WWC Intervention Report

A summary of findings from a systematic review of the evidence

ies INSTITUTE OF EDUCATION SCIENCES

Transition to College   **March 2018**

Summer Counseling

Intervention Description[1]

Summer counseling is designed to help college-intending high school graduates complete the steps needed to enroll in college and start their college careers. These programs provide services during the months between high school graduation and college enrollment and involve outreach by college counselors or peer mentors via text messaging campaigns, email, phone, in-person meetings, instant messaging, or social media. *Summer counseling* intervention services are typically set up through students' high schools, though some programs may be based in colleges or nonprofit organizations. These intervention services provide college-intending individuals with information about tasks required for college enrollment, as well as assistance in overcoming unanticipated financial, informational, and socioemotional barriers that prevent college entry. The ultimate goal of *summer counseling* is to increase the number of students who successfully enroll in college, particularly among disadvantaged students at a greater risk of not matriculating.

Research[2]

The What Works Clearinghouse (WWC) identified five studies of *summer counseling* that both fall within the scope of the Transition to College topic area and meet WWC group design standards. All five studies meet WWC group design standards without reservations, and no studies meet WWC group design standards with reservations. Together, these studies included 13,614 recent high school graduates in 10 locations.

According to the WWC review, the extent of evidence for *summer counseling* on the postsecondary outcomes of recent high school graduates was small for the credit accumulation and persistence domain and medium to large for the college access and enrollment domain. No studies meet WWC group design standards in the 12 other domains, so this intervention report does not report on the effectiveness of *summer counseling* for those domains.[3] (See the Effectiveness Summary on p. 7 for more details of effectiveness by domain.)

Effectiveness

Summer counseling had potentially positive effects on credit accumulation and persistence and mixed effects on college access and enrollment for recent high school graduates.

This intervention report presents findings from a systematic review of summer counseling conducted using the WWC Procedures and Standards Handbook (version 3.0) and the Transition to College review protocol (version 3.2).

Table 1. Summary of findings[4]

Outcome domain	Rating of effectiveness	Improvement index *(percentile points)*		Number of studies	Number of students	Extent of evidence
		Average	Range			
Credit accumulation and persistence	Potentially positive effects	+6	+6	1	1,397	Small
College access and enrollment	Mixed effects	+5	0 to +13	5	13,614	Medium to large

Intervention Information

Background

Even after students have applied and have been accepted to college, they must complete a number of steps to successfully matriculate in college. For example, colleges typically require students to take placement exams, enroll for classes, finalize financial aid arrangements, have health insurance, complete housing and medical forms, and fill out other paperwork over the summer months. For first-generation college students who no longer have access to high school guidance counselors and who do not have family members familiar with the matriculation process, these requirements may seem daunting. Without a support system to help them matriculate in college, students may fail to complete all necessary paperwork and requirements and fail to enroll in college during the fall, which is a phenomenon called the "summer melt."[5]

Intervention details

Summer counseling is designed to help college-intending high school graduates complete the steps needed to matriculate in college. The goal of *summer counseling* is to reduce the number of students who fail to matriculate in college, particularly among disadvantaged students. *Summer counseling* provides students with information and support for completing the steps needed to attend college, such as enrolling in courses, completing housing forms, registering for orientation, finalizing arrangements to secure financial aid, and addressing socioemotional barriers that may inhibit students from enrolling in higher education. *Summer counseling* involves outreach by peer mentors or college counselors via text messaging, email, phone, in-person meetings, instant messaging, or social media. These services are typically set up for students in their high schools, though some programs may be based in colleges or nonprofit organizations. Counseling interventions take place during the summer after high school and typically run for 1–2 months.

There is no standard list of *summer counseling* services or delivery strategies, and implementation can vary across locations and service providers. There are, however, commonalities among *summer counseling* programs reviewed by the WWC. In the five studies that met WWC group design standards, students were provided *summer counseling* for about 1.5 months between high school graduation and college matriculation. In all studies, participating students were high school graduates who intended to enroll in college in the fall. The interventions examined in these five studies targeted either low-income students (two studies), underrepresented students (one study), and students from large, urban school districts (two studies). *Summer counseling* was provided by staff based in high schools (five studies), at a nonprofit organization (two studies), and at a college (one study), with three studies employing counselors housed in more than one setting. One study included a text messaging campaign, one used peer mentors (near-aged college students in good academic standing), and the remaining relied primarily on college counselors (note that some studies used more than one approach). Counseling and outreach was provided using a number of communication methods, including phone (five studies), in-person consultations (five studies), email (four studies), text messaging (four studies), social media (two studies), and instant messaging (two studies). The frequency of contacts with college-intending students ranged from once every 5 days to once every 2 weeks. Counseling included financial aid information and informational barriers in all interventions studied and socioemotional barriers to college attendance in two of the interventions studied. Across all five studies, an average of 58% of students met with a counselor either in person or virtually at least one time during the summer after high school graduation.

Cost

Because *summer counseling* does not have a standard list of services or delivery strategies, implementation costs can vary across sites. Four of the five studies reviewed that met WWC group design standards without reservations included information about the cost of *summer counseling*. The cost of *summer counseling* involving one-on-one assistance ranged from $100–$200 per student (as cited in Castleman, Arnold, & Wartman, 2012; Castleman, Page, & Schooley, 2014; and Castleman, Owen, & Page, 2015a). The cost of *summer counseling* via text messaging was $7 per student for the text messaging campaign (and any associated counseling that came out of the text messaging outreach), and about $2 per student for just the text messaging portion of the intervention (as cited in Castleman & Page, 2015). *Summer counseling* via a peer mentoring intervention cost about $80 per student to pay the salaries of 20 peer mentors who worked 20 hours per week and for supervising advisors (as cited in Castleman & Page, 2015).

Research Summary

The WWC identified six eligible studies that investigated the effects of *summer counseling* on college enrollment and persistence of recent high school graduates. An additional 4 studies were identified but do not meet WWC eligibility criteria (see the Glossary of Terms in this document for a definition of this term and other commonly used research terms) for review in this topic area. Citations for all 10 studies are in the References section, which begins on p. 9.

Table 2. Scope of reviewed research

Grades	12–PS
Delivery method	Individual
Program type	Supplement

The WWC reviewed six eligible studies against group design standards. Five studies are randomized controlled trials that meet WWC group design standards without reservations. This report summarizes those five studies. The remaining study does not meet WWC group design standards.

Summary of studies meeting WWC group design standards without reservations

Castleman et al. (2012) conducted a randomized controlled trial to examine the effectiveness of college counseling delivered to students during the summer after high school graduation. In seven small high schools in Rhode Island, all 162 graduating seniors from the class of 2008 were assigned to receive college counseling during the summer or to a comparison group that did not receive the intervention. The summer college counseling services aimed to help students complete financial aid applications, address any gaps between financial aid packages and anticipated costs of attending college, or any other socioemotional issues that need to be addressed before matriculating into college. Counseling was provided via in-person consultations, email, and text messages. The WWC based its effectiveness rating on college enrollment outcomes among 80 students in the intervention group and 82 students in the comparison group.

Castleman et al. (2014) conducted a randomized controlled trial in Boston (MA) and Fulton County (GA) schools to examine the effectiveness of college counseling over the summer months after high school graduation. Students from six high schools in the Fulton County site were eligible for the study if they planned to pursue postsecondary education, if they had applied to college, and if they had been accepted by at least one institution. Students in the Boston site were all applicants to the Last Dollar Scholarship, which provides Boston students with funds to pay unmet college costs. Eligible students (all from the class of 2011) were then randomly assigned to receive *summer counseling* or to serve in a comparison group. Most consultations in Boston took place in person, while most consultations in Fulton County took place over the phone. The WWC based its effectiveness rating on college enrollment and persistence outcomes for the pooled student sample, which included 886 students in the intervention group and 1,487 students in the comparison group.

Castleman et al. (2015a) conducted a randomized controlled trial to examine the effectiveness of counselor outreach support on high school graduates' enrollment in college. High school graduates from the class of 2012 in New Mexico who had been accepted into college were eligible to participate in the study and were randomly assigned to the intervention group or to a comparison group. The goal of the intervention was to increase the number of students entering college by providing assistance with summer tasks relating to enrolling in college (e.g., finalizing financial aid, completing the FAFSA, arranging on-campus housing, signing up for placement tests, selecting classes, organizing transportation to campus). Counseling was provided in person and over the phone by eight counselors based at the University of New Mexico and 13 counselors based in Albuquerque Public Schools. The WWC based its effectiveness rating on college enrollment outcomes among 1,074 students in the intervention group and 528 students in the comparison group.

Castleman et al. (2015b) conducted a cluster randomized controlled trial to examine the effectiveness of an online software (Bridgit) that can be used by high school counselors to track college-intending students' progress on summer tasks relating to college enrollment. The goal of the Bridgit platform was to track progress on pre-matriculation tasks, help counselors assist with these tasks, and facilitate communication between students and counselors, particularly for those students at greater risk of failing to matriculate. Communication between counselors and students took place via text messages that could be sent through the Bridgit platform, or by phone if additional follow up was needed. Schools in Tennessee and Missouri serving at least 60% of students eligible for free/reduced-price lunch within each district were paired based on the prior year's college enrollment rate. In summer 2014, one school was randomly assigned in each pair into the intervention (Bridgit) group, with the remaining schools assigned to the comparison group, resulting in six intervention schools and six comparison schools. Counselors provided assistance via text messaging. The WWC based its effectiveness rating on college enrollment outcomes among 1,761 students in the intervention schools and 1,520 students in the comparison schools.

Castleman and Page (2015) conducted a randomized controlled trial to examine the effectiveness of two *summer counseling* interventions to help support high school graduates in their transition to postsecondary education. High school graduates in Texas, Massachusetts, and Pennsylvania from the class of 2013 who intended to go to college were eligible to participate in the study. Students were randomly assigned to a text message group, a peer mentoring group, or a comparison group. The WWC based its effectiveness rating on college enrollment outcomes for the two types of interventions. The texting intervention portion of the study included 2,524 students who were randomly assigned to a text message group and 2,535 students in the comparison group. The peer mentoring portion of the study included 934 students who were randomly assigned to a peer mentoring group and 1,272 students who were randomly assigned to a comparison group.

Summary of studies meeting WWC group design standards with reservations

No studies of *summer counseling* met WWC group design standards with reservations.

Effectiveness Summary

The WWC review of *summer counseling* for the Transition to College topic area includes student outcomes in 14 domains: general academic achievement (middle school), general academic achievement (high school), attendance (middle school), attendance (high school), college readiness, staying in high school, progressing in high school, completing high school, college access and enrollment, college attendance, credit accumulation and persistence, general academic achievement (college), degree attainment (college), and labor market. The five studies of *summer counseling* that met WWC group design standards reported findings in two of the 14 domains: (1) credit accumulation and persistence and (2) college access and enrollment. The following findings present the authors' estimates and WWC-calculated estimates of the size and statistical significance of the effects of *summer counseling* on recent high school graduates. Additional comparisons are available as supplemental findings in Appendix D. The supplemental findings do not factor into the intervention's rating of effectiveness. For a more detailed description of the rating of effectiveness and extent of evidence criteria, see the WWC Rating Criteria on p. 28.

Summary of effectiveness for the credit accumulation and persistence domain

Table 3. Rating of effectiveness and extent of evidence for the credit accumulation and persistence domain

Rating of effectiveness	Criteria met
Potentially positive effects *Evidence of a positive effect with no overriding contrary evidence.*	In the one study that reported findings, the estimated impact of *summer counseling* on college persistence outcomes was statistically significant, but not substantively important.
Extent of evidence	**Criteria met**
Small	One study that included 1,397 students located in six high schools in Fulton County and an unspecified number of high schools in Boston reported evidence in the *credit accumulation and persistence* domain.

One study that met WWC group design standards without reservations reported findings in the credit accumulation and persistence domain.

Castleman et al. (2014) reported, and the WWC confirmed, a positive and statistically significant difference between the *summer counseling* group and the comparison group on the percentage of students who remained enrolled in college after the spring of their freshman year and after the fall of their sophomore year. The WWC characterizes this finding as a statistically significant positive effect.

Thus, for the credit accumulation and persistence domain, one study of *summer counseling* found a statistically significant positive effect. This results in a rating of potentially positive effects, with a small extent of evidence.

Summary of effectiveness for the college access and enrollment domain

Table 4. Rating of effectiveness and extent of evidence for the college access and enrollment domain

Rating of effectiveness	Criteria met
Mixed effects *Evidence of inconsistent effects.*	In the five studies that reported findings, the estimated impact of the intervention on outcomes in the *college access and enrollment* domain was positive and statistically significant in one study, positive and substantively important in one study, and indeterminate in three other studies.
Extent of evidence	**Criteria met**
Medium to large	Five studies that included 13,614 students in 10 locations reported evidence of effectiveness in the *college access and enrollment* domain.

Five studies that met WWC group design standards without reservations reported findings in the college access and enrollment domain.

Castleman et al. (2012) reported, and the WWC confirmed, no statistically significant difference between intervention and comparison group students' fall college enrollment rates (whether full-time or part-time) and full-time enrollment rates. The effect size for both of these comparisons was large enough to be considered substantively important. The WWC characterizes this study finding as a substantively important positive effect.

Castleman et al. (2014) reported, and the WWC confirmed, a positive and statistically significant difference between the intervention group and the comparison group on the percentage of students who enrolled in college in the fall after high school graduation. The WWC characterizes this finding as a statistically significant positive effect.

Castleman et al. (2015a) reported, and the WWC confirmed, no statistically significant difference between the intervention group and the comparison group on fall college enrollment. The WWC characterizes this study finding as an indeterminate effect.

Castleman et al. (2015b) reported, and the WWC confirmed, no statistically significant difference between the *summer counseling* group and the comparison group on fall college enrollment. The WWC characterizes this study finding as an indeterminate effect.

Castleman and Page (2015) reported, and the WWC confirmed, no statistically significant difference between the intervention groups and the comparison groups on fall college enrollment. The WWC characterizes this study finding as an indeterminate effect.

Thus, for the college access and enrollment domain, one study of *summer counseling* found a statistically significant positive effect, one study of *summer counseling* found a substantively important positive effect, and three studies found indeterminate effects. This results in a rating of mixed effects, with a medium to large extent of evidence.

References

Studies that meet WWC group design standards without reservations

Castleman, B. L., Arnold, K., & Wartman, K. L. (2012). Stemming the tide of summer melt: An experimental study of the effects of post-high school summer intervention on low-income students' college enrollment. *Journal of Research on Educational Effectiveness, 5*(1), 1–17. Retrieved from https://eric.ed.gov/?id=EJ952097
Additional source:
Arnold, K., Fleming, S., DeAnda, M., Castleman, B. L., & Wartman, K. L. (2009). The summer flood: The invisible gap among low-income students. *Thought and Action*, Fall, 23–34. Retrieved from https://eric.ed.gov/?id=EJ930460

Castleman, B. L., Owen, L., & Page, L. C. (2015a). Stay late or start early? Experimental evidence on the benefits of college matriculation support from high schools versus colleges. *Economics of Education Review, 47*, 168–179. doi: 10.1016/j.econedurev.2015.05.010

Castleman, B. L., Owen, L., & Page, L. C. (2015b). *Report to College Bound St. Louis on the Implementation and Impact of the 2014 Summer Melt Intervention Utilizing Bridgit*. St. Louis, MO: College Bound.

Castleman, B. L., & Page, L. C. (2015). Summer nudging: Can personalized text messages and peer mentor out-reach increase college going among low-income high school graduates? *Journal of Economic Behavior and Organization, 115*, 144–160. Retrieved from https://eric.ed.gov/?id=EJ1124459
Additional sources:
Castleman, B. L. (2013). *Assistance in the 11th hour: Experimental interventions to mitigate summer attrition among college-intending high school graduates* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3662580)
Castleman, B. L., & Page, L. C. (2013). The not-so-lazy days of summer: Experimental interventions to increase college entry among low-income high school graduates. *New Directions for Youth Development*, *140*, 77–97. Retrieved from https://eric.ed.gov/?id=EJ1031658

Castleman, B. L., Page, L. C., & Schooley, K. (2014). The forgotten summer: Does the offer of college counseling after high school mitigate summer melt among college-intending, low-income high school graduates? *Journal of Policy Analysis and Management, 33*(2), 320–344. Retrieved from https://eric.ed.gov/?id=EJ1027721

Studies that meet WWC group design standards with reservations

None.

Studies that do not meet WWC group design standards

Spurling, S. (2000). The effect of process interventions and matriculation services on student persistence and success. *Journal of Applied Research in the Community College, 8*(1), 31–41. Retrieved from https://eric.ed.gov/?id=EJ652531 The study does not meet WWC group design standards because equivalence of the analytic intervention and comparison groups is necessary and not demonstrated.

Studies that are ineligible for review using the Transition to College Evidence Review Protocol

Harley, D., Winn, S., Pemberton, S., & Wilcox, P. (2007). Using texting to support students' transition to university. *Innovations in Education and Teaching International*, *44*(3), 229–241. Retrieved from https://eric.ed.gov/?id=EJ771201 The study is ineligible for review because it does not use an eligible design.

Levinson, E. M., & Ohler, D. L. (1998). Transition from high school to college for students with learning disabilities: Needs, assessment, and services. *The High School Journal, 82*(1), 62–69 The study is ineligible for review because it does not use an eligible design.

Matthews, P. H., & Mellom, P. J. (2012). Shaping aspirations, awareness, academics, and action: outcomes of summer enrichment programs for English-learning secondary students. *Journal of Advanced Academics, 23*(2), 105–124. Retrieved from https://eric.ed.gov/?id=EJ968883 The study is ineligible for review because it does not use an eligible design.

Owen, L. (2014). Prevent summer melt. *ASCA School Counselor, 52*(2), 10–16. The study is ineligible for review because it does not use an eligible design.

Appendix A.1: Research details for Castleman et al. (2012)

Castleman, B. L., Arnold, K., & Wartman, K. L. (2012). Stemming the tide of summer melt: An experimental study of the effects of post-high school summer intervention on low-income students' college enrollment. *Journal of Research on Educational Effectiveness*, *5*(1), 1–17. Retrieved from https://eric.ed.gov/?id=EJ952097

> *Additional source:*
> Arnold, K., Fleming, S., DeAnda, M., Castleman, B. L., & Wartman, K. L. (2009). The summer flood: The invisible gap among low-income students. *Thought and Action,* Fall, 23–34. Retrieved from https://eric.ed.gov/?id=EJ930460

Table A1. Summary of findings   **Meets WWC group design standards without reservations**

| | | Study findings | |
| | | Average improvement index *(percentile points)* | Statistically significant |
Outcome domain	Sample size		
College access and enrollment	162 high school graduates	+13	No

Setting

The study was conducted with the entire 2008 graduating class from seven urban schools in Rhode Island. These schools were in a network of charter schools run by Big Picture Learning. Schools in the Big Picture network are small learning communities that provide individualized curricula, internship programs, and focus on relationship building by maintaining a 4-year peer group and assigning teacher advisors to students. Every Big Picture student is expected to take college entrance examinations, apply to college, and complete financial aid applications.

Study sample

Within each of the seven Big Picture schools, students who were in the graduating class of 2008 were randomly assigned to the intervention group (*n* = 80) or to the comparison group (*n* = 82). In the intervention group, 43% of students were male, 49% were Hispanic, 29% were Black, 21% were White, and 2% were Asian. Moreover, 17% of intervention group students had an IEP, 68% received free lunch, and 81% reported that they planned to attend college as of graduation.

In the comparison group, 45% of students were male, 40% were Hispanic, 29% were Black, 21% were White, and 5% were Asian; 17% of students had an IEP, 62% received free lunch, and 80% reported that they planned to attend college as of graduation.

Intervention group

Recent high school graduates worked with two school-based counselors throughout the summer of 2008. The primary goal of the counseling program was to help students secure financial aid and address any gaps between financial aid packages and the anticipated costs of attending college. Counselors also acted as a liaison to the colleges and addressed any information barriers the students faced, and helped students address socioemotional barriers to enrollment (e.g., students having second thoughts about attending college, dealing with pressure from family or friends to stay home). The counselors took an active role in communicating with students via emails, text messages, and in-person consultations. The majority of the intervention group (84%) met with a counselor at some point during the summer. Counseling was provided from June 15, 2008 through September 1, 2008.

Comparison group

Students in the comparison group had access to regular counseling services delivered by the high school; however, comparison students did not receive proactive counseling from the counselors over the summer. The authors reported that 21% of the students in the comparison condition contacted a counselor during the summer intervention period.

Outcomes and measurement

Authors reported five outcomes. Two outcomes presented as primary findings in Appendix C include college enrollment in the fall following high school graduation, and full-time college enrollment. Both of these variables are binary and were collected from the National Student Clearinghouse.

Two outcomes are reported as supplementary findings in Appendix D: enrolled at a 4-year institution and enrolled at a 2-year institution. These outcomes were also collected from the National Student Clearinghouse and are dichotomous measures of three possible outcomes (1) enrollment in a 2-year institution, (2) enrollment in a 4-year institution, and (3) not enrolled in college. For example, 2-year enrollment is answered "yes" for a student who enrolled in a 2-year institution and "no" for students who enrolled in a 4-year institution or who did not enroll. Because these findings provide both positive and negative outcomes in the same category, they were presented as supplemental findings. These supplemental findings do not factor into the intervention's rating of effectiveness. For a more detailed description of these outcome measures, see Appendix B.

Study authors also reported on whether students enrolled in the institution they intended to enroll in at high school graduation. This outcome was used to examine whether students followed through on their expected plans after high school and is not eligible for review under the Transition to College protocol.

Support for implementation

Two college counselors were hired full-time to work through the summer to provide counseling to students.

Appendix A.2: Research details for Castleman et al. (2014)

Castleman, B. L., Page, L. C., & Schooley, K. (2014). The forgotten summer: Does the offer of college counseling after high school mitigate summer melt among college-intending, low-income high school graduates? *Journal of Policy Analysis and Management, 33*(2), 320–344. Retrieved from https://eric.ed.gov/?id=EJ1027721

Table A2. Summary of findings   Meets WWC group design standards without reservations

		Study findings	
Outcome domain	**Sample size**	**Average improvement index** *(percentile points)*	**Statistically significant**
College access and enrollment	2,373 high school graduates	+5	Yes
Credit accumulation and persistence	1,397 high school graduates	+6	Yes

Setting

The study was conducted in Boston, MA and in Fulton County Schools (FCS) in the metro Atlanta, GA area. In Boston, the counseling sessions took place primarily at the provider's (uAspire) Center for College Affordability in Boston. In Fulton County, most counseling took place over the phone rather than face-to-face.

Study sample

There were 2,373 students in the overall sample, including 886 students in the intervention group and 1,487 students in the comparison group.

In Boston, high school students who were participants in uAspire's High School Advising Program and who applied for uAspire's Last Dollar Scholarships were included in the study sample. Study authors assigned each of the 927 applicants to a team of 11 advisors, matching applicants to teams with the advisor who had worked with them before whenever possible. Study authors then randomly assigned students to the intervention group (*n* = 406) or the comparison group (*n* = 521). The intervention took place in Boston from June 27, 2011 to August 10, 2011.

In Fulton County, study authors selected six high schools with the highest estimated rates of "summer melt." Within these schools recent high school graduates were identified who indicated on the Fulton County Schools Senior Exit Survey that they (a) were planning to attend college the following fall, (b) had applied to at least one postsecondary institution, and (c) had been accepted to at least one postsecondary institution. In order to meet the researchers' target of 80 students served per school, eligibility criteria were expanded in two schools to include students waiting to hear about their acceptance. With 1,446 students identified as eligible for the study, researchers then randomly selected 80 students in each school to receive the intervention (*n* = 480) and the remaining students were assigned to the comparison group (*n* = 966). In Fulton County, the intervention took place between June 6, 2011 and July 11, 2011.

Across both sites, ethnic minority students comprised 72% of the sample (43% Black, 13% Hispanic, 10% Asian, 5% multiracial, and 2% other race/ethnicity), and 58% of the students were female. Eighty-one percent of students completed the FAFSA. Of those who completed the FAFSA in Boston, 62% had an Expected Family Contribution (EFC) of zero and another 23% had an EFC that was nonzero, but still within the range of Pell grant eligibility. In Fulton County, 37% of students qualified for free or reduced-price lunch (FRL).

Intervention group

Counselors attempted to contact each student in the intervention group via phone, email, text, and Facebook to offer support. In Fulton County, counselors were encouraged to use an intake form that outlined the tasks required for college enrollment in their initial meeting with students. Counselors who met with students in person primarily did so at the school from which they were working, but the counselors depended on phone conversations to provide most of their support. In Boston, upon reaching students, advisors offered students a $25 gift card to attend an in-person meeting. During the first in-person meeting, counselors completed a college assessment protocol that included the following elements: (1) review of the student's financial aid award letter and guidance on financial aid tailored to the amount of unmet need; (2) discussion of the calendar of summer deadlines at the college the student planned to attend, and help with understanding and completing paperwork from the college; and (3) assessment of any social or emotional barriers to college enrollment faced by the student. After the assessment, counselors and students developed a list of tasks that needed completion before starting college in the fall. Counselors followed up with students individually to check on their progress. After the initial meeting, counselors and students communicated mostly via phone, email, and text, though counselors also conducted in-person follow-up meetings with some students.

Across both sites, 52% of students had any communication with a counselor, and in Boston, 52% of students had at least one face-to-face meeting with an advisor. In Atlanta, approximately 25% of the non-FRL students had contact with a counselor, while nearly 54% of the FRL students had contact with a counselor. Authors noted that many of the counselors' interactions with students focused on issues of financial aid. Counselors also reported addressing a variety of informational questions, such as how to access a college's web portal, how to complete required paperwork, and what the college matriculation process entailed.

Comparison group

The comparison group students did not receive outreach though they were assigned to a counselor. Counselors were instructed not to deny support to any comparison group student who actively sought help. According to logs maintained by the counselors, about 1% of the comparison group students had contact with an advisor.

Outcomes and measurement

College enrollment is the primary outcome in this study. Enrollment data were obtained from the National Student Clearinghouse for the fall of 2011 (at the end of the fall semester of the student's freshman year), spring of 2012 (at the end of the spring semester of the student's freshman year), and fall of 2012 (at the end of the first semester of the student's sophomore year). The initial fall 2011 enrollment measure falls under the college access and enrollment domain, while the continued enrollment or persistence outcomes (spring 2012 and fall 2012) fall under the credit accumulation and persistence domain.

Subgroup analyses were presented for socioeconomic status subgroups, as defined by free or reduced-price lunch status for students in the Atlanta site and by expected family contribution and Pell Grant eligibility for students in the Boston site. The supplemental findings are reported in Appendix D and do not factor into the intervention's rating of effectiveness. For a more detailed description of these outcome measures, see Appendix B.

The study also examined whether students enrolled and persisted at (1) the specific institution in which they intended to enroll as of high school graduation and (2) the type of institution (i.e., 2-year vs. 4-year, public vs. private) in which they intended to enroll as of high school graduation. These outcomes focused on intentions after high school and are not eligible for review under the Transition to College protocol.

Support for implementation

In Atlanta, the study authors provided supplemental training for the counselors that focused on the federal and state financial aid application process. In Boston, the study authors provided the uAspire counselors with a protocol for their outreach activities and supplied the assessment protocol that guided the counselors' advising.

Appendix A.3: Research details for Castleman et al. (2015a)

Table A3. Summary of findings   Meets WWC group design standards without reservations

Outcome domain	Sample size	Study findings Average improvement index *(percentile points)*	Statistically significant
College access and enrollment	1,602 high school graduates	0	No

Setting

The study was conducted in Albuquerque, New Mexico. Summer outreach counseling was based in two settings: Albuquerque Public Schools (APS) high schools and the University of New Mexico (UNM).

Study sample

The study included a total of 1,602 students, including 539 students who received *summer counseling* from counselors based at UNM, 535 students who received *summer counseling* from counselors based at APS high schools, and 528 students who did not receive *summer counseling*. Participants were APS high school graduates from the class of 2012 who had been admitted to UNM. Across the full sample, 41% of students were male, 50% were Hispanic, 2% were Black, 5% were Asian, 85% were White, 1% were English Learners, and 29% were eligible for free or reduced-price lunch. The average high school GPA for the full sample was 3.26.

Intervention group

Study authors hired 21 school counselors, placing eight counselors at UNM and 13 counselors at high schools in APS. Counselors reached out to students via phone, email, and text message to help students complete summer tasks relating to enrolling in college (e.g., finalizing financial aid, completing the FAFSA, arranging on-campus housing, signing up for placement tests, selecting classes, and organizing transportation to campus). Counseling support was provided in person and over the phone. Counselors had caseloads between 60 and 100 students, and worked 10–20 hours per week for 5–6 weeks during the summer of 2012. Just over 52% of students in the intervention group met with a counselor over the summer, including 50% of Hispanic students and 51% of female students.

Comparison group

Students in the comparison group did not receive outreach support from an intervention-trained counselor. Less than 1% of students in the comparison group met with a counselor in the same time period.

Outcomes and measurement	Study authors reported findings on college enrollment in the fall following high school graduation (i.e., fall 2012). The outcome is binary and was obtained from the National Student Clearinghouse. Additionally, supplemental findings were reported by ethnicity and gender (i.e., for Hispanic males, non-Hispanic males, Hispanic females, and non-Hispanic females). The authors also reported on the effects of *summer counseling* based in APS and in UNM. These supplemental findings are reported in Appendix D and do not factor into the intervention's effectiveness. For a more detailed description of these outcome measures, see Appendix B.

The study also examined the impact of *summer counseling* on enrollment at UNM, as well as enrollment at a college other than UNM in the fall after graduation. These outcomes are not eligible for review under the Transition to College topic area, since they focus on enrollment at a specific institution. |
| **Support for implementation** | Prior to the start of the intervention, counselors were trained on how to review required college paperwork and were given tools to guide their interactions with students (e.g., checklists). Additionally, college-based counselors also were provided a day-long on-campus orientation covering university-specific details on required summer tasks for students, and a staff liaison was available at UNM to answer counselors' questions. |

Appendix A.4: Research details for Castleman et al. (2015b)

Castleman, B. L., Owen, L. & Page, L. C. (2015b). *Report to College Bound St. Louis on the implementation and impact of the 2014 summer melt intervention utilizing Bridgit.* St. Louis, MO: College Bound.

Table A4. Summary of findings Meets WWC group design standards without reservations

		Study findings	
Outcome domain	**Sample size**	**Average improvement index** *(percentile points)*	**Statistically significant**
College access and enrollment	3,281 high school graduates	+3	No

Setting	The study was conducted in Shelby County Schools in Tennessee and in the Ferguson-Florissant School District in Missouri.
Study sample	A total of 12 schools were included in the study, with 10 schools from Shelby County and two schools from Ferguson-Florissant. Schools had to meet three criteria to participate in the study: (1) at least 60% of students had to be eligible for free/reduced-price lunch; (2) at least 50% of the graduating seniors had to have submitted a FAFSA form by June 2014; and (3) at least 100 students had to have completed the FAFSA by June 2014. Eligible schools within each district were then paired based on the prior year's college enrollment rate. In summer 2014, one school was randomly assigned in each pair into the intervention (Bridgit) group, with the remaining school assigned to the comparison group, resulting in six intervention schools and six comparison schools.

Within these 12 schools, 3,281 students participated in the study, including 1,761 students in the intervention group and 1,520 students in the comparison group. Students who indicated on a spring 2014 survey that they were college-intending at the time of high school graduation were included in the study. Across both conditions, 59% of students were eligible for free or reduced-price meals; 86% were Black, 6% were Hispanic, and 5% were White; 10% had an IEP; and 53% were female. These students had an average ACT score of 16.67 and an average GPA of 2.50.

Intervention group

The Bridgit platform was implemented in intervention schools during the summer of 2014. The Bridgit platform is a schoolwide intervention used by school counselors to track students' progress toward college enrollment. Students first created a profile in the system that identified which college they planned to attend and where they were in the admissions process. The system then prioritized pre-matriculation steps needed that were tailored to the student's chosen college. Counselors or college advisors were assigned to each student, and monitored the prioritized list of pre-matriculation tasks for each of their students. Counselors were able to communicate with students via text messages directly in the Bridgit platform, and if additional follow up was needed they could place personal phone calls to students. The Bridgit platform collected data about counselor outreach to students, whether counselors were able to make contact, and whether that contact resulted in students updating their profiles and/or in-person meetings. Over 60% of students in the intervention group interacted with a counselor, primarily via text messaging and phone.

Comparison group

Students in comparison schools participated in the "business-as-usual" procedures for graduating seniors with regard to support for transitioning to college.

Outcomes and measurement

The authors measured one primary outcome: college enrollment in the fall following high school graduation. The outcome is binary and was obtained from the National Student Clearinghouse. Additionally, supplemental findings were reported for enrollment in 2-year institutions and enrollment in 4-year institutions. The supplemental findings are reported in Appendix D and do not factor into the intervention's effectiveness. For a more detailed description of these outcome measures, see Appendix B.

Support for implementation

A 2-day training was conducted for counselors using the Bridgit system. School counselors implementing Bridgit in intervention schools provided feedback to the study authors on the challenges and advantages of the tool during the course of the study.

Appendix A.5: Research details for Castleman and Page (2015)

Castleman, B. L., & Page, L. C. (2015). Summer nudging: Can personalized text messages and peer mentor outreach increase college going among low-income high school graduates? *Journal of Economic Behavior and Organization, 115,* 144–160. Retrieved from https://eric.ed.gov/?id=EJ1124459

> *Additional sources:*
> Castleman, B. L. (2013). *Assistance in the 11th hour: Experimental interventions to mitigate summer attrition among college-intending high school graduates* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3662580)
>
> Castleman, B. L., & Page, L. C. (2013). The not-so-lazy days of summer: Experimental interventions to increase college entry among low-income high school graduates. *New Directions for Youth Development, 140,* 77–97. Retrieved from https://eric.ed.gov/?id=EJ1031658

Table A5. Summary of findings — Meets WWC group design standards without reservations

Outcome domain	Sample size	Study findings Average improvement index *(percentile points)*	Statistically significant
College access and enrollment	6,196 high school graduates	+2	No

Setting

This study examined two *summer counseling* interventions across five different research sites in Massachusetts (Boston, Lawrence, and Springfield), Pennsylvania (Philadelphia), and Texas (Dallas).

Study sample

Across all five study sites, 2012 high school graduates who were "college-intending" were eligible for study participation. The definition of college-intending students varied by site. In Philadelphia, college-intending students were identified via a high school exit survey; in uAspire sites (Boston, Lawrence, and Springfield), college-intending students were defined as having at least two meetings with a uAspire advisor during the student's senior year; and in Dallas, college-intending students were defined as having started (or completed) the FAFSA as of high school graduation.

In Philadelphia, students were randomly assigned to peer mentors within each of five schools, to ensure a caseload of 40 students per mentor (one school had two mentors). The study sample in Philadelphia included 240 students in the intervention group and 203 students in the comparison group.

In Dallas, nine counselors were each assigned to a set of high schools within the district, and eligible students were then randomly assigned within each counselor's cluster to either receive the texting intervention ($n = 1,454$) or to serve in a comparison group ($n = 1,466$).

In uAspire sites in Boston, Lawrence, and Springfield, students were randomly assigned by site to receive peer mentoring ($n = 450$ in Boston, 94 in Lawrence, and 150 in Springfield), text messaging ($n = 697$ in Boston, 100 in Lawrence, and 273 in Springfield), or serve in a comparison group ($n = 696$ in Boston, 100 in Lawrence, and 273 in Springfield).

Altogether, the peer mentoring intervention had 934 students in the intervention group and 1,272 students in the comparison group, and the texting intervention had 2,524 students in the intervention group and 2,535 students in the comparison group. The pooled sample of 6,196 students was 58% female; 46% Hispanic, 37% Black, 8% White, and 13% other race/ethnicity. Seventy-eight percent qualified for free or reduced-priced lunch, and 94% had completed the FAFSA.

Intervention group

The automated text messaging campaign was implemented in Dallas, TX; Boston, MA; Lawrence, MA; and Springfield, MA. During the summer of 2012, students and their parents in the text messaging intervention were sent a series of 10 automated text messages to remind them about tasks required for college enrollment and to prompt them to request additional help when needed. The texts included reminders to access important paperwork online, register for orientation, register for placement tests, complete housing forms, sign up for/waive health insurance, and offers to help students complete the FAFSA and interpret financial aid award letters and tuition bills. A text message was sent approximately every 5 days between early July and mid-August. In Dallas, the authors collaborated with the Dallas Independent School District to link students to one of nine college counselors to provide additional assistance. In Boston, Lawrence, and Springfield, the authors collaborated with a nonprofit organization, uAspire, to link students to financial aid advisors at participating high schools.

The peer mentoring intervention was implemented in Boston, MA; Lawrence, MA; Springfield, MA; and Philadelphia, PA. Students in the peer mentoring intervention group received contacts from peer mentors who assessed their readiness to matriculate into college in the fall 2012 semester. Peer mentors discussed various topics with their mentees, including whether students were still planning to enroll in college, whether students had completed the FAFSA, whether students had received and reviewed financial aid letters, and whether students had registered for orientation and placement tests. Subsequent meetings and phone conversations served to address any other issues the students may have encountered. Counseling took place between mid-June and mid-August. In Boston, Lawrence, and Springfield, uAspire selected and trained the peer mentors who delivered the intervention. In Philadelphia, the authors collaborated with Mastery Charter Schools which supplied counselors from five high school campuses.

Comparison group

The students in the comparison condition did not receive the intervention, but had access to typical school supports. Two percent of the sample interacted with a counselor.

Outcomes and measurement

One primary outcome is eligible for review under the college access and enrollment domain: college enrollment in the fall following high school graduation. The outcome is binary and was obtained from the National Student Clearinghouse. The authors also reported on two other outcomes: enrolled at a 4-year institution and enrolled at a 2-year institution.[6] These supplemental findings are reported in Appendix D and do not factor into the intervention's rating of effectiveness. For a more detailed description of these outcome measures, see Appendix B.

Support for implementation

Signal Vine was contracted to deliver the text messages used in the text messaging campaign. In Boston, Lawrence, and Springfield, uAspire was responsible for all peer mentor selections, training, and ongoing support and supervision of the mentors through the summer months. In Philadelphia, Mastery Charter Schools was responsible for all peer mentor selections, trainings, and ongoing support and supervision of the mentors through the summer months.

Appendix B: Outcome measures for each domain

Credit accumulation and persistence	
Continuous first-year enrollment	Continuous first-year enrollment for the fall and spring semesters was collected from the National Student Clearinghouse (as cited in Castleman et al., 2014). This measure was reported in both the Boston and Atlanta sites as a binary outcome.
Continuous enrollment into sophomore year	Continuous enrollment into sophomore year (for the first three semesters after high school) was obtained from the National Student Clearinghouse (as cited in Castleman et al., 2014). This measure was reported in both the Boston and Atlanta sites as a binary outcome.
College access and enrollment	
Enrollment	Enrollment was measured by enrollment in college in the fall semester following high school graduation (as cited in Castleman et al., 2012). Enrollment data were collected from the National Student Clearinghouse and were reported as a binary outcome.
Full-time enrollment	Full-time college enrollment was measured by enrollment as a full-time student, with part-time enrollment and no enrollment included in the denominator of this measure (as cited in Castleman et al., 2012). Full-time enrollment data were collected from the National Student Clearinghouse and were reported as a binary outcome.
Enrolled in 2-year institutions	Enrollment in a 2-year institution was measured as enrollment in a 2-year institution in the fall semester following high school graduation (as cited in Castleman et al., 2012). Enrollment data were collected from the National Student Clearinghouse and were reported as a binary outcome. This outcome is only reported as a supplemental finding.
Enrolled in 4-year institutions	Enrollment in a 4-year institution was measured as enrollment in a 4-year institution in the fall semester following high school graduation (as cited in Castleman et al., 2012). Enrollment data were collected from the National Student Clearinghouse and were reported as a binary outcome. This outcome is only reported as a supplemental finding.

Appendix C.1: Findings included in the rating for the credit accumulation and persistence domain

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Castleman et al., 2014[a]								
Continuous first-year enrollment (%)	Full sample	1,397 students	82.4 (na)	78.5 (na)	3.9	0.15	+6	< .05
Continuous enrollment into sophomore year (%)	Full sample	1,397 students	71.3 (na)	66.3 (na)	5.0	0.14	+6	< .05
Domain average for credit accumulation and persistence (Castleman et al., 2014)						0.15	+6	**Statistically significant**
Domain average for credit accumulation and persistence across all studies						0.15	+6	**na**

Table Notes: For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual's percentile rank that can be expected if the individual is given the intervention. WWC-computed average effect size is a simple average rounded to two decimal places; the average improvement index is calculated from the average effect size. The statistical significance of each study's domain average was determined by the WWC. Some statistics may not sum as expected due to rounding. na = not applicable.

[a] For Castleman et al. (2014), a correction for multiple comparisons was needed but did not affect whether any of the contrasts were found to be statistically significant. The WWC did not need to make corrections for clustering or to adjust for baseline differences. The p-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted, and reflect the pooled Boston and Fulton samples. Findings for each site are presented in Appendix D. This study is characterized as having a statistically significant positive effect because the estimated effect is positive and statistically significant. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

Appendix C.2: Findings included in the rating for the college access and enrollment domain

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Castleman et al., 2012[a]								
Enrollment (%)	Full sample	162 students	58.0 (na)	45.0 (na)	13.0	0.32	+12	< .10
Full-time enrollment (%)	Full sample	162 students	46.0 (na)	32.0 (na)	14.0	0.36	+14	< .10
Domain average for college access and enrollment (Castleman et al., 2012)						0.34	+13	**Not statistically significant**
Castleman et al., 2014[b]								
Enrollment (%)	Full sample	2,373 students	86.0 (na)	82.7 (na)	3.3	0.15	+6	< .05
Domain average for college access and enrollment (Castleman et al., 2014)						0.15	+6	**Statistically significant**
Castleman et al., 2015a[c]								
Enrollment (%)	Full sample	1,602 students	91.7 (na)	91.8 (na)	−0.1	−0.01	0	> .10
Domain average for college access and enrollment (Castleman et al., 2015a)						−0.01	0	**Not statistically significant**

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Castleman et al., 2015b[d]								
Enrollment (%)	Full sample	3,281 students	56.0 (na)	52.5 (na)	3.5	0.09	+3	< .10
Domain average for college access and enrollment (Castleman et al., 2015b)						**0.09**	**+3**	**Not statistically significant**
Castleman and Page, 2015[e]								
Enrollment (%)	Texting intervention: Full sample	5,059 students	71.5 (na)	69.6 (na)	1.9	0.06	+2	> .10
Enrollment (%)	Peer mentoring intervention: Full sample	2,206 students	69.9 (na)	67.6 (na)	2.3	0.06	+3	> .10
Domain average for college access and enrollment (Castleman & Page, 2015)						**0.06**	**+2**	**Not statistically significant**
Domain average for college access and enrollment across all studies						**0.13**	**+5**	**na**

Table Notes: For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual's percentile rank that can be expected if the individual is given the intervention. WWC-computed average effect size is a simple average rounded to two decimal places; the average improvement index is calculated from the average effect size. The statistical significance of each study's domain average was determined by the WWC. Some statistics may not sum as expected due to rounding. na = not applicable.

[a] For Castleman et al. (2012), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The *p*-value presented here was reported in the original study. Means for the intervention group are covariate adjusted. This study is characterized as having a substantively important effect because the estimated effect is positive and not statistically significant but is substantively important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

[b] For Castleman et al. (2014), the WWC did not need to make corrections for clustering, multiple comparisons, or to adjust for baseline differences. The *p*-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted, and reflect the pooled Boston and Fulton samples. Findings for each site are presented in Appendix D. This study is characterized as having a statistically significant positive effect because the estimated effect is positive and statistically significant. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

[c] For Castleman et al. (2015a), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The *p*-value presented here was reported in the original study. Means for the intervention and comparison groups are covariate adjusted. This study is characterized as having an indeterminate effect because the reported effect size was neither statistically significant nor large enough to be substantially important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

[d] For Castleman et al. (2015b), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The *p*-value presented here was reported in the original study. Means for the intervention and comparison groups are covariate adjusted and reflect the pooled Shelby County and Ferguson-Florissant findings. This study is characterized as having an indeterminate effect because the reported effect size was neither statistically significant nor large enough to be substantially important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

[e] For Castleman and Page (2015), no corrections for clustering or multiple comparisons and no difference-in-differences adjustments were needed. The *p*-value presented here was reported in the original study. Means for the intervention and comparison groups are covariate adjusted, and reflect the combined sample across sites. Findings for each site are presented in Appendix D. Sample sizes do not add up to the entire unduplicated student sample because some students were included in both the texting condition and the peer mentoring condition. This study is characterized as having an indeterminate effect because the reported effect size was neither statistically significant nor large enough to be substantially important. For more information, please refer to the WWC Procedures and Standards Handbook (version 3.0), p. 26.

Appendix D.1: Description of supplemental findings for the credit accumulation and persistence domain

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	*p*-value
Castleman et al., 2014[a]								
Continuous first-year enrollment (%)	FRL, Fulton	910 students	62.3 (na)	59.3 (na)	3.0	0.08	+3	> .10
Continuous first-year enrollment (%)	Non-FRL, Fulton	536 students	90.2 (na)	89.4 (na)	0.8	0.05	+2	> .10
Continuous enrollment into sophomore year (%)	FRL, Fulton	910 students	41.4 (na)	39.2 (na)	2.2	0.06	+2	> .10
Continuous enrollment into sophomore year (%)	Non-FRL, Fulton	536 students	83.4 (na)	80.9 (na)	2.5	0.10	+4	> .10
Continuous first-year enrollment (%)	EFC = 0, Pell eligible, Boston	487 students	86.5 (na)	72.6 (na)	13.9	0.53	+20	< .01
Continuous first-year enrollment (%)	EFC > 0, Pell eligible, Boston	177 students	88.7 (na)	85.1 (na)	3.6	0.19	+8	> .10
Continuous first-year enrollment (%)	Not Pell eligible, Boston	120 students	79.7 (na)	95.7 (na)	−16.0	−1.04	−35	< .05
Continuous enrollment into sophomore year (%)	EFC = 0, Pell eligible, Boston	487 students	77.6 (na)	64.4 (na)	13.2	0.39	+15	< .01
Continuous enrollment into sophomore year (%)	EFC > 0, Pell eligible, Boston	177 students	81.9 (na)	66.2 (na)	15.7	0.51	+19	< .05
Continuous enrollment into sophomore year (%)	Not Pell eligible, Boston	120 students	64.9 (na)	78.9 (na)	−14.0	−0.42	−16	> .10

Table Notes: The supplemental findings presented in this table are additional findings from studies in this report that meet WWC design standards with or without reservations, but do not factor into the determination of the intervention rating. For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual's percentile rank that can be expected if the individual is given the intervention. Some statistics may not sum as expected due to rounding. na = not applicable. FRL = free or reduced-price lunch. EFC = expected family contribution.

[a] For Castleman et al. (2014), no corrections for clustering and no difference-in-differences adjustments were needed. A correction for multiple comparisons was needed but did not affect whether any of the contrasts were found to be statistically significant. The *p*-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted. Subgroup sample sizes were obtained from an author query.

Appendix D.2: Description of supplemental findings for the college access and enrollment domain

| Outcome measure | Study sample | Sample size | Mean (standard deviation) | | WWC calculations | | | |
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	p-value
Castleman et al., 2012[a]								
Enrolled in 2-year institution (%)	Full sample	162 students	19.0 (na)	23.0 (na)	−4.0	−0.15	−6	> .10
Enrolled in 4-year institution (%)	Full sample	162 students	40.0 (na)	26.0 (na)	14.0	0.39	+15	< .10
Castleman et al., 2014[b]								
Enrollment (%)	Boston	927 students	83.0 (na)	78.4 (na)	4.6	0.18	+7	< .10
Enrollment (%)	Fulton	1,446 students	87.6 (na)	85.4 (na)	2.2	0.11	+5	> .10
Enrollment (%)	FRL, Fulton	910 students	71.9 (na)	63.4 (na)	8.5	0.24	+9	< .10
Enrollment (%)	Non-FRL, Fulton	536 students	92.6 (na)	92.8 (na)	−0.2	−.02	−1	> .10
Enrollment (%)	EFC = 0, Pell eligible, Boston	487 students	88.6 (na)	76.3 (na)	12.3	0.53	+20	< .01
Enrollment (%)	EFC > 0, Pell eligible, Boston	177 students	85.7 (na)	83.3 (na)	2.4	0.11	+4	> .10
Enrollment (%)	Not Pell eligible, Boston	120 students	83.5 (na)	94.3 (na)	−10.8	−0.71	−26	< .10
Castleman et al., 2015a[c]								
Enrollment (%)	High school based counseling (APS)	1,063 students	90.9 (na)	91.8 (na)	−0.9	−0.07	−3	> .05
Enrollment (%)	College-based counseling (UNM)	1,067 students	92.4 (na)	91.8 (na)	0.6	0.05	+2	> .05
Enrollment (%)	Hispanic males	290 students	93.5 (na)	84.0 (na)	9.5	0.61	+23	< .05
Enrollment (%)	Non-Hispanic males	374 students	89.6 (na)	91.0 (na)	−1.4	−0.10	−4	> .05
Enrollment (%)	Hispanic females	513 students	91.9 (na)	93.0 (na)	−1.1	−0.10	−4	> .05
Enrollment (%)	Non-Hispanic females	435 students	93.4 (na)	96.0 (na)	−2.6	−0.32	−13	> .05

Outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	*p*-value
Castleman et al., 2015b[d]								
Enrolled in 2-year institution (%)	Full sample	3,281 students	22.9 (na)	15.4 (na)	7.5	0.30	+12	< .01
Enrolled in 4-year institution (%)	Full sample	3,281 students	34.1 (na)	36.7 (na)	−2.6	−0.07	−3	> .10
Castleman & Page, 2015[e]								
Enrollment (%)	Texting intervention: Dallas	2,920 students	74.2 (na)	71.8 (na)	2.4	0.07	+3	> .10
Enrollment (%)	Texting intervention: Boston	1,393 students	68.5 (na)	70.1 (na)	−1.6	−0.05	−2	> .10
Enrollment (%)	Texting intervention: Lawrence & Springfield	746 students	69.9 (na)	62.8 (na)	7.1	0.19	+8	< .05
Enrollment (%)	Peer mentoring intervention: Boston	1,146 students	73.6 (na)	70.1 (na)	3.5	0.10	+4	> .10
Enrollment (%)	Peer mentoring intervention Lawrence & Springfield:	617 students	66.4 (na)	62.8 (na)	3.6	0.10	+4	> .10
Enrollment (%)	Peer mentoring intervention: Philadelphia	443 students	65.2 (na)	67.5 (na)	−2.3	−0.06	−2	> .10
Enrolled in 2-year institution (%)	Texting intervention: Full sample	5,059 students	23.2 (na)	20.2 (na)	3.0	0.11	+4	< .05
Enrolled in 4-year institution (%)	Texting intervention: Full sample	5,059 students	36.8 (na)	38.6 (na)	−1.8	−0.05	−2	> .10
Enrolled in 2-year institution (%)	Peer mentoring intervention: Full sample	2,206 students	13.8 (na)	14.2 (na)	−0.4	−0.02	−1	> .10
Enrolled in 4-year institution (%)	Peer mentoring intervention: Full sample	2,206 students	43.3 (na)	38.8 (na)	4.5	0.11	+4	< .10

Table Notes: The supplemental findings presented in this table are additional findings from studies in this report that meet WWC design standards with or without reservations, but do not factor into the determination of the intervention rating. For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing

the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average individual's percentile rank that can be expected if the individual is given the intervention. Some statistics may not sum as expected due to rounding. na = not applicable. FRL = free or reduced-price lunch. EFC = expected family contribution.

[a] For Castleman et al. (2012), the WWC did not need to make corrections for clustering, multiple comparisons, or to adjust for baseline differences. The *p*-values presented here were reported in the original study. Means for the intervention group are covariate adjusted. The two outcomes presented here are dichotomous measures that combine three possible outcomes: enrollment in a 2-year institution, enrollment in a 4-year institution, and no college enrollment. For example, the enrolled in a 2-year institution variable includes both students who did not enroll and students who enrolled in 4-year institutions as "no" responses.

[b] For Castleman et al. (2014), no corrections for clustering and no difference-in-differences adjustments were needed. A correction for multiple comparisons was needed but did not affect whether any of the contrasts were found to be statistically significant. The *p*-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted. Subgroup sample sizes were obtained from an author query.

[c] For Castleman et al. (2015a), no corrections for clustering and no difference-in-differences adjustments were needed. A correction for multiple comparisons was needed but did not affect whether any of the contrasts were found to be statistically significant. The *p*-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted. Subgroup sample sizes were obtained from an author query.

[d] For Castleman et al. (2015b), no corrections for clustering and no difference-in-differences adjustments were needed. A correction for multiple comparisons was needed but did not affect whether any of the contrasts were found to be statistically significant. The *p*-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted.

[e] For Castleman and Page (2015), no corrections for clustering and no difference-in-differences adjustments were needed. A correction for multiple comparisons was needed for the texting intervention but did not affect whether any of the contrasts were found to be statistically significant. The *p*-values presented here were reported in the original study. Means for the intervention and comparison groups are covariate adjusted. The two outcomes presented here are dichotomous measures that combine three possible outcomes: enrollment in a 2-year institution, enrollment in a 4-year institution, and no college enrollment. For example, the enrolled in a 2-year institution variable includes both students who did not enroll and students who enrolled in 4-year institutions as "no" responses.

Endnotes

[1] The descriptive information for this intervention comes from: Castleman et al., 2012, Castleman et al., 2014, Castleman et al., 2015a, Castleman et al., 2015b, and Castleman and Page, 2015. Further verification of the accuracy of the descriptive information for this intervention is beyond the scope of this review.

[2] The literature search reflects documents publicly available by August 2017. Reviews of the studies in this report used the standards from the WWC Procedures and Standards Handbook (version 3.0) and the Transition to College review protocol (version 3.2). The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

[3] Please see the Transition to College review protocol (version 3.2) for a list of all outcome domains.

[4] For criteria used to determine the rating of effectiveness and extent of evidence, see the WWC Rating Criteria on p. 28. These improvement index numbers show the average and range of individual-level improvement indices for all findings across the studies.

[5] As cited in Castleman, Arnold, and Wartman (2012); Castleman, Page, and Schooley (2014); Castleman, Owen, and Page (2015a); Castleman, Owen, and Page (2015b); and Castleman and Page (2015).

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WWC Rating Criteria

Criteria used to determine the rating of a study

Study rating	Criteria
Meets WWC group design standards without reservations	A study that provides strong evidence for an intervention's effectiveness, such as a well-implemented RCT.
Meets WWC group design standards with reservations	A study that provides weaker evidence for an intervention's effectiveness, such as a QED or an RCT with high attrition that has established equivalence of the analytic samples.

Criteria used to determine the rating of effectiveness for an intervention

Rating of effectiveness	Criteria
Positive effects	Two or more studies show statistically significant positive effects, at least one of which met WWC group design standards for a strong design, AND No studies show statistically significant or substantively important negative effects.
Potentially positive effects	At least one study shows a statistically significant or substantively important positive effect, AND No studies show a statistically significant or substantively important negative effect AND fewer or the same number of studies show indeterminate effects than show statistically significant or substantively important positive effects.
Mixed effects	At least one study shows a statistically significant or substantively important positive effect AND at least one study shows a statistically significant or substantively important negative effect, but no more such studies than the number showing a statistically significant or substantively important positive effect, OR At least one study shows a statistically significant or substantively important effect AND more studies show an indeterminate effect than show a statistically significant or substantively important effect.
Potentially negative effects	One study shows a statistically significant or substantively important negative effect and no studies show a statistically significant or substantively important positive effect, OR Two or more studies show statistically significant or substantively important negative effects, at least one study shows a statistically significant or substantively important positive effect, and more studies show statistically significant or substantively important negative effects than show statistically significant or substantively important positive effects.
Negative effects	Two or more studies show statistically significant negative effects, at least one of which met WWC group design standards for a strong design, AND No studies show statistically significant or substantively important positive effects.
No discernible effects	None of the studies shows a statistically significant or substantively important effect, either positive or negative.

Criteria used to determine the extent of evidence for an intervention

Extent of evidence	Criteria
Medium to large	The domain includes more than one study, AND The domain includes more than one school, AND The domain findings are based on a total sample size of at least 350 students, OR, assuming 25 students in a class, a total of at least 14 classrooms across studies.
Small	The domain includes only one study, OR The domain includes only one school, OR The domain findings are based on a total sample size of fewer than 350 students, AND, assuming 25 students in a class, a total of fewer than 14 classrooms across studies.

Glossary of Terms

Attrition   Attrition occurs when an outcome variable is not available for all subjects initially assigned to the intervention and comparison groups. If a randomized controlled trial (RCT) or regression discontinuity design (RDD) study has high levels of attrition, the validity of the study results can be called into question. An RCT with high attrition cannot receive the highest rating of *Meets WWC Group Design Standards without Reservations*, but can receive a rating of *Meets WWC Group Design Standards with Reservations* if it establishes baseline equivalence of the analytic sample. Similarly, the highest rating an RDD with high attrition can receive is *Meets WWC RDD Standards with Reservations*.

For single-case design research, attrition occurs when an individual fails to complete all required phases or data points in an experiment, or when the case is a group and individuals leave the group. If a single-case design does not meet minimum requirements for phases and data points within phases, the study cannot receive the highest rating of *Meets WWC Pilot Single-Case Design Standards without Reservations*.

Baseline   A point in time before the intervention was implemented in group design research and in regression discontinuity design studies. When a study is required to satisfy the baseline equivalence requirement, it must be done with characteristics of the analytic sample at baseline. In a single-case design experiment, the baseline condition is a period during which participants are not receiving the intervention.

Clustering adjustment   An adjustment to the statistical significance of a finding when the units of assignment and analysis differ. When random assignment is carried out at the cluster level, outcomes for individual units within the same clusters may be correlated. When the analysis is conducted at the individual level rather than the cluster level, there is a mismatch between the unit of assignment and the unit of analysis, and this correlation must be accounted for when assessing the statistical significance of an impact estimate. If the correlation is not accounted for in a mismatched analysis, the study may be too likely to report statistically significant findings. To fairly assess an intervention's effects, in cases where study authors have not corrected for the clustering, the WWC applies an adjustment for clustering when reporting statistical significance.

Confounding factor   A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.

Design   The method by which intervention and comparison groups are assigned (group design and regression discontinuity design) or the method by which an outcome measure is assessed repeatedly within and across different phases that are defined by the presence or absence of an intervention (single-case design). Designs eligible for WWC review are randomized controlled trials, quasi-experimental designs, regression discontinuity designs, and single-case designs.

Effect size   The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.

Eligibility   A study is eligible for review and inclusion in this report if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.

Equivalence   A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.

Extent of evidence   An indication of how much evidence from group design studies supports the findings in an intervention report. The extent of evidence categorization for intervention reports focuses on the number and sizes of studies of the intervention in order to give an indication of how broadly findings may be applied to different settings. There are two extent of evidence categories: small and medium to large.

- **small:** includes only one study, or one school, or findings based on a total sample size of less than 350 students and 14 classrooms (assuming 25 students in a class)

- **medium to large:** includes more than one study, more than one school, and findings based on a total sample of at least 350 students or 14 classrooms

Gain scores   The result of subtracting the pretest from the posttest for each individual in the sample. Some studies analyze gain scores instead of the unadjusted outcome measure as a method of accounting for the baseline measure when estimating the effect of an intervention. The WWC reviews and reports findings from analyses of gain scores, but gain scores do not satisfy the WWC's requirement for a statistical adjustment under the baseline equivalence requirement. This means that a study that must satisfy the baseline equivalence requirement and has baseline differences between 0.05 and 0.25 standard deviations *Does Not Meet WWC Group Design Standards* if the study's only adjustment for the baseline measure was in the construction of the gain score.

Group design   A study design in which outcomes for a group receiving an intervention are compared to those for a group not receiving the intervention. Comparison group designs eligible for WWC review are randomized controlled trials and quasi-experimental designs.

Improvement index   Along a percentile distribution of individuals, the improvement index represents the gain or loss of the average individual due to the intervention. As the average individual starts at the 50th percentile, the measure ranges from –50 to +50.

Intervention   An educational program, product, practice, or policy aimed at improving student outcomes.

Intervention report   A summary of the findings of the highest-quality research on a given program, product, practice, or policy in education. The WWC searches for all research studies on an intervention, reviews each against design standards, and summarizes the findings of those that meet WWC design standards.

Multiple comparison adjustment   An adjustment to the statistical significance of results to account for multiple comparisons in a group design study. The WWC uses the Benjamini-Hochberg (BH) correction to adjust the statistical significance of results within an outcome domain when study authors perform multiple hypothesis tests without adjusting the *p*-value. The BH correction is used in three types of situations: studies that tested multiple outcome measures in the same outcome domain with a single comparison group; studies that tested a given outcome measure with multiple comparison groups; and studies that tested multiple outcome measures in the same outcome domain with multiple comparison groups. Because repeated tests of highly correlated constructs will lead to a greater likelihood of mistakenly concluding that the impact was different from zero, in all three situations, the WWC uses the BH correction to reduce the possibility of making this error. The WWC makes separate adjustments for primary and secondary findings.

Outcome domain	A group of closely-related outcomes. A domain is the organizing construct for a set of related outcomes through which studies claim effectiveness.
Quasi-experimental design (QED)	A quasi-experimental design (QED) is a research design in which study participants are assigned to intervention and comparison groups through a process that is not random.
Randomized controlled trial (RCT)	A randomized controlled trial (RCT) is an experiment in which eligible study participants are randomly assigned to intervention and comparison groups.
Rating of effectiveness	For group design research, the WWC rates the effectiveness of an intervention in each domain based on the quality of the research design and the magnitude, statistical significance, and consistency in findings. For single-case design research, the WWC rates the effectiveness of an intervention in each domain based on the quality of the research design and the consistency of demonstrated effects. The criteria for the ratings of effectiveness are given in the WWC Rating Criteria on p. 28.
Regression discontinuity design (RDD)	A design in which groups are created using a continuous scoring rule. For example, students may be assigned to a summer school program if they score below a preset point on a standardized test, or schools may be awarded a grant based on their score on an application. A regression line or curve is estimated for the intervention group and similarly for the comparison group, and an effect occurs if there is a discontinuity in the two regression lines at the cutoff.
Single-case design	A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.
Standard deviation	The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample tend to be spread out over a large range of values.
Statistical significance	Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < .05$).
Study rating	The result of the WWC assessment of a study. The rating is based on the strength of the evidence of the effectiveness of the educational intervention. Studies are given a rating of *Meets WWC Design Standards without Reservations, Meets WWC Design Standards with Reservations*, or *Does Not Meet WWC Design Standards*, based on the assessment of the study against the appropriate design standards. The WWC has design standards for group design, single-case design, and regression discontinuity design studies.
Substantively important	A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.
Systematic review	A review of existing literature on a topic that is identified and reviewed using explicit methods. A WWC systematic review has five steps: 1) developing a review protocol; 2) searching the literature; 3) reviewing studies, including screening studies for eligibility, reviewing the methodological quality of each study, and reporting on high quality studies and their findings; 4) combining findings within and across studies; and, 5) summarizing the review.

Please see the WWC Procedures and Standards Handbook (version 3.0) for additional details.

Intervention Report   **Practice Guide**   **Quick Review**   **Single Study Review**

An **intervention report** summarizes the findings of high-quality research on a given program, practice, or policy in education. The WWC searches for all research studies on an intervention, reviews each against evidence standards, and summarizes the findings of those that meet standards.

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