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WWC Review of the Report "Expanding College Opportunities for High-Achieving, Low Income Students"[1,2]

The findings from this review do not reflect the full body of research evidence on the effects of providing high school students with information about the college application process and college costs.

What is this study about?

The study examined the effects of providing low-income, high-achieving high school seniors with a multi-component intervention program including college application guidance, information about the costs of college, and a fee waiver for college applications.

Students were identified using data from the College Board and ACT. A random sample of students was selected from those who scored in the top decile of the SAT I or ACT and had estimated family incomes in the bottom third of the income distribution of families with students in the twelfth grade. This review focuses on findings from students who were randomly assigned to the multi-component intervention program (n = 3,000) or a no-treatment comparison condition (n = 3,000).[3]

The *application guidance* component of the intervention included information about deadlines and requirements for college applications at nearby institutions, at the state's flagship institution, and at in- and out-of-state selective colleges. The *application guidance* component of the intervention also included tables that compared colleges' graduation rates and provided tools for students to explore colleges' curricula, instructional resources, and housing. The *information about the costs of college* component of the intervention provided students with information on the amount spent on instruction, the list price of attendance, and net costs of attendance for different colleges and universities. This net cost information was presented for hypothetical families with incomes of $20,000, $40,000, and $60,000, but emphasized that the student's actual cost of attendance at a given school would be unknown unless he or she actually applied. Finally, students received a *waiver* that allowed them to apply to 171 selective institutions without paying application fees. This multi-component intervention was administered by mailing these materials to the students' homes, 4–14 months after they registered for a college entrance examination. The cost to implement the multi-component intervention was estimated at about $6 per student.

Features of Providing Information About College Application Process and College Costs

The authors of this study designed a multi-component intervention that provided low-income, high-achieving high school seniors with college application guidance, information about college costs, and a fee waiver for college applications. Specifically, the multi-component intervention included the following components:

- an *application guidance* component that included mailed packets with tables listing graduation rates for nearby colleges, state flagship colleges, and selective colleges;
- a *net cost* component that provided students with information about the actual cost of attending specific schools, including instructional spending and net costs for nearby, state flagship, and selective colleges; and
- a *fee waiver* component that provided students with no-paperwork fee waivers that could be used at 171 different selective schools.

What did the study find?

The authors reported, and the WWC confirmed, a statistically significant impact of providing students with college application guidance, net cost information, and fee waivers on postsecondary application submissions and postsecondary enrollment outcomes. The authors reported that the multicomponent intervention increased the percentage of students who (a) applied to a selective institution (from 55% to 67%), (b) were admitted to a selective institution (from 30% to 39%), and (c) enrolled in a selective institution (from 29% to 34%), relative to the comparison condition. Students in the multicomponent intervention condition also completed more applications and were admitted to more colleges than students in the comparison group. All of these differences were statistically significant.

WWC Rating

The research described in this report meets WWC evidence standards with reservations

Strengths: This study is a randomized controlled trial.

Notes: Although students were randomized to the intervention and comparison conditions, there was a high level of non-response on the surveys used to collect post-intervention outcome measures. The study demonstrated baseline equivalence of the analysis samples for the outcomes presented in this WWC report. Therefore, this evidence meets WWC standards with reservations.

Appendix A: Study details

Hoxby, C., & Turner, S. (2013). *Expanding college opportunities for high-achieving, low income students*. Stanford, CA: Stanford Institute for Economic Policy Research. Retrieved from http://siepr.stanford.edu

Setting

The study was conducted with low-income, high-achieving high school seniors in the United States. Participants received the intervention materials via postal mail and reviewed the intervention materials on their own.

Study sample

A national sample of low-income, high-achieving high school seniors was targeted for this intervention and identified using College Board and ACT data, census data, and other sources. Low-income students were defined as those with an estimated family income in the bottom third of the income distribution for families with a student in the twelfth grade, based on the 2007–11 American Community Survey. High-achieving students were defined as those who scored in the top decile of test-takers of the SAT I or ACT (1300 math plus verbal on the SAT I, or 28 on the ACT). These students are typically geographically dispersed and so cannot easily be reached by usual methods of informing students about college. To assess whether information would change students' behavior, the sample was randomized to the Expanding College Opportunities Comprehensive (ECO-C) intervention (n = 3,000), a no-treatment comparison group (n = 3,000), or one of four other interventions which are not included in this single study report (see Endnote 3). The analytic sample for the ECO-C intervention and comparison conditions included 1,835 students who completed a survey the summer after they were expected to graduate from high school, and/or completed a survey the summer after which they were expected to have completed one year of college. The demographic composition of the original assigned sample was not reported. In the analytic sample for the ECO-C intervention and comparison conditions, 45% of the students were female and 53% were underrepresented minorities.

Intervention group

Intervention condition students were high school seniors who had taken the SAT/ACT, who scored in the top deciles of the SAT/ACT, had an estimated family income in the bottom third of the income distribution for families with a student in the twelfth grade, and did not attend a "feeder" high school (feeder schools were those in which more than 30 students in each academic cohort typically scored in the top decile on college assessment exams). Students were randomly assigned to the ECO-C intervention program, a no-treatment comparison condition, or to one of four other interventions that provided only one intervention component (the four single component interventions are not included in this single study review; see Endnote 3). The ECO-C intervention included (1) *Application Guidance,* (2) *Net Cost*, and (3) *Fee Waiver* components intended to help high school seniors learn about their options for attending college and provide them with materials to help organize their multiple college applications.

The *net cost* intervention component provided students with information about net costs for low- to -middle-income students. This information included list prices, instructional spending, and net costs of the state flagship university, at least one other in-state public college, nearby colleges, a selective in-state private college, one out-of-state private liberal arts college, and one out-of-state selective university. The materials emphasized that the students' actual cost of attendance at a given school would be unknown unless they actually applied to that school.

The *fee waiver* intervention component provided students with no-paperwork fee waivers that allowed them to apply to up to 171 selective colleges.

Comparison group

The comparison condition did not receive the intervention packet, and therefore received treatment as usual. Comparison condition students were high school seniors who had taken the SAT/ACT, who scored in the top deciles of the SAT/ACT, had an estimated family income in the bottom third of the income distribution for families with a student in twelfth grade, and did not attend a "feeder" high school (feeder schools were those in which more than 30 students in each academic cohort typically scored in the top decile on college assessment exams). These students received no intervention services, but may have received college application/admission/enrollment information from other sources as part of usual practices.

Outcomes and measurement

College application, admission, and enrollment outcomes were based on student survey responses collected during the summer after they were expected to graduate from high school, and the summer after which they were expected to have completed their first year of college. For a more detailed description of these outcome measures, see Appendix B.

Support for implementation

The intervention materials were delivered in a packet via postal mail to the homes of high school seniors. No training of high school students or their families was reported. No implementation support was reported.

Reason for review

This study was identified for review by the WWC because it received significant media attention.

Appendix B: Outcome measures for each domain

Postsecondary applications	
Number of applications submitted	This outcome is based on responses to a survey that asked students to report the total number of postsecondary applications they submitted. The survey was conducted during the summer after which students were expected to graduate from high school. For this analysis, the study authors used a count measure of the total number of applications submitted.
Applied to a peer/selective institution	This binary outcome is based on responses to a survey that asked students to report the names of postsecondary institutions to which they submitted applications. These data were collected during the summer after which students were expected to graduate from high school. For this analysis, the study authors measured whether students applied to any "peer" institutions (public, private, liberal arts, or other institution type), where peer institutions are defined as those institutions where median student scores fall within five percentiles of a student's own score.
Number of colleges to which admitted	This outcome is based on responses to a survey that asked students to report the total number of postsecondary colleges to which they were admitted. The survey was administered during the summer after which students were expected to have completed one year of college. For this analysis, the study authors used a count measure of the total number of colleges to which students were admitted.
Admitted to a peer/selective institution	This binary outcome is based on responses to a survey that asked students to report the names of postsecondary institutions to which they were admitted. The survey was administered during the summer after which students were expected to have completed one year of college. For this analysis, the study authors measured whether students were admitted to any "peer" institutions (public, private, liberal arts, or other institution type), where peer institutions are defined as those institutions where median student scores fall within five percentiles of a student's own score.
Postsecondary enrollment	
Enrolled in a peer/selective institution	This binary outcome is based on responses to a survey that asked students to report the names of postsecondary institutions to which they enrolled. The survey was administered during the summer after which students were expected to have completed one year of college. For this analysis, the study authors measured whether students were enrolled in a "peer" institution (public, private, liberal arts, or other institution type), where peer institutions are defined as those institutions where median student scores fall within five percentiles of a student's own score.

Table Notes: The study also provided results for whether students submitted at least five applications, applied to a peer public university, applied to a peer private university, applied to a peer liberal arts college, applied/admitted/enrolled to an institution that was peer within a range of percentile points, 4-year graduation rates of colleges to which applied/admitted/enrolled, instructional spending of colleges to which applied/admitted/enrolled, student related spending of colleges to which applied/admitted/enrolled, median SAT scores of colleges to which applied/admitted/enrolled, filed a FAFSA, used any application fee waivers, and number of application fee waivers used. These outcomes were not included in this report because they were not eligible outcomes as specified in the protocol and/or were overlapping with the more comprehensive application and enrollment outcomes included in this report.

Appendix C: Study findings for each domain

Domain and outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			*p*-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Postsecondary applications								
Number of applications submitted	2011–12 cohort	1,835 students	5.56 (nr)	4.67 (3.60)	0.89	0.23	+9	< 0.01
Applied to a peer/ selective institution	2011–12 cohort	1,748 students	67%	55%	12%	0.25	+10	< 0.01
Number of colleges to which admitted	2011–12 cohort	1,835 students	2.31 (nr)	2.06 (1.37)	0.25	0.17	+7	< 0.01
Admitted to a peer/ selective institution	2011–12 cohort	1,738 students	39%	30%	9%	0.19	+8	< 0.01
Domain average for postsecondary applications						**0.21**	**+8**	**Statistically significant**
Postsecondary enrollment								
Enrolled in a peer/ selective institution	2011–12 cohort	1,687 students	34%	29%	5%	0.12	+4	< 0.05
Domain average for postsecondary enrollment						**0.12**	**+4**	**Statistically significant**

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 student outcomes, representing the average change expected for all students who are given the intervention (measured in standard deviations of the outcome measure). The effect sizes reported here were computed by the WWC (using *t*-statistics from regression models reported in the original study) and therefore differ from the effect sizes reported in the original study, which estimated effect sizes using the standard deviation in the comparison group (rather than the pooled standard deviation, used in the WWC calculations). The improvement index is an alternate presentation of the effect size, reflecting the change in an average student's percentile rank that can be expected if the student is given the intervention. The 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 the study's domain average was determined by the WWC; the study is characterized as having a statistically significant positive effect because univariate statistical tests are reported for each outcome measure, the effect for at least one measure within the domain is positive and statistically significant, and no effects are negative and statistically significant, accounting for multiple comparisons. nr=not reported.

Study Notes: A correction for multiple comparisons was needed and resulted in a WWC-computed *p*-value of < 0.05 for the *Postsecondary Applications* domain; therefore, the WWC confirmed that the result in this domain was statistically significant. The *p*-values presented here were reported in the original study.

Endnotes

[1] Single study reviews examine evidence published in a study (supplemented, if necessary, by information obtained directly from the author[s]) to assess whether the study design meets WWC evidence standards. The review reports the WWC's assessment of whether the study meets WWC evidence standards and summarizes the study findings following WWC conventions for reporting evidence on effectiveness. This study was reviewed using the Postsecondary Education topic area review protocol, version 2.0. A quick review of this study was released on April 17, 2013, and this report is the follow-up review that replaces that initial assessment. The WWC rating applies only to the results that were eligible under this topic area and met WWC standards with reservations, and not necessarily to all results presented in the study.

[2] There are no conflicts of interest to report.

[3] Students were randomly assigned to the multi-component (ECO-C) intervention program (n = 3,000) or a no-treatment comparison condition (n = 3,000), or to one of four other single component interventions (n = 12,000). These single component interventions included an *Application Guidance* intervention (n = 3,000), a *Net Cost* intervention (n = 3,000), a *Fee Waiver* intervention (n = 3,000), and a *Parent* intervention (n = 3,000). This review only focuses on the reported effects of the multi-component ECO-C intervention program, relative to the comparison condition, given that this multi-component intervention included three of the four components that were in each of these four single component interventions (the *Parent* intervention was dropped for the multi-component intervention program).

Recommended Citation

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Glossary of Terms

Attrition Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.

Clustering adjustment If intervention assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.

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 design of a study is the method by which intervention and comparison groups were assigned.

Domain A domain is a group of closely related outcomes.

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 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.

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

Multiple comparison adjustment When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.

Quasi-experimental design (QED) A quasi-experimental design (QED) is a research design in which subjects 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 investigators randomly assign eligible participants into intervention and comparison groups.

Single-case design (SCD) 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 are 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% ($p < 0.05$).

Substantively important A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the WWC Procedures and Standards Handbook (version 2.1) for additional details.