Low SES Students GEAR UP for College:
Evaluating Adolescent Intervention Programs Academically and Socially

Rachael Walsh
The Pennsylvania State University
AERA 2010, Division G Social Context of Education
Section 4: Social Context of Educational Policy, Politics, and Praxis
May 3, 2010
Abstract: This research evaluates the social context of adolescent intervention programs through a critical lens to determine the impact on youth postsecondary decisions with respect to both educational attainment and deviant behavior, further examining the role of education from a social and political perspective. The Education Longitudinal Study 2002/06 is employed. Propensity score matching is used to make causal inferences with respect to program participation and the impact of some associated ecological aspects. Policy recommendations for programmatic enhancement and future research are discussed based on the implications of the findings.
Purpose

Education has assumed an encompassing role as the solution to all ills plaguing society (Baker & LeTendre, 2005). Over several decades federal education policy has sought to rectify the racial and economic barriers to educational attainment through adolescent intervention programs implemented under the Higher Education Act of 1965. The purpose of this paper is to address the following objectives:

1. assess school-based adolescent intervention programs within social contexts;
2. evaluate the populations benefiting from intervention services;
3. apply the aforementioned results to social and political contexts of education.

Essentially, this research aims to determine whether programs are alleviating the burdens of social class as a form of social and cultural differentiation using measures of educational deviance. Through adolescent intervention programs, the federal government is significantly increasing the role of education in social and political contexts in an environment that has socially constructed education to be one of few ways in which personal status growth is possible. With economic inequality in the U.S. exceeding that of any other developed country, federal intervention is necessary to achieve equitable access to higher education, making the assessment of programs focused on such a political priority (Wolff, 2006).

Theoretical Frame

Despite the relative acceptance of the findings of the Coleman Report (1966)—variation with respect to student outcomes is determined by within school variances and not between school variances—more recent research has found that between school variance explains 40% of
student achievement (Borman & Dowling, 2009; Gamoran & Long, 2006). Because postsecondary education is neither compulsory nor free, yet remains a key determinant in economic and social mobility, minimizing between school variance has the ability to reduce the gaps in postsecondary eligibility and access. Maximizing the impact of the between school variance can be achieved through addressing the characteristics identified as predictors of student success at the school level. Due to insufficient resources, between school variances may be attributable to any of the following: inadequate counseling and academic advisement, non-college preparatory trajectories, inability to meet admissions’ requirements, unqualified teachers, low aspirations and expectations, lack of peer support, de facto segregation, high drop-out rates, and a lack of parental and communal resources that produce adequate social and cultural resources (Gandara, 2001; Hayward, Brandes, Kirst, & Mazzeo, 1997; Vargas, 2004).

Because high school completion is no longer sufficient for a sustainable lifestyle in postindustrial society, college attendance is a necessary component to breaking the cyclic nature of poverty, as evident through attendance rates (Marshall & Tucker, 1992; Wortington & Juntunen, 1997). Only 6.9% of low SES students attend some form of postsecondary education—comparable to an 88% attendance rate of their higher SES counterparts—with only 22% completing their program of study (HEA, 2008; IES, 2007; Perna & Swail, 2002). In addition to lower high school completion and college matriculation rates, low SES students are overrepresented in forms of deviant behavior. Deviant behavior taking place in school results in suspension or expulsion, which is a pathway to idleness.

Juvenile delinquency and convictions, whether in school or the criminal justice system, result in the attaching of negative labels, contributing to lower aspirations, expectations, and attainment (DiLe, 1999; Hirschi, 1969). Zero tolerance policies with respect to violence and/or
drugs strip schools of their disciplinary authority forcing suspension or expulsion. When school is no longer an option, youth are left with employment as a high school dropout, or idleness, which is defined as a lack of employment, educational enrollment, military service, or primary caregiver responsibilities (Bowen & Finegan, 1969; Finegan, 1982; Jencks, 1989; Mare, Winship, & Kubitschek, 1984; Tienda & Stier, 1991; Welch, 1990). Interim forms of idleness—that is less than six months—have minimal detrimental results; however, exceeding the six month threshold negatively impacts future success with respect to educational attainment, SES employment status, and marital status, resulting in low self-esteem and higher levels of stress and anxiety (Finegan, 1982; Powers, 1994; Taggart, 1982).

Accounting for 40% of variance in student outcomes, the school then becomes a determinant in future success and a pathway to enhance youth educational outcomes through increased high school graduation and college matriculation rates, as well as decreased suspension and expulsion rates that serve as pathways to idleness and the possibility of future criminal behavior (Maguin & Loeber, 1996; Sampson & Laub, 1993). To accomplish these goals, between school differences need to be addressed. Currently, school SES, race/ethnic composition, urbanicity, and mean achievement have been identified as predictors of youth outcomes with considerable variance.

While the school funding debate is beyond the scope of this research, the complexity of the relationship between funding and achievement (Hanushek & Lindseth, 2009) does not negate the contextual effect of school SES that is beyond that of individual and familial SES (Becker & Epstein, 1982; Lightfoot, 1978; Lleras, 2008; Willms, 1992). The funding hierarchical structure provides tax dollars on a district-level basis, meaning familial and community SES impacts the funding available to schools. The most successful schools in the U.S. are found in predominately

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1 For more information refer to [http://www.abanet.org/crimjust/juvjus/zerotolreport.html](http://www.abanet.org/crimjust/juvjus/zerotolreport.html).
white, upper-middle class, suburban areas, interconnecting SES, race/ethnicity, and urbanicity at
the school level (Wilkins, 2000). White flight to the suburbs has created de facto segregation
equivalent to the de jure segregation seen prior to the Civil Rights movement (Coleman, 1987;
Delgado-Gaitan, 1991; Farkas, 2004; Frankenberry & Lee, 2003; Hao & Bonstead-Bruns, 1998;
Jenks & Phillips, 1998). The growth of the middle class and desirability of suburbia has resulted
in an even greater concentration of poverty in urban schools and neighborhoods with an
overrepresentation of minorities (Bankston & Caldas, 1996; Farley & Frey, 1994; Lleras, 2008;
Reardon & Yun, 2001; Roscigno, 1998).

Several attempts have been made to rectify the inequity at the school-level, one of which
was the Higher Education Act of 1965 (HEA). In the wake of the War on Poverty and the Civil
Rights movement, the gaps between low and high SES families were brought to the forefront of
social policy. HEA implemented programs aiming to minimizing these gaps by increasing
access to and eligibility for postsecondary matriculation. Adolescent intervention programs
provide low SES youth with information they would have otherwise possessed had their parents
attended some form of higher education. While the majority of these programs take place at the
individual level—the most notable programs being Upward Bound and Talent Search—
additional programs have been implemented at the school level. HEA provides funding for the
spillover program Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR
UP).

Spillover programs target the lower achieving students in schools where the majority of
the students qualify for free/reduced lunch. In targeting lower achieving students, GEAR UP
seeks to enhance the educational environment of the school by implementing early intervention
services, professional development, pre-service teacher education programs, parent programs,
and last dollar scholarships\(^2\) (PA State, 2004). The Department of Education reports GEAR UP as a success given the high school graduation rates of participants—low SES, first generation college attendees—in 2006 was 84.4% with 52.2% enrolling in postsecondary institutions (HEA, 2008). The U.S. population graduation rates in 2006 were 74.4%, with the national postsecondary enrollment rates of 18 to 24-year-olds in degree-granting institutions was 38.9\(^3\) (IES, 2007).

Effective adolescent intervention programs increase aspirations and expectations, understanding and use of the collegiate support resources, applications for financial aid, parental involvement, core and advanced course taking in high school, ACT scores, and international baccalaureate program participation, high school graduation, and college attendance rates, maximizing the academic and socio-cultural strengths for all race-sex groups (Domina, 2009; Garms, 1971; McElroy & Armesto, 1998; McLure & Child, 1998; Murnane & Levy, 1998; Zulli, Frierson, & Clayton, 2003). These programs can also reduce the number of remedial math credits in both high school and postsecondary institutions (Gullatt & Jan, 2003). However, experimental or quasi-experimental designs have rendered different, mixed results, including a 50% attrition rate due to the mobility of low SES students, low program intensity, minimal summer participation and parental interactions, minimal or no effect on high school curriculum and/or college plans, and inconsistency with respect to academic achievement, aspirations, and expectations (ACT, 2007; Domina, 2009; Westat, Inc. 2003). When positive results are reported, the effect is more a result of the spillover—at the school level—than individualistic—participating students only (Domina, 2009).

\(^2\) For an example of the specific program attributes under each of the five categories, refer to the Pennsylvania State GEAR UP website: [http://www.pagearup.org/aboutus.html](http://www.pagearup.org/aboutus.html)

\(^3\) The Department of Education statistics fail to specify the qualification for postsecondary enrollment as a “degree-granting institution”.

While these results may be discouraging and reflect programmatic inconsistency and in some cases failure, the only measured outcomes were educationally based. Physical, cognitive, and social development taking place during the age-graded transition of adolescences provide the social institution of schooling to be a salient influence over individual behaviors (Sampson & Laub, 1992). Crime and delinquency rates peak during this stage of development, and many low SES youth rely on social institutions like the school to provide them with the tools necessary to effectively integrate social circles in this stage (Fordham & Ogbu, 1986; Sampson & Laub, 1992). While deviance based programs like Scared Straight have been found to actually cause harm (Petrosino, Turpin-Petrosino, & Buehler, 2003), educationally based programs can promote a sense of belonging and attachment, decreasing welfare dependency, delinquency, and criminal behavior, while simultaneously improving the overall school atmosphere, increasing the students’ commitment to education, educational attainment and lifetime earnings (Currie, 2001; Gottfredson, 1986; Maguin & Loeber, 1996).

The aims of this research are to evaluate educationally based adolescent programs from the educational perspective while including outcome measures of educational deviance using a quasi-experimental design. Additionally, this research will contribute to the current body of knowledge by clarifying the type of adolescent intervention program at the school level as either a true spillover program or a school-wide program. Examining the characteristics of the schools offering these programs will enable this research to determine whether these particular intervention programs are actually aiding the population with the greatest need or merely widening the gap even further by only being offered in schools with the resources to provide them. The social and political context of programmatic efficiency and effectiveness can also be addressed in this research as outlined through a discussion of the methods used.

4 Refer to Figure 1 in Appendix A for the theoretical framework used in this analysis.
Methods

The complexities of human ecologies require an equally multifaceted analysis to measure the effects of the social context in which adolescent intervention programs are implemented. As such, this paper utilizes propensity score matching to infer causality with respect to program effectiveness, and then gain a better understanding of the relationship between the differing demographic facets of human ecology and successful transitioning decisions. The quasi-experimental design of propensity score matching creates a control group and a treatment group based on school characteristics (Domina, 2009). Nearest neighbor matching with replacement is used, allowing each case in the treatment group to be matched to the closest control case in a one-to-one match. The ATT is then computed through the average difference between the treated and untreated outcomes.

Using nearest neighbor matching enables the application of Rosenbaum Bounds to test the robustness of the models (Rosenbaum, 2002). Rosenbaum bounds indicate the sensitivity of the model to possible bias attributed to unobserved confounding variables (DiPrete & Gangl, 2004). As per design, these bounds can only be used in one-to-one matches, thus restricting the application to the nearest neighbor matching algorithm. For this research, the assigned scale ranges from 1 to 2 and the higher the value the better the model, with the desired minimum being 1.5. As an additional measure of robustness, and because nearest neighbor matching forces matches regardless of the difference in scores, radius matching is also used to further support the findings (Becker & Ichino, 2002).

Separate assessments of overall school outcomes—one for spillover programs and one for school-wide programs—provides statistical information at the school level enabling this research to further explore the depth of the spillover effect of adolescent intervention programs.

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5 The radius was restricted to the STATA default of 0.1.
One analytic technique for programmatic assessments is the quasi-experimental design of propensity modeling. In choosing data for a propensity model, the timing of data collection must be taken into consideration. The matching variables must be collected prior to the treatment, and the outcome variables after the treatment. Additionally, the dataset must have a sufficient sample size to provide both a treatment and a control group. Given these stipulations, the Education Longitudinal Study (ELS) 2002 is an applicable dataset in that it is nationally representative, has more than 15,000 respondents, is longitudinal, and provides the necessary matching variables.

Data Source & Variables

ELS data collection began in 2002 through the National Center for Education Statistics. This multi-level, longitudinal study follows a group of students beginning during their sophomore year of high school\(^6\) with a biannual follow-up. The Research Triangle Institute, a not-for-profit, university based research organization, surveyed the students and their parents, as well as school administrators, teachers, and librarians. Two-tiered sampling was done with 750, nationally representative schools being randomly chosen then the tenth grade sample taken from those schools. All available sample members were retained for the 2004 and 2006 follow-ups, with freshening taking place as needed\(^7\). With more than 15,000 students in all three waves, this dataset applicably covers the transition into adulthood, though the second follow-up wave of data are not yet available for public use. As such, the restricted data was used, providing access to the social and educational variables necessary to address the aims of this research.

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\(^6\) Though it varies by state, the youngest age at which a student can legally dropout of the public education system is 16-years of age, or approximately their sophomore year of high school.

\(^7\) Asian and non-public schools were purposefully over-sampled.
The baseline data collected in 2002 was used in the matching algorithms. ELS constructed a composite variable to provide researchers with a uniform measure of School SES, which was used for these analyses. At the school level, SES is determined by the percent of students receiving free/reduced lunch, and therefore, is easily misinterpreted. To rectify this situation, the sample was broken into inverse quintiles so that SES Quintiles is intuitively interpretable. The interaction between SES, race/ethnicity, and urbanicity is incorporated in the matching stage of the analysis through the inclusion of measures of Race/Ethnic Composition—the percent of the student body that is non-white—and Urbanicity. Given the racial disparity and the rising immigrant population, the schools percent of limited English proficient students, or LEP, is also included in the analysis (Bankston & Caldas, 1996; Carbonaro, 2005; Entwisle & Alexander, 1992; Lleras, 2008; Roscigno, 1998).

Impoverished schools in areas with perceptibly higher levels of crime face difficulties when attempting to adequately staff their schools. As such, this research additionally matched students with respect to the Student-Teacher-Ratio, as well as the percent of Out-of-Field Teachers, Certified Teachers, and access to College Prep courses. To ensure high quality matches, not only did the region of common support bind the sample, but Wald tests were also done with each matching variable for the matched samples. In order to satisfying the balancing property, an interaction term was necessary between Certified Teachers and College Prep, under the assumption that they are codependent. The inclusion of the interaction satisfied the balancing property and eliminated the significance of the Wald test that was present for those

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8 Urbanicity is coded numerically for Urban, Suburban, and Rural. Because the mean value has no statistical importance, urbanicity is not displayed in the table but is included in the analyses.
9 Restricting the sample to the region of common support ensures only those students with the propensity to receive the treatment are included.
10 The balancing property is satisfied when matched observations have the same distribution of observable characteristics independent of treatment status (Khandker, Koolwal, & Samad, 2010).
variables. The descriptive statistics are displayed in Tables 1 and 2 and the sampling distributions are depicted in Figures 2 and 3, for the spillover and school-wide programs, respectively, whose classifications are best explained through a discussion of the applied treatment variable.

The treatment was taken from the first follow-up wave of data collected in the expected senior year of high school in 2004. To specify program participation between spillover and school-wide programs, a survey question was asked of administrators whether or not students participated in intervention programs aimed at increasing college matriculation or easing the transition into the workforce. A response of “yes, some students do this” was used to classify a spillover program (N = 350 schools with 7,550 students), while a response of “yes, all students do this” (emphasis added) was used to classify a school-wide program (N = 90 schools with 2,150 students). The outcomes were then tested separately for spillover program participation and school-wide program participation to assess program effectiveness.

Because this research is interested in the school level as opposed to the individual level at which the data was collected, individual data will be aggregated for the outcome variables of interest. The aggregate data then reports the proportion of the students in each school responding positively to each dichotomous outcome variable with the means displayed in Table 3. As previously discussed, the goal of many adolescent intervention programs is not the successful transition into adulthood, but also the successful transition to any postsecondary institution. As such, College Attendance (N = 10,530) is a dichotomously coded outcome variable. This analysis takes it one step further and additionally dichotomously codes attendance at Two-Year (N = 4,000), Four-Year (N = 6,490), Public (N = 7,760), and Private (N = 2,730).

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11 In accordance with NCES restricted-use data policy, all sample size values were rounded to the nearest 10.
12 This was done using the *egen* command in STATA.
institutions. Under normal circumstances, eligibility for postsecondary education is conditional upon *High School Completion* (N = 14,630), which is also measured as an outcome variable.

Because pathways to deviance often begin with minor indiscretions and are either deterred early in life (as with intervention programs) or escalate into more serious offending, measures of *Deviance* are included as outcome variables (Sampson & Laub, 1993; Tanner, Davies, & O’Grady, 1999). *Deviance* was formed using factor analysis with respect to administrator provided information on how often deviant behaviors (i.e. fighting, drugs, alcohol, etc.) were a problem on school grounds (α=0.995, eigen value = 14.10). An additional outcome variable was added to the school-level analysis, *Tardiness*, which was formed using factor analysis from administrator responses to questions regarding how often students skip school, are late, or have unexcused absences (α=0.820, eigen value = 2.254). Because no enrollment status is one of the definitive components of idle behavior, dropping out—whether self-selected or the result of suspension/expulsion—in order to not be classified as idle the respondent must then enter the workforce, military, or be the primary caregiver of a child (Finegan, 1982; Powers, 1994; Taggart, 1982). As such, the enumeration of *Idleness* is not mutually exclusive from that of *Deviance*. Additionally, the enumeration of *Idleness* poses another difficulty given the current economic situation in the U.S.

Most states provided a maximum unemployment compensation allotment for 26 weeks. The *Emergency Unemployment Compensation Extension Act* of 2008 and its extension passed in February 2009, provide an additional 20 weeks of federal compensation. As such, in times of economic strife the federal government is willing to allot individuals 46 weeks to find gainful employment, which can extended to 59 weeks in the 27 states experiencing unemployment rates in excess of 6%. Though the second follow-up wave of data was collected in 2006, to prevent
the misidentification of respondents as idle when the economy is to blame and not the individual, an individual will be dichotomously coded as idle if they are unemployed for a period exceeding 15 months, during which time they are not otherwise engaged (N = 1,540).

Results

The ATT and Rosenbaum bounds for spillover program effectiveness are displayed in Table 4. Participation in a spillover program increases high school graduation and college matriculation rates, specifically at four-year, public, and private institutions. The negative relationship reflected in the two-year ATT values may be the result of more students attending four-year institutions, but this analysis did not aim to confirm those results. Additionally, program participation had an overall negative impact on deviant behaviors, especially in the form of idleness and tardiness. Each of these outcomes were statistically significant in at least one of the algorithms and demonstrated a significant stability against unobservable bias, with only one of the models being below the desired 1.5 threshold (public college attendance at 1.4).

Spillover programs are performing as hypothesized by enhancing the social context of the educational environment. Referring back to Table 1, the populations these programs are assisting are in lower SES, higher racial/ethnic minorities with limited English proficiency. Schools offering spillover programs do have a higher percentage of certified teachers, more of whom are able to teach in their specified fields. Because the propensity models were able to find schools with comparable quality teachers, it is safe to say that the positive outcomes are a result of program participation and not having a higher caliber teacher in each classroom. The propensity models also account for the likelihood that these schools may be able to offer intervention programs because they are more adequately staffed. However, based on the
descriptive statistics, while these programs are being implemented in schools with populations characteristic of requiring interventions, the enhanced teaching staff needs to be explored further.

Referring now to the first column in Table 6, several matching variables significantly determine the schools propensity to offer spillover programs. As seen with the descriptive statistics, the relationship between the propensities to offer an intervention program is negatively associated with school SES, limited English proficiency, and the number of out-of-field teachers. The percentage of racial/ethnic minorities, student-teacher ratios, levels of perceived crime, and the number of certified teachers have a significant positive relationship with respect to the propensity to offer spillover programs. While the sample size was smaller for school-wide intervention programs, the results are similar.

Table 5 displays the ATT and Rosenbaum bounds for school-wide adolescent intervention programs. As seen with spillover programs, school-wide programs increase high school graduation and college matriculation rates, specifically at four-year, public, and private institutions, though private institution attendance can be easily confounded by unobserved variables. Additionally, school-wide programs experienced the benefits of decreasing deviant behaviors, specifically those of idleness and tardiness. The propensity models are more resistant to outside influence with respect to deviant outcomes than were the spillover models.

Again, as hypothesized, in the social context, school-wide programs enhance educational outcomes while decreasing deviant behavior at the school level. When referring to Table 2, the school-wide program participation descriptive statistics, schools offering intervention services are lower SES, have a higher percentage of racial/ethnic minorities, and perceptibly higher levels of crime, though only marginally so for each. On the other hand, these schools also have lower levels of limited English proficient students, substantially more students enrolled in college
preparatory curriculums, and more certified teachers practicing in their field. The availability of a higher quality staff provides students with access to information necessary to attend postsecondary education.

Referring to the second column in Table 6, the significance of the matching characteristics in determining propensity to offer a school-wide program is listed. As seen with spillover programs, SES is inversely associated with the propensity to offer a program, though to a much lesser extent. Urbanicity is a significant contributor, though it’s nominal coding makes the direction difficult to interpret. Offering a college preparatory curriculum with certified teachers teaching within their subject matter expertise increases the propensity to offer a program. These results will be summarized and further clarified through a discussion of the significance of this research.

Research Significance

Both spillover and school-wide programs are effectively enhancing educational outcome while decreasing deviant behavior at the school level. The use of propensity score matching provides certainty that these results are attributable to program participation and not some other social context. The social context in which these programs are being offered, however, do substantiate an argument that while these programs are for the most part helping those who require the most help in terms of limited familial resources, they are still being offered in schools whose staffing status is reflective of already enhanced educational environments.

One key difference between the populations being served by spillover versus school-wide programs is the percent of LEP students. While spillover programs are offered in schools with

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13 This significant difference seen in the percent of students taking college preparatory courses may actually be one of the intervention elements used by the administrator to classify the school as offering programmatic services.
significantly higher proportions of the student body being classified as LEP, the school-wide programs are not. In fact, school-wide programs are actually implemented in schools where there are lower percentages of LEP students. Given both programs are effectively enhancing the educational outcomes of youth while simultaneously decreasing school deviance, the social and political contexts of these findings render further discussion.

Socially speaking, these programs can be used to level the educational playing field and further enhance the educational environment through the production of increased stability, while decreasing the fear and anxiety that accompany perceptions of a dangerous environment (Pallas, 2006). Economic segregation impacts individuals, families, and communities altering school environments and contextual effects. The process of educating low SES students can be a sufficient means of enhancing human capabilities in a manner conducive to adaptation throughout life, alleviating the burdens of complex ecologies. As such, while education policy may not have the capacity to overcome disadvantages directly resulting from a lack of familial resources, the political context of education should focus on the impact such policies can make through the enhancement of human capabilities and enrichment of choices (Anderson & Larson, 2009).

The convergence of social spheres of influence in public education provide a context in which adolescent intervention services benefit youth during the transition to adulthood by both enhancing education and decreasing deviance. As this research demonstrates programmatic effectiveness, specifically in more adequately staffed low SES schools, one policy recommendation involves the implementation of adolescent intervention programs in the lowest SES quintile schools that are the most difficult to staff. To further enhance these programs, the
element of teacher training, as well as benefits to attract and retain higher quality teachers need to be incorporated in all intervention programs\textsuperscript{14}.

Intervention programs effectively enhancing the educational environment and simultaneously decreasing deviance can impact ecological factors. Decreasing the actual as well as perceived levels of crime in the school and surrounding neighborhood has the ability to substantially improve the school environment, decreasing levels of fear and anxiety which have been shown to reduce student achievement as well as well-being freedom (Anderson & Larson, 2009). Schools contribute to the ecologies of students, and as such have the ability to compensate for the otherwise restraining context in which low SES students are developing and making choices. As demonstrated in this research, the implementation of adolescent intervention programs—whether spillover or school-wide—can help to reduce both the college attendance gap and the deviance participation gap between low and high SES students. Minimizing the overrepresentation of low SES students with respect to deviant behavior, as well as minimizing the underrepresentation of these same students in the collegiate realm has the potential to break the cyclic nature of poverty, but only when educational policy is properly formed and implemented.

\textsuperscript{14} As teacher quality and retention are not the focus of this paper, refer to that body of research (i.e. Darling-Hammond; Haunshek, Kain, & O’Brien; Buckley & Schneider; etc.).
References


APPENDIX A: FIGURES

Figure 1. Propensity Score Model

Matching       Treatment       Possible Outcomes\textsuperscript{15}

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<thead>
<tr>
<th>School Level Characteristics</th>
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<tbody>
<tr>
<td>SES</td>
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<tr>
<td>Race/Ethnic Composition</td>
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<tr>
<td>Urbanicity</td>
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<tr>
<td>Perceived Crime</td>
</tr>
<tr>
<td>% LEP</td>
</tr>
<tr>
<td>Student/Teacher Ratio</td>
</tr>
<tr>
<td>% College Prep</td>
</tr>
<tr>
<td>% Certified Teachers</td>
</tr>
<tr>
<td>% Out-of-Field Teachers</td>
</tr>
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</table>

Adolescent Intervention Program Participation

Spillover (i.e. GEAR UP)

School-Wide

High School Completion

College Attendance

High School Drop-Out

Deviance

Idleness

\textsuperscript{15} This figure only includes the tested outcomes, noting there are several additional outcomes with respect to the transition to adulthood.
Figure 2. Sampling Distribution for Spillover Programs
Figure 3. Sampling Distribution for School-wide Programs
### APPENDIX B. TABLES

#### Table 1. Spillover Program Descriptive Statistics

<table>
<thead>
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<th>Variable</th>
<th>FULL SAMPLE</th>
<th>MATCHED SAMPLE</th>
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<tr>
<td></td>
<td>Participants</td>
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<td>SES quintiles</td>
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<td>School Race/Ethnic Comp.¹</td>
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<td>Perceived Crime</td>
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<td>School LEP²</td>
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<td>School College Prep</td>
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<td>Certified Teachers</td>
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<td>Out-of-Field Teachers</td>
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<td>Student-Teacher Ratio</td>
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<td>7,550</td>
<td>6,210</td>
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</table>

¹School Race/Ethnic Comp. is the percentage of non-white students.
²School LEP is reported as the percentage of 10th graders who are LEP or non-English proficient.

#### Table 2. School-Wide Program Descriptive Statistics

<table>
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<th>MATCHED SAMPLE</th>
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<td>Non-Participants</td>
</tr>
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<td>SES quintiles</td>
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<td>School Race/Ethnic Comp.¹</td>
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<td>11,610</td>
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</tbody>
</table>

¹School Race/Ethnic Comp. is the percentage of non-white students.
²School LEP is reported as the percentage of 10th graders who are LEP or non-English proficient.

#### Table 3. Mean Distribution for School-level outcome variables by program participation.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full Sample</th>
<th>Spillover</th>
<th>School-wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Graduation</td>
<td>0.903</td>
<td>0.893</td>
<td>0.928</td>
</tr>
<tr>
<td>College Attendance</td>
<td>0.599</td>
<td>0.610</td>
<td>0.695</td>
</tr>
<tr>
<td>Two-Year</td>
<td>0.227</td>
<td>0.251</td>
<td>0.224</td>
</tr>
<tr>
<td>Four-Year</td>
<td>0.369</td>
<td>0.357</td>
<td>0.467</td>
</tr>
<tr>
<td>Public</td>
<td>0.441</td>
<td>0.470</td>
<td>0.498</td>
</tr>
<tr>
<td>Private</td>
<td>0.155</td>
<td>0.137</td>
<td>0.193</td>
</tr>
<tr>
<td>Deviance</td>
<td>NC</td>
<td>3.449</td>
<td>3.584</td>
</tr>
<tr>
<td>Idleness</td>
<td>0.087</td>
<td>0.022</td>
<td>0.019</td>
</tr>
<tr>
<td>Tardiness</td>
<td>NC</td>
<td>1.047</td>
<td>0.932</td>
</tr>
</tbody>
</table>

NC indicates not comparable at individual level.
### Table 4. ATT and Rosenbaum Bound Outcomes for Spillover Programs.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Nearest Neighbor</th>
<th>Radius</th>
<th>Rosenbaum Bounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Graduation</td>
<td>0.895</td>
<td>0.895**</td>
<td>1.5</td>
</tr>
<tr>
<td>College Attendance</td>
<td>0.614</td>
<td>0.614**</td>
<td>1.5</td>
</tr>
<tr>
<td>Two-Year</td>
<td>-0.257*</td>
<td>-0.257**</td>
<td>1.5</td>
</tr>
<tr>
<td>Four-Year</td>
<td>0.353*</td>
<td>0.353**</td>
<td>1.5</td>
</tr>
<tr>
<td>Public</td>
<td>0.473</td>
<td>0.473**</td>
<td>1.4</td>
</tr>
<tr>
<td>Private</td>
<td>0.138*</td>
<td>0.138**</td>
<td>1.6</td>
</tr>
<tr>
<td>Deviance</td>
<td>-3.443</td>
<td>-3.443**</td>
<td>1.5</td>
</tr>
<tr>
<td>Idleness</td>
<td>-0.024</td>
<td>-0.024**</td>
<td>1.5</td>
</tr>
<tr>
<td>Tardiness</td>
<td>-0.986*</td>
<td>-0.986**</td>
<td>1.5</td>
</tr>
</tbody>
</table>

N treated: 5,030

*p-value < 0.05, **p-value < 0.01, ***p-value < 0.001

### Table 5. ATT and Rosenbaum Bound Outcomes for School-Wide Programs.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Nearest Neighbor</th>
<th>Radius</th>
<th>Rosenbaum Bounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Graduation</td>
<td>0.934*</td>
<td>0.934***</td>
<td>1.5</td>
</tr>
<tr>
<td>College Attendance</td>
<td>0.695*</td>
<td>0.695***</td>
<td>1.5</td>
</tr>
<tr>
<td>Two-Year</td>
<td>-0.237*</td>
<td>-0.237***</td>
<td>1.4</td>
</tr>
<tr>
<td>Four-Year</td>
<td>0.453</td>
<td>0.453***</td>
<td>1.9</td>
</tr>
<tr>
<td>Public</td>
<td>0.511*</td>
<td>0.511***</td>
<td>1.7</td>
</tr>
<tr>
<td>Private</td>
<td>0.179</td>
<td>0.179***</td>
<td>1.2</td>
</tr>
<tr>
<td>Deviance</td>
<td>-3.539</td>
<td>-3.539***</td>
<td>1.8</td>
</tr>
<tr>
<td>Idleness</td>
<td>-0.024</td>
<td>-0.024***</td>
<td>1.6</td>
</tr>
<tr>
<td>Tardiness</td>
<td>-0.893</td>
<td>-0.893***</td>
<td>1.9</td>
</tr>
</tbody>
</table>

N treated: 1,420

*p-value < 0.05, **p-value < 0.01, ***p-value < 0.001

### Table 6. Propensity Score Model Logistic Regression Coefficients.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Spillover</th>
<th>School-Wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES Quintiles</td>
<td>-0.736***</td>
<td>-0.091***</td>
</tr>
<tr>
<td>School Urbanicity</td>
<td>0.051</td>
<td>-0.285***</td>
</tr>
<tr>
<td>School Race/Ethnic Comp.</td>
<td>0.005***</td>
<td>0.001</td>
</tr>
<tr>
<td>Perceived Crime</td>
<td>0.106**</td>
<td>0.211</td>
</tr>
<tr>
<td>School LEP</td>
<td>-0.016**</td>
<td>-0.001</td>
</tr>
<tr>
<td>School College Prep</td>
<td>-0.005</td>
<td>0.012***</td>
</tr>
<tr>
<td>Certified Teachers</td>
<td>0.008***</td>
<td>0.014***</td>
</tr>
<tr>
<td>Out-of-Field Teachers</td>
<td>-0.004**</td>
<td>-0.009***</td>
</tr>
<tr>
<td>Student-Teacher Ratio</td>
<td>0.039***</td>
<td>-0.006</td>
</tr>
<tr>
<td>CollPrep*Certified Teachers</td>
<td>0.000***</td>
<td>0.000</td>
</tr>
</tbody>
</table>

N: 9,580, 9,610

*p-value < 0.05, **p-value < 0.01, ***p-value < 0.001

1School Race/Ethnic Comp. is the percentage of non-white students.

2School LEP is reported as the percentage of 10th graders who are LEP or non-English proficient.