or she has graduated from a district high school.

### *Postsecondary Outcomes*

- **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).
- **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.
- **Academic achievement** refers to the extent to which students adequately complete expected coursework. 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).
- **Attainment** 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 are 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>**

#### First Year Experience Programs

First Year Experience (FYE) programs, often referred to as college success courses or freshman seminars, may be a required or elective course for first-year students in 2-year or 4-year colleges. The general goal of such experiences is to promote students' transition to college, academic performance, social development, persistence, and degree completion (Hunter & Linder, 2005; Pascarella & Terenzini, 2005). While courses vary in terms of content and focus, most First Year Experience programs are designed to introduce students to "campus resources, time management, study skills, career planning, cultural diversity, and student development issues" (Barefoot & Fidler, 1992, p. 2).

First Year Experience programs may be offered to all new students or to targeted groups such as at-risk students or students in a specific department, college, or school. In some universities, the course is required only for those students meeting certain requirements (i.e. athletes, undeclared, or honor students) or those who are at a greater risk for retention (i.e. those provisionally admitted, developmental students; Tobolowsky et al. 2005).

First Year Experience programs may be offered as extended orientation seminars, academic seminars, or professional or discipline-linked seminars. All such programs are eligible for review by the WWC. However, college or university orientations alone are not considered First Year Experiences, nor are programs or seminars that focus exclusively on teaching students study or test-taking skills.

#### Summer Bridge Interventions

Summer bridge interventions are programs that aim to provide postsecondary enrollees with academic and college preparation skills. The goal of summer bridge interventions is to provide students with targeted academic support and the social capital needed to succeed in college. Typically, these programs will provide accelerated instruction in one or more subject area (e.g., math, English, reading), provide general academic or other student support services, provide information about the academic expectations and cultural contexts of colleges, and expose students to college faculty and administrators. These programs often, but not always, target students deemed at-risk of academic problems in their first year of college. These "summer bridge" programs provide the majority of services in the summer or other period

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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.

immediately preceding postsecondary enrollment, although additional supplementary or ongoing services may be provided after enrollment. These interventions can be delivered in a residential or non-residential framework, and can involve either mandatory or voluntary participation.

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

All studies will be reviewed against the WWC Evidence Standards, using version 3.0 of the [WWC 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 the postsecondary literature, pretests on the outcomes are often 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 socio-economic status (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 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 First Year Experience Programs

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

<p>((("college adjustment course*" OR "college adjustment program*" OR "college adjustment class*" OR "college adjustment seminar*" OR "college seminar*" OR "college success course*" OR "college success program*" OR "college success class*" OR "college success seminar*" OR "college survival course*" OR "college survival program*" OR "college survival class*" OR "college survival seminar*" OR "college transition course*" OR "college transition program*" OR "college transition class*" OR "college transition seminar*" OR "first semester seminar*" OR "first year college experience" OR "first year experience course*" OR "first year experience program*" OR "first year experience class*" OR "first year experience seminar*" OR "first year new student orientation course*" OR "first year new student orientation program*" OR "first year new student orientation class*" OR "first year new student orientation seminar*" OR "first year orientation course*" OR "first year orientation program*" OR "first year orientation class*" OR "first year orientation seminar*" OR "first year seminar*" OR "freshman experience course*" OR "freshman experience program*" OR "freshman experience class*" OR "freshman experience seminar*" OR "freshman orientation course*" OR "freshman orientation program*" OR "freshman orientation class*" OR "freshman orientation seminar*" OR "freshman seminar*" OR "freshman success course*" OR "freshman success program*" OR "freshman success class*" OR "freshman success seminar*" OR "freshman transition course*" OR "freshman transition program*" OR "freshman transition class*" OR "freshman transition seminar*" OR "freshman year experience course*" OR "freshman year experience program*" OR "freshman year experience class*" OR "freshman year experience seminar*" OR "learning skills course*" OR "learning skills program*" OR "learning skills class*" OR "learning skills seminar*" OR "learning strateg* course*" OR "learning strateg* program*" OR "learning strateg* class*" OR "learning strateg* seminar*" OR "new student orientation course*" OR "new student orientation program*" OR "new student orientation class*" OR "new student orientation seminar*" OR "orientation course*" OR "orientation program*" OR "orientation class*" OR "orientation seminar*" OR "student life skills course*" OR "student life skills program*" OR "student life skills class*" OR "student life skills seminar*" OR "student success course*" OR "student success program*" OR "student success class*" OR "student success seminar*" OR "study skills course*" OR "study skills program*" OR "study skills class*" OR "study skills seminar*" OR "study strateg* course*" OR "study strateg* program*" OR "study strateg* class*" OR "study strateg* seminar*" OR "success course*" OR "University 10* orientation course*" OR "University 10* orientation program*" OR "University 10* orientation class*" OR "University 10* orientation seminar*" OR "university seminar*"))</p>
<p>AND</p>
<p>(Universit* OR "institution of higher learning" OR "community college" OR "technical college" OR "junior college" OR "institutions of higher learning" OR "community colleges" OR "technical colleges" OR "junior colleges" OR "liberal arts" OR "Historically Black Colleges and Universities" OR "Hispanic Serving Institutions" OR freshman OR freshmen OR sophomore OR junior OR senior OR first-year OR beginning)</p>
<p>AND</p>
<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>

The databases searched were:

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

The search was conducted on July 29, 2014 using ProQuest Central.

Results:

- Total hits downloaded: 1174
- Total after duplicate removal (including duplicates of materials previously identified via other sources—e.g., websites): 1140
- Title and abstract screening: 213

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 or 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 85 potentially eligible citations.

In total, 281 citations were retrieved in full-text form and screened for eligibility.

## Appendix B.2—Supplementary Searches for Summer Bridge Programs

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

AB("summer bridge*" OR "summer-bridge" OR "summer session" OR "summer program" OR "intensive summer" OR "pre-matriculation" OR "pre-freshman support")
AND
AB(university* OR "college" OR "institution of higher learning" OR "institutions of higher learning" OR "liberal arts" OR "Hispanic Serving Institutions" OR freshman OR freshmen OR sophomore OR junior OR senior OR first-year OR beginning OR "pre-freshman")

The databases searched were:

- ERIC
- ProQuest Dissertations & Theses Full Text
- PsycINFO

Limits on the search were:

- Date range of 1994–2014
- Excluded newspaper articles

The original search was conducted on August 11, 2014 using ProQuest Central.

The updated search was conducted on August 5, 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)

### Results:

- Total hits downloaded from original electronic search: 1520
- Total hits downloaded from the updated search: 97
- Total hits downloaded from supplementary searches: 10
- Total after duplicate removal (including duplicates of materials previously identified via other sources—e.g., websites): 1392
- Passed title and abstract screening: 138