Effectiveness of programs to improve postsecondary education enrollment and success of underrepresented youth

A literature review

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Introduction

The purpose of this literature review is to evaluate the evidence for the effectiveness of interventions aimed at increasing postsecondary enrollment and success of underrepresented groups, in particular students of color and students from low-income families.

Background

The importance of postsecondary education

One year before the authorization of the *Higher Education Act of 1965*, President Lyndon B. Johnson gave a speech at the 200th Anniversary Convocation of Brown University in which he said that "universal, free, public education is the very foundation upon which our entire society rests today." That statement is as true today as it has ever been. Indeed, the relationship between an educated citizenry and the health of our society continues to grow even stronger as our economy grows increasingly knowledge based.

According to the United States Bureau of Labor Statistics (2005), approximately 80 percent of the fastest growing occupations in the United States require at least some postsecondary education. For those with only a high school education and on-the-job training, the available jobs often do not pay the living wage necessary to comfortably care for oneself or raise a family. Many of these jobs do not offer essential benefits or opportunities for advancement, and they are often unstable jobs that lack job security. Consequently, families with lower-educated heads of household are often left economically vulnerable and at risk of financial devastation. In contrast, individuals with higher levels of education are better able to compete for higher quality jobs, earning an average of $19,100 more per year in 2003 than individuals with only a high school diploma (Baum & Payea, 2005). They are also more likely to obtain jobs that provide better working conditions, essential benefits, opportunities for advancement, and job security.

Not only does higher education benefit the individuals that receive it and their families, higher education also benefits society as a whole. Having a highly educated and skilled workforce is essential for competing in a changing economy that is increasingly knowledge based. Because individuals with higher education tend to earn higher wages, they also contribute more to tax revenues (Baum & Payea, 2005). In addition, research has demonstrated some of the positive effects of having an educated citizenry, including lower crime rates, fewer unplanned pregnancies, lower unemployment rates, decreased burden on social services, and increased civic engagement (Baum & Payea, 2005; Haveman & Wolfe, 1994). These benefits carry on to future generations, as well-

educated parents are more likely to have the skills and knowledge necessary to help their children navigate the educational system and do well in school.

Recognizing the role of education's overall benefits to our society, President Johnson made it a national goal "to open the doors to education beyond the high school to all young Americans, regardless of station or the station of their families." Yet over 40 years later, those doors still remain closed to many.

The achievement gap

Postsecondary enrollment rates have increased substantially over the past three decades, and more low-income students are enrolling in college today than every before. However, low-income students continue to enroll, complete credits, and graduate at rates lower than high-income students, and the income-related gaps are large and appear to be growing (Haveman & Smeeding, 2006).

Achievement gaps are clearly visible throughout the school years. Gaps related to income and race/ethnicity are observed in a variety of outcomes, including average grades in elementary and secondary school, enrollment in Advanced Placement math and science courses, average SAT scores, high school graduation rates, and college enrollment rates (National Center for Education Statistics [NCES], 2005). Moreover, the achievement gap persists long-term, as evidenced by class and racial/ethnic disparities in the highest level of education completed for individuals age 25 and older (NCES, 2005).

The lower educational achievement and attainment among low-income and racial/ minority students is becoming an increasingly important issue as these groups make up a growing proportion of the school (kindergarten - grade 12, k-12) population. Because racial/ethnic minorities make up a growing proportion of the student population, they will clearly be an increasing proportion of the workforce in the future. Their lower educational achievement has grave implications for society. A well-educated workforce is crucial in an increasingly knowledge-based economy. Not to mention the moral arguments for equal representation.

Why the achievement gap persists

The United States government has formally made higher education a priority since the authorization of the Higher Education Act in 1965, and with its continued reauthorization, a commitment to need-based aid in particular. However, recent changes in the federal Pell Grant program have decreased financial aid for low-income students, and at the same time, college tuition costs are rising. As a result, the dream of postsecondary education is out of reach for many who simply cannot afford it.

Nevertheless, financial aid alone is not enough to level the playing field. Racial/ethnic and income disparities appear much earlier in the educational pipeline. In order to increase postsecondary access and success for underrepresented students, the steps required to be academically, socially, and psychologically prepared for college must be addressed (Gladieux & Swail, 1999).

Whether or not the American educational system prepares students for college depends upon the educational track in which the student has been placed. The college preparatory track can provide students with a world-class education, whereas the vocational track prepares students to enter employment – usually low-skill or blue collar jobs – directly after high school. This two-track system was created in the early twentieth century to accommodate an industrial society with many low-skill factory jobs available. However, in today's knowledge-based economy, this type of educational system is outdated. Students on the vocational track graduate from high school unprepared to enter college, and those students are disproportionately from low-income and racial/ethnic minority groups.

This problem stems from systematic inequalities in K-12 schools. Low-income and minority students are overrepresented in schools that are underfunded and lack resources. As a result, these schools tend to have lower quality teachers and are less likely to offer a challenging curriculum, including rigorous math courses, shown to be one of the most important predictors of college enrollment and success (Adelman, 1999).

In addition, low-income, minority students must deal with cumulative disadvantages resulting from a history of racism and discrimination. According to Gándara and Bial (2001), underrepresented youth face a number of impediments to higher education, including lack of access to information and resource networks, inequality of neighborhood resources, lack of peer support for academic achievement, segregation, ineffective high school counseling, and low expectations and aspirations (pp. 8-9). Not only does the American educational system fail to adequately prepare disproportionate numbers of low-income and minority students academically; the system also fails to address many of the social and psychological barriers that underrepresented students face.

The need for pre-college outreach programs

Outreach programs serve to compensate for the shortcomings of the public education system (Swail, 2001), particularly by offering a more comprehensive approach to college access (Perna & Swail, 2002). Research has shown that pre-college outreach programs improve college access for underrepresented students (Macy, 2000; Gándara & Bial, 2001; Vargas, 2004). In fact, Horn and Chen (1998) found that high school outreach programs almost doubled the odds of enrolling in college for moderate- to high-risk students. However, only about 5 percent of at-risk students reported participating in such programs.

According to results from the National Survey of Outreach Programs (Swail & Perna, 2001), an estimated two million or more students are served in outreach programs across the United States each year. Two-thirds of the programs surveyed offer services to students beginning in ninth grade or earlier, with the remaining one-third focusing on the later years of high school. Programs most commonly target low-income, first-generation, and minority students. The majority of programs are sponsored by colleges or universities, although they may also be sponsored by K-12 schools or community organizations. The most frequent program goals include promoting college attendance, college awareness, and college exposure, followed by improving academic skills, building student self-esteem, and providing role models. The most common service provided is college awareness, followed by social skills development, campus visits, and cultural activities. Sixty-nine percent of programs offer a parental component, and 22 percent require parental participation.

Evaluating the effectiveness of outreach programs

The importance of evaluation

Evaluation is a critical component of program improvement. Furthermore, evaluation results help to inform policy and to ensure fiscally responsible decision making and accountability. In other words, program evaluation can help determine how to effectively help as many people as possible with the limited funding available.

Although almost all programs report conducting evaluations, in actuality the availability of empirical data, along with appropriate use and reporting of data, are major problems for programs (Swail & Perna, 2001). In their extensive search of the literature, Gándara and Bial (2001) found only 13 programs that had an acceptable level of evidence for effectiveness. The search conducted for this review found only seven additional programs with such evidence available.

Components of quality evaluations

This brief discussion on components of quality evaluations is a summary of information provided in a guide published by the U.S. Department of Education (2003). For additional information, please consult the guide.

The best evaluation design for measuring a program's impact is the experimental design (also called the randomized control trial), where individuals are randomly assigned to the participant and control groups prior to program implementation. This design is ideal because the only characteristic for which the two groups should systematically differ is

program participation, and therefore, any difference in outcomes found between the two groups can confidently be attributed to the program's impact.

However, in most cases random assignment is not possible because programs are already in operation prior to the decision to conduct an evaluation. In such cases, the preferred evaluation design is the quasi-experiment, using well-matched comparison groups. In order to attribute differences between the participant and comparison groups to the program's impact, it is essential to demonstrate that the participant and comparison group members were initially equivalent on measures that are potentially associated with the outcome measure (i.e., academic success), such as previous academic performance and demographic and family background characteristics. It is often difficult to control for systematic unobservable differences between participants and non-participants. For example, when students choose to participate in the program (an issue called self-selection), it is often the case that participants differ systematically from non-participants with regard to personal motivation. Researchers try to control for unobservable characteristics as best they can using variables that serve as proxies. As a result, well-matched comparison group studies generally yield correct conclusions about whether a program is effective. However, the estimated size of the impact is often inaccurate because unobservable characteristics for which the researcher could not control account for a portion of the estimated impact. Longitudinal, prospective designs (where students are followed into the future) are generally stronger than cross-sectional, retrospective designs (where student outcomes are examined at one point in time using previously collected data).

In addition to the evaluation design, other important components of quality evaluations include the way in which data are collected and reported. Evaluations should use objective outcome measures that are appropriate for measuring the program's impact. For example, SAT scores do not appropriately measure a program's impact on college access. The college enrollment rate would be a more appropriate measure. In addition, it is preferable to report findings in easily understandable, real-world terms (e.g., change in probability is preferable to odds ratios). Results should be reported for all outcome measures, not only those for which the program had a positive effect. When evaluations analyze information provided by the participants themselves, it is ideal to verify the self-reports using independent and/or objective measures. In estimating the program's impact, it is essential to include all members in the participant group even if they do not complete the intervention. It is also important to minimize sample attrition as much as possible. Researchers should report the size of the program's effect and indicate whether differences between participants and non-participants are statistically significant. In this review, results are considered to be statistically significant if there is only a 5 percent probability at most that the finding resulted by chance (i.e., $p<0.05$). In order to achieve statistical significance, it is usually necessary to have a large sample size. On the other

hand, evaluations with very large samples will find even small differences to be statistically significant. For this reason, it is important to consider whether results are substantial in addition to whether they are statistically significant.

Selection of programs for review

The purpose of this literature review is three-fold: to update findings for the programs reviewed in Gándara and Bial's (2001) *Paving the Way*, to examine any additional programs that had acceptable evidence of effectiveness, and to give closer consideration to the methodology and quality of evidence.

In order to identify programs for inclusion, Wilder's information management specialist conducted an extensive search of the available literature. She searched a number of databases, including ERIC, ArticleFirst, Electronic Collections Online (ECO), Periodical Abstracts, SIRS Researcher, WilsonSelectPlus, WorldCat, EBSCO MegaFile. She also conducted a general web search and collected information from program websites. The Pathways to College Network website (http://pathwaystocollege.net/) provided general information on a number of programs that served as a starting point for further searching.

In addition, the following compendia were consulted:

Jurich, S., & Estes, S. (2000). *Raising Academic Achievement: A Study of 20 Successful Programs.* Washington, D.C.: American Youth Policy Forum. Retrieved July 27, 2006, from http://www.aypf.org/publications/RAA/index.htm

James, D.W., Jurich, S., & Estes, S. (2001). *Raising Minority Academic Achievement: A Compendium of Education Programs and Practices.* Washington, D.C.: American Youth Policy Forum. Retrieved July 27, 2006, from http://www.aypf.org/publications/rmaa/pdfs/Book.pdf

Only programs with evaluations providing evidence for effectiveness were considered for inclusion. Evaluations conducted by third parties were preferred; however, internal evaluations were also accepted. The evaluations generally needed to include appropriate measures of postsecondary access or success, and to compare outcomes for program participants to outcomes for reasonably comparable students. The search was limited to recent evaluations (conducted in 2000 or later). However, in exceptional cases older evaluations were included because their methodology and findings were particularly strong.

Organization of literature review

This review begins with a discussion of the key features of effective programs and summaries of the programs with the strongest evidence for effectiveness, followed by a discussion of program limitations and the limitations of the evidence. Please consult the larger report for more detailed descriptions of the programs, evaluation methodologies, findings, and assessments of the quality of evidence.

Key features of effective programs

The evaluations included in this review are limited. Although they were designed to assess a program's impact on college access and persistence, almost none of the evaluations were designed to identify which program features account for or contribute most to the program's success. Therefore, it was necessary to draw on previous research to compile a list of the key features of effective programs. That is, the key features discussed here were frequently found in other literature reviews, program evaluations, and studies designed to measure the impacts of contributing factors. Programs with the best evidence for effectiveness, based on this review, contain many of the features highlighted in this section.

Prepare students academically

Multiple research studies have concluded that access to a college preparatory curriculum while in high school is the most critical variable for helping students gain access to postsecondary education (Corwin, Colyar, & Tierney, 2005; Cabrera & La Nasa, 2001; Perna, 2000). Effective outreach programs help prepare students academically through "untracking," tutoring, and/or curriculum reform (Gándara & Bial, 2001). It is especially important that students take rigorous mathematics courses during high school, as this was found to be the single greatest predictor of successful college completion (Adelman, 1999). Programs should address teachers' biases and instill high expectations among school staff as well as among students (Martinez & Klopott, 2002). Additional strategies include providing academic counseling, enrichment, and remediation; teaching study skills; and creating personalized learning environments. All the programs in this review incorporate some form of academic enrichment.

Balance academic support with social support

Research has shown that social support is a predictor of college attendance and completion (Perna, 2000). Social support helps students see college as a realistic option. Students are more likely to plan to attend college if their friends also plan to enroll (Hossler, Schmit, & Vesper, 1999). Strong social networks help support students' academic and emotional development, which can influence their likelihood of enrolling in college (Cabrera & La Nasa, 2001). In addition to peer support, research has shown that mentors play a key supportive role in helping low-income students overcome obstacles and enroll in college (Levine & Nidiffer, 1996). Most of the programs included in this review (80%) incorporate some form of personal and social enrichment in addition to academic enrichment, and of the programs with the strongest evidence for effectiveness, all include this component.

Intervene early

Research has shown that it is critical to intervene early in order to facilitate curricular planning. Researchers recommend that programs begin by eighth grade (Perna, 2002), no later than the ninth grade (Corwin et al., 2005), or well before high school (Levine & Nidiffer, 1996) if possible. Almost all of the programs reviewed begin serving students in ninth grade or earlier, and 40 percent of the programs target students prior to entering high school. Of the six programs with the strongest evidence for effectiveness, two begin serving students prior to high school, and the other four begin serving students in ninth grade.

Involve and encourage parents/family

Students with parents who are knowledgeable about college are more likely to attend college. Effective outreach programs address this predictor by involving parents and other family members, providing college information to parents, and teaching parents how to support their children's education (Perna, 2002; Corwin et al., 2005; Swail & Perna, 2002). However, less than one-third of the programs in this review include a parental component, and just one-third of the programs with the strongest evidence for effectiveness have this component.

Help students navigate the college admissions process

Research has shown that helping students complete college applications and helping students prepare for entrance exams are important predictors of enrollment (Horn & Chen, 1998). Almost all of the programs in this review help students navigate the college admissions process, and of the programs with the strongest evidence for effectiveness, all include this component.

Provide comprehensive, long-term support

The programs that have the greatest impact tend to be those that are comprehensive in terms of the services provided and intense with regard to the level of involvement required (Cabrera & La Nasa, 2001; Perna & Swail, 2002). In addition, several evaluations have shown that students benefit more the longer they participate in the program (Gándara & Bial, 2001). Nearly all of the programs in this review offer a wide variety of services and support students for at least four years. The programs with the strongest evidence for effectiveness tend to be more comprehensive and offer long-term support.

Encourage systemic reform

Most outreach programs are peripheral and supplemental to the classroom, which may explain why outreach programs tend to have little effect on students' academic achievement (Gándara & Bial, 2001). According to Watson Scott Swail (2001), outreach programs must have, at their core, "a desire to help change the very system whose failure required their existence" if they are to have any long-term or systemic impacts on our educational system (p. xiii). Indeed, researchers at the State Higher Education Executive Officers (SHEEO, 2003) found that the most effective programs offer long-term systemic services that are incorporated as part of the regular school offerings, rather than short-term supplemental programmatic services. Research has also shown that linking the secondary and postsecondary educational systems – for example, by aligning high school curricular requirements with college entry requirements – helps low-income and minority students succeed (Martinez & Klopott, 2005). However, very few programs take a systemic approach, and this is the case among the programs included in this review. Several programs address this issue to some extent, for example, by establishing partnerships between secondary schools and postsecondary institutions and by helping ensure that students complete college entrance requirements. In addition, programs often operate in tandem with other statewide reform efforts that help reach more students. Nevertheless, more work is needed in this area.

Provide financial assistance

Students need adequate financial resources in order to attend and complete college. Research has shown that financial aid – especially state funded need-based grants – is positively associated with college enrollment (St. John, Chung, Musoba, Simmons, Wooden, & Mendez, 2004), and students who received financial aid persist in college better than or as well as students who do not receive aid (Hu & St. John, 2001). Programs can provide financial assistance by sending students on college visits, covering the fees for college entrance exams and applications, and awarding scholarships (Gándara & Bial, 2001). Although only about half of the programs included in this review provide scholarships, most programs provide students with information and assist students in applying for financial aid.

Summaries of the programs with the strongest evidence for effectiveness

Indiana's Twenty-first Century Scholars Program

Indiana's Twenty-first Century Scholars is a statewide early intervention program designed to help low-income students prepare for and enroll in college. The program is based on a dual pledge process. Income-eligible students make a pledge in the eighth grade to meet certain program requirements, and in exchange, the State of Indiana guarantees to cover the last dollar costs for students to attend any public college in Indiana (or to cover a like portion of tuition costs for students attending independent colleges). In addition to providing the tuition incentive, the State of Indiana also provides college information and support services, including tutoring, mentoring, college visits, and activities for parents.

Researchers from the Indiana Education Policy Center received funding from Lumina Foundation for Education to conduct an evaluation of the program's impact on increasing access to postsecondary education (St. John, Musoba, Simmons, & Chung, 2002) and a follow up study of the program's impact on postsecondary persistence and degree completion (St. John, Gross, Musoba, & Chung, 2005). The researchers developed a multinomial logistic regression model including a number of independent explanatory variables, which allowed them to compare the odds of enrolling in college for students with different characteristics (e.g., Scholars versus non-Scholars, males versus females, etc.). They found that Scholars were significantly more likely than non-Scholars to enroll in Indiana public and private colleges. Four years after enrollment, a smaller percentage of Scholars had left college in comparison to income-eligible non-Scholars, and Scholars were more than twice as likely to have received two-year degrees. The strength and quality of this evidence is rated as promising (see page 18 for definitions of ratings).

Upward Bound

Upward Bound is one of the original federal TRIO programs designed to help low-income and first-generation students prepare for, enroll in, and succeed in college. Students are usually recommended for participation by educators, social workers, or clergy, and the program serves students in grades 9-12. Upward Bound projects are most commonly hosted by colleges and universities, and program implementation varies considerably depending upon the project. While projects are required to provide instruction in laboratory science, mathematics, composition, literature, and foreign language, other possible services include academic and financial counseling, tutoring, mentoring, financial aid and college application assistance, information on postsecondary

educational opportunities, work-study positions, and exposure to cultural events. Participants also receive intensive instructional preparation for college in a six-week summer program.

The U.S. Department of Education commissioned Mathematica Policy Research, Inc. to conduct the national evaluation of Upward Bound (Myers, Olsen, Seftor, Young, & Tuttle, 2004). Using a randomly selected, nationally representative sample of Upward Bound projects, the researchers randomly assigned eligible applicants to the treatment and control groups. Three follow-up studies were conducted to measure student outcomes over time. The researchers estimated the value-added of Upward Bound by computing the differences in outcomes between the treatment and control groups after controlling for some background characteristics. In addition, the researchers examined differences between subgroups of participants to examine whether the program benefited some students more than others. They found that the program's impact was modest for the average student. However, the impact was larger for certain groups. For example, Upward Bound significantly increased four-year college enrollment and the number of postsecondary credits earned at four-year colleges and universities for students with lower educational expectations. Longer participation and program completion were associated with better student outcomes. The strength and quality of this evidence is rated as promising (see page 18).

Gateway to Higher Education

Gateway to Higher Education is a four-year secondary school program that has been implemented in New York City high schools. The program provides rigorous pre-college academic preparation to underrepresented minority students who are interested in pursuing majors in science, technology, engineering, and medicine. Both the school day and the school year are extended for participants, who enroll in an additional period of math or science, participate in small group study and after-school tutoring, and attend academic summer programs. Enrichment experiences include internships, social outings, campus visits, college fairs, and research experiences. Participants are expected to enroll in advanced placement courses and take college entrance exams.

In order to examine the impact of the Gateway to Higher Education program, researchers analyzed existing quantitative data and compared Gateway students with a retrospective matched comparison group of non-participants (Campbell, Wahl, Slater, Iler, Moeller, et al., 1998). The researchers found that Gateway students were more apt to graduate from high school, take the SAT at least once, and earn a higher combined SAT score than their matched comparison students. Although comparison group data were not available for the college attendance and retention indicators, Gateway students enrolled in and

graduated from college at high rates. The strength and quality of this evidence is rated as promising (see page 18).

Quantum Opportunities Program

The Quantum Opportunities Program was designed as a social experiment to test whether community-based organizations could help increase the educational achievement and social competencies of highly disadvantaged youth. In each of five project cities, students were randomly selected from a list of families receiving public assistance and assigned to the participant and control groups. The program provided year-round services, assistance, and coaching to participants beginning in ninth grade and continuing through high school. Program activities were designed to foster learning, community service, and development. Students were paired with caring adult mentors and received small financial incentives for their participation.

Questionnaires and skills tests were periodically administered to the participant and control group students, allowing researchers to compare student outcomes to estimate the program's impact. Hahn, Leavitt, and Aaron (1994) analyzed data from the post-high school follow-up survey and compared outcomes for the participant and control groups. They also conducted a small benefit-cost analysis. They found that significantly higher percentages of program participants graduated from high school, enrolled in two-year and four-year colleges, received honors or awards, and participated in community service in comparison to the control group students. The program's effects had increased over time. In addition, the benefit-cost analysis found that for every dollar spent, the program produced over three dollars of benefit. The strength and quality of this evidence is rated as strong (see page 18).

Sponsor-A-Scholar

Sponsor-A-Scholar (SAS) is a college preparatory/college retention program administered by the nonprofit organization Philadelphia Futures. The program serves low-income students of color with average grades who demonstrate motivation and attend one of the participating public high schools in Philadelphia. Students are nominated for participation by school staff and must sign a Statement of Intent upon acceptance to the program. Participants are paired with volunteer adult mentors, who meet with them monthly from ninth grade through the first year after high school. In addition, program staff arrange academic enrichment opportunities, including tutoring, SAT preparation, study skills workshops, college visits, college selection assistance, and summer programs. Upon graduating from high school, SAS participants receive a $6,000 scholarship that is donated by the mentor or an outside partner.

Mathematica Policy Research, Inc. (Johnson, 1998) conducted an evaluation of SAS using a longitudinal comparison group design. Participants and matched comparison students were surveyed each of the four evaluation years. In order to measure the program's impact on a variety of outcome measures, the researchers used regression and logistic regression analyses, controlling for socioeconomic and demographic characteristics, student motivation, and previous student academic performance. They found that the program had a positive and significant impact on participation in college preparation activities and on college attendance during the first and second years after high school. The program's impact was largest for students who entered the program with the fewest resources and students who had strong relationships with their mentors. The strength and quality of this evidence is rated as promising (see page 18).

Talent Search

Talent Search is one of the original federal TRIO programs designed to help low-income, first-generation students enroll in college. The program is low-intensity, focusing primarily on addressing informational barriers. The services offered are limited and vary depending upon the project, but the most common services include academic support, career development, and financial aid assistance.

The U.S. Department of Education commissioned Mathematica Policy Research, Inc. (Constantine, Seftor, Martin, Silva, & Myers, 2006) to conduct an evaluation of the Talent Search program. The evaluation examined the effect of Talent Search on postsecondary outcomes in three states (Florida, Indiana, and Texas) by comparing program participants with matched non-participants using a regression-adjusted approach. The researchers found positive results in all three states evaluated. Participants were more likely to graduate from high school, to apply for financial aid, and to enroll in two-year and four-year institutions than non-participants. The strength and quality of this evidence is rated as promising (see page 18).

Program limitations

In *Paving the Way*, Gándara and Bial (2001) identified several program limitations that also apply to the programs included in this review:

■ Program drop-out rates are high.

■ Participant selection is not explicit, limiting the ability to judge who can best benefit from the program.

■ Males are seriously underrepresented.

■ Few programs keep records on participation levels, and programs are often vague about what constitutes completion and retention.

■ Most programs use a sector approach. In other words, they provide non-systemic, non-continuous services, focusing on only one sector of the educational system.

■ The evidence that programs impact academic achievement is limited, likely because the programs begin too late, do not last long enough, and do not impact the education system, as stated above.

■ Because achievement is not raised, the programs do not have a major impact on increasing enrollment in selective colleges and universities, but rather in community colleges and less selective four-year colleges.

■ Little is known about long-term outcomes, such as degree completion.

■ Few programs report cost data.

Additional challenges include hiring and retaining effective staffs and sustaining funding (Swail & Perna, 2001).

Programs are also limited in who they serve. Most programs are geared towards underrepresented students who demonstrate high potential. Programs often target students who are middle achieving (earning B's and C's), who demonstrate motivation through consistent attendance and high involvement, and who receive strong recommendations from teachers. In other words, most participants are academic survivors in many regards prior to program entry. On the other hand, unmotivated students who achieve below average or failing grades are often neglected by these programs.

Limitations of the evidence

- Few evaluations use control groups (Gullatt & Jan, 2003), limiting the ability to conclude that outcomes observed for participants can be attributed to the impact of the program and not to other factors.

- Little is known about the selection criteria for program participation (Gullatt & Jan, 2003).

- Few programs keep track of attrition, and students who leave the program are usually not included in evaluations. Success is usually calculated based on program completers only, thereby overstating the program's effect (Gullatt & Jan, 2003; Swail & Perna, 2001).

- Little is known about the long-term effectiveness of programs (Perna & Swail, 2002). Few programs track success in postsecondary education, and there is a lack of data on postsecondary persistence and completion (Gándara & Bial, 2001).

- Little is known about which students are most likely to benefit (Perna & Swail, 2002).

- Little is known about how much programs are likely to cost (Perna & Swail, 2002).

- There is a lack of cost-benefit analysis (Gándara & Bial, 2001).

- Some programs only conduct internal evaluations. However, internal evaluations may have more biases than external evaluations, especially if funding is contingent upon good outcomes.

- Several evaluations used unmatched or poorly matched comparison groups, limiting the ability to conclude that differences between the participant and comparison groups can be attributed to the program and not to differences between the two groups for which the researcher did not control.

- Researchers seldom provide context for interpreting the results and seldom draw connections between program components and results. Little is known about which program features account for or contribute to program success.

- Program implementation and components often vary considerably from site to site for the same program, and this variation is seldom addressed in evaluations.

- Program descriptions often consisted of a list of components. However, it was difficult to conceptualize how the components came together for the program to operate.

■ Descriptions of the evaluation methodology were often incomplete.

■ Researchers often failed to report key information, such as standard deviations, statistical significance, and descriptive statistics on the characteristics of participant and comparison students prior to program implementation.

■ Evaluations often lacked meaningful outcome measures. For example, measures of college preparation (e.g., SAT test taking, curriculum completion, etc.) were often used as measures of college access.

■ The quantity of evidence (i.e., replication) is limited because few programs have been implemented in multiple settings with different populations.

Review of programs with evaluation results

The following tables summarize the program components and evaluation features for the programs previously reviewed by Gándara and Bial (2001) (Figures 1 and 2) and for the additional programs with evaluation data (Figures 3 and 4) included in this review. Programs were given a rating for the quality and strength of the evidence for effectiveness. These ratings took into consideration the quality of the evaluation methodology and the strength of the evaluation findings. The rating scale is as follows: limited, suggestive, promising, strong.

The ratings were assigned somewhat subjectively, but the following definitions provide examples of the types of evaluations that fall into each category:

- Limited evidence – the evaluation methodology was very weak (e.g., convenience sample comparison groups) to the extent that it was difficult to judge whether the findings were meaningful, even if they appeared to be favorable. Many of these evaluations used inappropriate outcome measures and calculated and reported results in ways that suggested significant biases.

- Suggestive evidence – the findings are generally favorable; however, the evaluation methodology limited the ability to conclude that the findings could be attributed to the program alone and not to other factors (e.g., due to poorly matched comparison groups).

- Promising evidence – the findings are generally favorable, and the researchers used a solid quasi-experimental design (e.g., well-matched comparison groups), allowing one to conclude with considerable confidence that the program is having a positive impact. However, the size of the effect may not be accurate given the limitations of quasi-experiments.

- Strong evidence – the findings are favorable and substantial, and the researchers used an experimental design (i.e., participant and control groups randomly assigned prior to program entry), allowing one to draw confident conclusions about the program's impact and the size of the program's effect.

Additional explanation about the quality and strength of evidence for individual programs is provided in the "assessing the quality of evidence" section for each program.

1. Summary of program features, previously reviewed programs

Program	Counseling	Academic enrichment	Parental involvement	Personal and social enrichment	Mentoring	Scholarships	Target audience
ABC	X	X					Individual H.S. students
AVID	X	X		X			Individual middle and H.S. students
College Bound	X	X		X	X		Secondary schools
College Pathways	X	X		X		X	H.S. students by class
CROP	X	X			X		Individual students (6-12)
IHAD	X	X		X	X	X	Students by class (6-12)
NAI	X	X	X	X		X	Individual students (7-12)
PSEO		X				X	Individual H.S. juniors and seniors
Project GRAD	X	X	X	X		X	K-12 students by school
Puente	X	X	X	X	X		H.S. students by class
Posse	X	X		X	X	X	Individual H.S. students
Upward Bound	X	X	X	X	X		Secondary students by class
21st Century Scholars	X	X	X	X	X	X	Individual students (8-12)

Note: Adapted from Gándara and Bial (2001).

Note: A Better Chance (ABC), Advancement Via Individual Determination (AVID), College Reach-Out Program (CROP), I Have A Dream (IHAD), Neighborhood Academic Initiative (NAI), Post-secondary Enrollment Options (PSEO), Project Graduation Really Achieves Dreams (Project GRAD).

2. Summary of evaluation components, previously reviewed programs

Program	Randomly assigned control groups	Matched comparison groups or controlled explanatory factors	Convenience sample comparison groups	Longitudinal data	Disaggregated outcomes or independent net effects[a]	Quality and strength of evidence
ABC		X	X			Limited
AVID			X	X	X	Suggestive
College Bound			X	X		Suggestive
College Pathways			X			Limited
CROP		X				Suggestive
IHAD			X	X		Suggestive
NAI			X			Limited
PSEO						Limited
Project GRAD		X		X		Limited
Puente		X		X		Suggestive
Posse						Limited
Upward Bound	X			X	X	Promising
21st Century Scholars		X		X	X	Promising

Note: A Better Chance (ABC), Advancement Via Individual Determination (AVID), College Reach-Out Program (CROP), I Have A Dream (IHAD), Neighborhood Academic Initiative (NAI), Post-secondary Enrollment Options (PSEO), Project Graduation Really Achieves Dreams (Project GRAD).

[a] *Disaggregating the outcomes for different groups of students helps reveal for which group(s) the program is most effective. Calculating independent net effects provides an estimate of the relative contribution that each independent explanatory variable has on college enrollment net of the other explanatory variables.*

3. Summary of program features, additional programs with evaluation data

Program	Counseling	Academic enrichment	Parental involvement	Personal and social enrichment	Mentoring	Scholarships	Target audience
College Now		X		X		X	Ind. H.S. students
EAOP[a]	X	X	X	X			Ind. students (6-12) and 6-12 students by school
Gateway to Higher Ed		X		X			Ind. H.S. students
Helping Teens Succeed		X					Ind. H.S. students
Quantum Opportunities	X	X		X	X		Ind. H.S. students
Sponsor-A-Scholar		X		X	X	X	Ind. H.S. students
Talent Search		X		X			Ind. students (5-12)

[a] *Early Academic Outreach Program*

4. Summary of evaluation components, additional programs with evaluation data

Program	Randomly assigned control groups	Matched comparison groups or controlled explanatory factors	Convenience sample comparison groups	Longitudinal data	Disaggregated outcomes or independent net effects[a]	Quality and strength of evidence
College Now		X			X	Limited
EAOP[b]			X			Limited
Gateway to Higher Ed		X		X		Promising
Helping Teens Succeed		X		X		Suggestive
Quantum Opportunities	X			X	X	Strong
Sponsor-A-Scholar		X		X	X	Promising
Talent Search		X				Promising

[a]   *Disaggregating the outcomes for different groups of students helps reveal for which group(s) the program is most effective. Calculating independent net effects provides an estimate of the relative contribution that each independent explanatory variable has on college enrollment net of the other explanatory variables.*

[b]   *Early Academic Outreach Program*

"The answer for all of our national problems, the answer for all the problems of the world, comes down, when you really analyze it, to one single word – education."

President Lyndon B. Johnson

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