

# Academic and School Behavioral Variables as Predictors of High School Graduation Among At-Risk Adolescents Enrolled in a Youth-Based Mentoring Program

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**Abstract:** Using official school data, this study examined a sample of 447 at-risk students enrolled over a 10-year period in a youth-based mentoring program. The primary objective of the program was to ensure high school graduation. Participants were identified by indices of academic and school behaviors that rendered them less likely to graduate from high school. This study used logistic regression to examine the extent to which academic (i.e., GPA, grade retention, and math and reading proficiency scores) and behavioral (i.e., expulsions) variables, as well as age at entry of program, and duration in the program predicted high school graduation. Results indicated that GPA and participants' age at time of enrollment in the program were significant predictors of graduating high school. Implications are drawn for designers of diversion, intervention, and mentoring programs.

## Introduction

Research has demonstrated that approximately one third of all students in the United States are labeled as at-risk for academic failure (Schargel & Smink, 2001). Many of such at-risk students tend to experience academic and behavioral problems such as dropping out of school, low proficiency scores, increased grade retention, and discipline problems in school (Hickman, Bartholomew, Mathwig, & Heinrich, 2008; Hickman & Garvey, 2006; Schargel & Smink, 2001). Furthermore, at-risk adolescents tend to experience family involvement indicative of divorce, poverty, teen pregnancy, drug abuse, violence, and/or stress (Schargel & Smink, 2001). Given such environmental experiences, at-risk adolescents tend to be less likely to graduate and/or leave school without the basic skills necessary to succeed in life and overcome basic life adjustments (Hickman & Garvey, 2006; Orfeld, Losen, Wald, & Swanson, 2004).

Presently, our society is teeming with universal intervention programs designed to inoculate a broad audience (Andrews & Hickman, 1998; Children's Defense Fund, 2002; Kemple & Herlihy, 2004; Smink & Schargel, 2004). Although beneficial for the general population of adolescents, such universal strategies may not be effective for adolescents targeted as academically and/or behaviorally at risk (Andrews & Hickman, 1998; Bailey & Stegelin, 2003). As a result, professionals in various arenas have employed targeted intervention programs designed and tailored to the specific needs of an identified audience (Schargel & Smink, 2001).

Today, mentoring is one of the most popular strategies commissioned among intervention, diversion, and prevention specialists (Schargel & Smink, 2001). Mentoring programs have surfaced in arenas such as primary and secondary schools, colleges, local community centers, churches, neighborhoods, and various peer networks. Indeed, it would be difficult for an individual to wander throughout life without being positively steered by a mentor (Cuomo, 1999). The basic premise of mentoring is that providing at-risk adolescents a mature adult role model who can purvey support, nurturance, and guidance outside the immediate or extended family will lower the probability of such adolescents from experiencing and engaging in problematic behaviors (Schargel & Smink, 2001).

Although it is often assumed that mentoring increases the likelihood of at-risk adolescents graduating from high school, very little research has inferentially examined those factors associated with improving program completion objectives as related to high school graduation (Hickman et al., 2008). The purpose of this study was to examine whether academic and behavioral variables, as well as participants' age at entry of program and duration in the program, predicted completing the mentoring program and graduating from high school between at-risk male and female adolescents. As set forth by the mentoring program and for purposes of this study, the singular objective of program completion was high school graduation as opposed to quitting the mentoring program because of earlier program termination and/or dropping out of high school.

## Research Questions

Several research questions were suggested. First, to what extent do behavioral factors (i.e., expulsions) increase the prediction of high school graduation among male and female adolescents enrolled in the mentoring program? Second, to what extent do academic factors (i.e., grade retention, grade point average, and proficiency tests) increase the prediction of high school graduation between male and female adolescents enrolled in the mentoring program? Finally, to what extent does duration in the mentoring program and participants' age at entry of program increase the prediction of high school graduation between male and female adolescents enrolled in the mentoring program?

## Mentoring and the Relationship to Academic and Behavioral Variables Dropout Rate

Educators agree that the idea of dropping out of school may be prominent as early as elementary school (Alexander, Entwisle, & Kabbani, 2001; Hickman & Heinrich, in press; Henderson & Mapp, 2002; Lehr, Sinclair, & Christenson, 2004). Indeed, a recent study by Hickman et al. (2008) found that the path of dropping out of school started as early as kindergarten as dropouts were significantly behind in all academic subjects compared to their peers who eventually graduated high school. Although dropout rates are decreasing both geographically and nationally, those students who continue to suffer academically may drop out as they feel alienated and rejected by their teachers and/or peers (Abbott et al., 2000; Bailey & Stegelin, 2003).

Through tutoring and modeling, mentoring programs have been commissioned to help at-risk adolescents acquire germane academic skills needed to enhance school performance. One such program entitled Linking Individual Students To Educational Needs (LISTEN) conducted a two-year pre- and postcomparative evaluation on educational and behavioral variables of at-risk middle school students (Lampley & Johnson, 2010). The results of this study found that mentoring had a positive effect through behavioral adjustments and academic progress of such at-risk middle school students compared to similar at-risk middle school students who did not participate in LISTEN. Moreover, not one participant in the LISTEN program dropped out of school (Lampley & Johnson, 2010).

## Grade Point Average

Research has consistently demonstrated that academic success is essential for academic achievement and school completion (Alexander et al., 2001; Christensen & Thurlow, 2004; Lehr et al., 2004). Anderson (2007) studied African American third through eighth grade children enrolled in the Helping Hands mentoring program. Program variables of interest included end-of-year grade point average, standardized tests score, special education status, and socioeconomic status. Results concluded that there was a positive effect of mentoring on this population for grade point average and standardized testing regardless of other variant factors such as special education and socioeconomic status (Anderson, 2007).

Other research on the relationship between mentoring and academic achievement has reported unfavorable findings. For example, in a study of a large mentoring program, 447 at-risk middle school and

high school students were matched with mentors. After spending on average over 27 months interacting with their mentor, the student's grades actually decreased and behavior problems increased (Hickman & Garvey, 2006). Moreover, Hickman and Garvey (2006) found that other academic variables such as standardized testing, absenteeism, grade point average, grade overage, and graduation rates decreased after being enrolled in the mentoring program.

## Grade Retention

Research on the effects of grade retention has demonstrated a plethora of negative effects for students who have been retained (Allensworth, 2004; Hauser, Pager, & Simons, 2004; Jimmerson, Anderson, & Whipple, 2002; Roderick, Bryk, Jacob, Easton, & Allensworth, 1999). For example, Hickman et al. (2008) found that students that dropped out of high school were 15 times more likely to have been held back than students that graduated. Those students who graduated were held back between kindergarten and first grade whereas students that dropped out of school were held back between fifth grade and sixth grades. Moreover, not one student who was held back past the first grade graduated from high school (Hickman et al., 2008).

Jent & Niec (2009) evaluated the effectiveness of a cognitive behavioral group mentoring program for a sample of 86 8- to 12-year-old at-risk students. More specifically, the aim of this study was to demonstrate that group mentoring was an avenue for providing support for such students and effective at decreasing problematic behaviors and increasing problem solving and self-efficacy for students at risk for grade retention. Parents were asked to evaluate the variables of study for their children upon program completion. Results indicated that after completing the cognitive behavioral group mentoring program; parents reported that their children exhibited a reduction in disruptive behavioral problems and increased their self-efficacy and problem-solving skills (Jent & Niec, 2009).

Queen (1994) examined the impact that mentoring had on at-risk students. At-risk students were defined as students who demonstrated academic failure, grade retention, suspensions and expulsions from school, drug and alcohol use, and truancy. Of the 27 students recruited for the sample, 20 students admitted to using drugs and alcohol, 22 students evidenced low self-esteem, and 22 students experienced depression. After meeting with mentors in a group setting for 30 minutes at the beginning of each school day over a one-semester period, only 3 individuals still used drugs, 10 individuals still used alcohol, 5 individuals still evidenced low self-esteem, and 4 individuals still experienced depression. Finally, the academic performance and grade retention of all individuals improved (Queen, 1994).

Slicker and Palmer (1993) evaluated a school-based mentoring program for at-risk high school adolescents. Participants included 86 at-risk 10th grade students from a large suburban Texas school district. At-risk students were identified as students demonstrating the propensity to leave school before graduation, failure of two or more courses in their most recent semester, minimal reading and math achievement scores, and grade retention. Results of the study failed to yield statistically significant differences between the mentored at-risk group and the nonmentored control group across the variables of study (Slicker & Palmer, 1993).

## Proficiency Tests

Typically, educators focus on standardized tests of reading and math as accurate indicators of students' overall achievement level (National Center for Educational Statistics 2008; Orfeld et al., 2004). Such a procedure seems appropriate, as recent research suggested students who graduated from high school tended to have higher proficiency scores than those students who did not graduate from high school (Hickman & Garvey, 2006; Hickman et al., 2008). Moreover, not only did high school dropouts have lower standardized tests scores but the gap between classroom performance and standardized tests scores increased as students progressed from elementary school through high school (Hickman et al., 2008). Despite the predictive nature of proficiency tests on academic achievement and graduation rates, such a significant factor has remained absent from the curriculum and design of mentoring programs.

## School Behavioral Problems

Rendering Educational Assistance through Caring Hands (R.E.A.C.H) was developed as a peer support group mentoring program that met once a week and included additional one-on-one meetings with a mentor on a daily basis. Results found that teachers reported improvements in tardiness, class preparation, peer interactions, and grades among those students involved in the program. Moreover, those students involved in R.E.A.C.H. demonstrated less school behavior problems (Reglin, 1998).

For a six-month study conducted on the Brothers' project, 36 adolescents were randomly assigned to an experimental group (mentoring) and a control group (Reglin, 1998). Variables studied included self-esteem, attitude toward drug and/or alcohol use, GPA, attendance, and disciplinary problems. Comparative analyses demonstrated that mentoring had little, if any, effect on the adolescents' grades, attendance, suspensions, and expulsions (Reglin, 1998).

Given the mixed findings surrounding mentoring programs and the lack of empirical and longitudinal evaluative studies, a closer examination of mentoring appears to be warranted. More specifically, research that targets variables associated with program completion and high school graduation improvement is greatly needed. The ability to recognize factors associated with high school graduation may facilitate the adoption of such factors among program designers in an effort to improve program objectives. In doing so, this study aims to provide valuable information from which intervention, diversion, and mentoring agencies can adopt to increase the likelihood of at-risk adolescents graduating high school.

## Method Participants

Participants consisted of 447 males and females who participated in a large youth-based mentoring program and who were enrolled in the Cincinnati Public School system (CPS). Complete data were obtained from 174 males and 273 females. Their ages ranged from 10 to 18 years old. The ethnic breakdown included African Americans (79.4%), Caucasian (19.9%), and Asian (.7%). Gender of the participants included 38.9% female and 61.1% male. Grade levels of the participants were high school (72.9%), middle school (23.5%),

and elementary school (3.6%). Of the youth who participated in this study, 66.9% graduated from high school, and 33.1% either dropped out of high school and/or dropped out of the mentoring program. The mean duration of participation in the mentoring program was approximately 26 months. A demographic profile of the participants is presented in Table 1.

Table 1

*Demographic Characteristics of Participants*

Variable	n	Percent
Gender		
Male	273	61.1
Female	174	38.9
Ethnicity		
African American	355	79.4
Caucasian	89	19.9
Asian	3	.7
Grade Level Started Program		
High School	326	72.9
Middle School	105	23.5
Elementary School	16	3.6
Program Results		
Graduated High School	299	66.9
Dropped Out of School or the Program	148	33.1

## Procedures

Participants in this study were students enrolled, at any given time, in both the Cincinnati Public School (CPS) system and a large Cincinnati youth-based mentoring program over a 10-year period. The participants of this study were identified as at risk via teacher academic and behavioral reports. For purposes of this study, at risk was defined as those students who have demonstrated academic and/or school behavioral problems that render them less likely to graduate from high school.

In a collaborative effort, CPS provided the mentoring program official school records for participants in this study as they recorded data such as grade point average, grade retention, proficiency test scores, and expulsions over this 10-year period. Only those students who were matched with a volunteer mentor from the local community were tracked, recorded, and evaluated. All mentors were recruited, screened, and trained before the matching process was conducted. To ensure a positive match, both mentor and mentee interests were evaluated by mentoring program representatives. Once a prospective match was identified, an introductory interview was arranged for the mentor and mentee to decide if either party was interested in proceeding further. If both parties agreed, the mentor-mentee relationship began. Typically,

mentors met with their mentees approximately twice per month and engaged in a variety of activities. Further training (i.e., mentor feedback, communication skills, interaction skills) was offered to mentors on a quarterly basis. Participation in these training seminars was not mandatory.

All participants in this study were officially categorized as “inactive” according to the mentoring program. Participants were deemed “inactive” as they were no longer in the program as a result of graduating from high school, dropping out of high school, or voluntarily dropped out of the mentoring program. Once a person was deemed inactive, data were no longer collected from CPS by the mentoring program. Each variable was collected at different points and times over the 10-year period. For example, grade point average was collected on a quarterly basis, while grade retention, proficiency scores, and expulsions were collected on an annual basis.

## Measures

All variables were measured and obtained via official school records from the Cincinnati Public School system. Variables include the following: (a) grade point average, (b) proficiency test scores, (c) grade retention, (d) expulsions, (e) age entered the program, (f) duration in program, and (g) gender. Values were gathered via summation of all data points (e.g., academic quarters or academic years) after enrollment into the mentoring program. After the values were gathered and the data aggregated, mean values were established. Reasoning for this procedure was based on the various length of time the participants were enrolled in the program and because the data for the variables were collected at different times during the school year. As a result, the measures are presented as quarterly- or yearly-means based upon their perspective method of data collection.

### Grade Point Average (GPA)

GPA was measured as the student’s academic performance of class grades according to the official Cincinnati Public School grading system (0.0 – 4.0 scale). In order to determine overall GPA, official grade point averages were aggregated and divided by the total number of perspective quarters after program entry. For example, if a participant obtained a 3.85 and a 3.75 GPA during their tenure in the mentoring program, their quarterly GPA mean would be 3.80.

### Proficiency Test Scores

Math and reading proficiency tests were given to all students enrolled in the Cincinnati Public School System on a yearly basis. A Normal Curve Equivalent score of 50 reflected a current match of a student’s present grade level. Scores ranged from 1 – 99 with a mean of 50 and a standard deviation of 21. The Normal Curve Equivalents of Cincinnati Public Schools proficiency tests have demonstrated reliability and validity, as it is the required score for all federal and state projects evaluating data for educational projects and programs. For this study, participants’ math and reading proficiency scores were found to be highly reliable before and after program entry. For example, a Cronbach’s Alpha of .93 was found for participants’ reading proficiency scores before and after program entry. A Cronbach’s Alpha of .89 was found for participants’ math proficiency scores before and after program entry. To determine proficiency mean scores, the researcher aggregated the values and divided by the number

of corresponding yearly tests after program entry. For example, if a participant obtained math proficiency scores of 45 and 43, their yearly math proficiency mean would be 44.

### Grade Retention

Grade retention was measured by examining official school records of student’s advancement or lack of advancement to the next grade level. School records were recorded yearly as to what grade level the student was enrolled at every given year over the student’s academic tenure. For example, a student’s records may have appeared as such: ‘93 – 7th grade, ‘94 – 8th grade, ‘95 – 8th grade, ‘96 – 9th grade, ‘97 – 9th grade. Examining such records, the researcher was able to deduce that the student had a total of two years of grade retention as they repeated eighth grade and ninth grade. To determine yearly grade retention means, the researcher aggregated grade retentions and divided by the corresponding time spent in the mentoring program. For example, if a participant had been retained two grades and had been enrolled in the program for three years, their grade retention mean would be .66 grades per year.

### Expulsions

Expulsions were measured by examining official school records of total number of times a student was expelled. In order to determine yearly standardized times of expulsions, the researcher aggregated yearly expulsion times and divided by the number of years a student was enrolled after program entry. For example, if a participant was expelled four times in two years, their yearly times of expulsions mean would be two times per year.

### Demographics

Official school records provided duration of time spent in the mentoring program, the age at program entry, and gender of the participants enrolled in the mentoring program. Age of the participant at program entry was presented in years (e.g., 13 years of age), duration in the mentoring program was recorded in months (e.g., 15 months), and gender was recorded as 0 = female and 1 = male.

### Data Analysis

This study used binary logistic regression to predict the likelihood of whether at-risk male and female adolescents completed the mentoring program (i.e., graduated from high school) or did not complete the mentoring program (i.e., dropped out of school and/or quit the program). Logistic regression allowed the researcher to determine which independent variables were likely to increase or decrease the probability of program completion. An analysis of -2LL chi-square was used to examine the goodness-of-fit model of the independent variables (i.e., GPA, grade retention, math proficiency scores, reading proficiency scores, expulsions, age, and duration of time in the program) and the dependent variable (i.e., program completion status). Finally, an analysis of proportional reduction in error was conducted to examine the fit of the logistic regression model.

## Results

The research questions for this study examined to what extent the variables age of program entry, duration in program, gender, GPA, math and reading proficiency scores, and expulsions after program entry predicted whether at-risk male and female adolescents will complete

the mentoring program and graduate high school. Separate logistic regression models were examined for both male and female participants. The means and standard deviations of the independent variables (i.e., grade point average, age entered program, duration, proficiency scores, grade retention, and expulsions) and dependent variables (i.e., high school graduation) are presented in Table 2. In addition, a correlation matrix of the predictor variables is presented in Table 3.

The aforementioned variables accounted for the logistic regression equation and were entered simultaneously as predictors of completing the program and graduating from high school for at-risk male and female adolescents. For males, the variables that predicted high school graduation were age, when student started program, grade retention, and GPA. More specifically, holding all other independent variables constant, for a one-unit increase (SD = 1.52) in participants' age when started the program, the odds of completing the mentoring program and graduating high school are increased by approximately 55%. In addition, holding all other independent variables constant, for a one-unit increase (SD = .84) in GPA, the odds of completing the mentoring program and graduating high school were increased by approximately 348%. Finally, holding all other independent variables constant, for a one-unit increase (SD = .26) in grade retention, the odds of completing the mentoring program and graduating high school are decreased by approximately 99%. Overall, the model chi-square was found to be significant ( $X^2 = 101.71, df = 7, p < .001$ ). Moreover, Nagelkerke pseudo R<sup>2</sup> indicated a high goodness of fit as the model accounted for 59% of the variance. See Table 4 for summary of the logistic regression equation variables.

Table 2

Means and Standard Deviations of Variables

Variable	Mean	SD
<b>Males</b>		
Age Started Program	15.53	1.52
GPA	1.800	.84
Grade Retention	.196	.26
Math Proficiency	42.71	20.77
Reading Proficiency	43.43	18.90
Duration in Program	26.35	14.61
Total Expulsions	.15	.23
<b>Females</b>		
Age Started Program	15.56	1.60
GPA	2.122	.83
Grade Retention	.110	.21
Math Proficiency	45.76	16.48
Reading Proficiency	47.20	15.78
Duration in Program	25.93	14.62
Total Expulsions	.08	.17

Table 3

Correlation Matrix of Variables

	Age	GPA	Grade Retention	Math Proficiency	Reading Proficiency	Duration	Expulsions
<b>Males</b>							
Age	1.000						
GPA	-.078	1.000					
Grade Retention	-.078	.267	1.000				
Math Proficiency	.184	-.271	-.005	1.000			
Reading Proficiency	.020	.061	.271	-.634	1.000		
Duration	.408	-.078	-.021	.129	.012	1.000	
Expulsions	-.083	.152	.211	-.062	.134	.111	1.000
<b>Females</b>							
Age	1.000						
GPA	.068	1.000					
Grade Retention	-.052	.374	1.000				
Math Proficiency	.173	-.034	.074	1.000			
Reading Proficiency	.012	.143	.120	-.456	1.000		
Duration	.393	-.042	-.014	-.038	.083	1.000	
Expulsions	-.128	.107	.005	.013	.077	-.022	1.000

Table 4

Logistic Regression: Predicting Program Completion

Variables	Coefficient	Statistic	p	Exp(B) <sup>1</sup>
<b>Males</b>				
Grade Retention	-4.963	14.682	.000	.007
Grade Point Average	1.498	12.158	.000	4.477
Age Started Program	.436	6.127	.013	1.547
Total Expulsions	1.055	1.065	.302	.348
Math Proficiency	-.006	.170	.679	.993
Duration in Program	.003	.044	.832	1.003
Reading Proficiency	-.001	.004	.946	.998
<b>Females</b>				
Grade Point Average	2.066	28.878	.000	7.899
Age Started Program	.526	13.034	.000	1.693
Math Proficiency	.029	2.596	.107	1.029
Reading Proficiency	.018	1.337	.247	1.018
Grade Retention	-1.118	1.326	.249	.326
Total Expulsions	-.784	.552	.457	.456
Duration in Program	.006	.253	.614	1.006

<sup>1</sup>Factor by which the odds of program completion increase or decrease for a one-unit increase in the independent variable.

Note. Female Model Chi-Square = 131.32; df = 7; p < .001; Male Model Chi-Square = 101.71, df = 7, p < .001.

For females, the variables that predicted completing the program and graduating from high school were age when student started program and GPA. More specifically, holding all other independent variables constant, for a one-unit increase (SD = 1.60) in age started program; the odds of completing the mentoring program and graduating high school are increased by approximately 69%. In addition, holding all other independent variables constant, for a one-unit increase (SD = .83) in GPA, the odds of completing the program and graduating high school are increased by approximately 790%. Overall, the model chi-square was found to be significant ( $X^2 = 131.32$ ,  $df = 7$ ,  $p < .001$ ). Moreover, Nagelkerke pseudo  $R^2$  indicated a high goodness of fit as the model accounted for 56% of the variance. See Table 4 for summary of the logistic regression equation variables.

A 2 x 2 classification table examined the baseline prediction of completing the program and graduating from high school and the prediction of completing the program and graduating high school after the logistic regression equation model was entered. The baseline model for males predicted a correct classification of approximately 44%. After the logistic regression equation was examined, the model

predicted a correct classification of approximately 81%. Hence, the logistic regression equation increased the correct classification of completing the program and graduating high school by 37%. Finally, a proportional reduction in error statistic was examined to further support the classification table. More specifically, there were approximately 55% fewer errors when predicting high school graduation using the logistic regression model compared to predicting high school graduation without the logistic regression model. See Table 5 for complete summary.

In a 2 x 2 classification table for females, the baseline model predicted a correct classification of approximately 74%. After the logistic regression equation was examined, the model predicted a correct classification of approximately 84%. Hence, the logistic regression equation increased the correct classification of completing the program and graduating high school by 10%. Finally, a proportional reduction in error statistic was examined to further support the classification table. More specifically, there were approximately 39% fewer errors when predicting high school graduation using the logistic regression model compared to predicting high school graduation without the logistic regression model. See Table 5 for complete summary.

Table 5

Classification Table: Predicting Program Completion

Observed	No Completion	Completion	Percent Correct
<b>Males</b>			
No Completion	58	18	76.32%
Completion	16	82	83.67%
Overall % Correct 80.46%			
<b>Females</b>			
No Completion	40	32	55.56%
Completion	12	189	94.03%
Overall % Correct 88.88%			

## Discussion

This research disconfirmed and confirmed antecedents theoretically related to academic outcomes. For example, proficiency tests, school expulsions, and duration in the program were not related to completing the program and graduating high school. However, there were several significant outcomes within this study. For both males and females, the age started the program was significant in predicting

high school graduation. Namely, the younger the age of entry into the mentoring program, the less likely male and female adolescents were to complete the program and graduate from high school. Such findings supports a litany of research that suggests the younger a child is labeled as at risk, the more likely they will experience a life-persistence course of problematic behaviors (Hickman, et al., 2008; Moffit, 1993; Sampson & Laub, 1993).

The students' GPA after they began the mentoring program was also significant in predicting high school graduation. Regardless of gender, the higher the students' GPA, the greater the students' chances were of completing the mentoring program and graduating from high school. Research has supported findings that those children who are attached to school tend to have higher GPAs and graduate high school. Conversely, those children who are not attached to school tend to have lower GPAs and drop out of high school (Anderman, 2003; Bailey & Stegelin, 2003; Sampson & Laub, 1993).

One differential predictor of completing the mentoring program and graduating high school was grade retention. More specifically, grade retention was significant in predicting whether male students would complete the program and graduate from high school but was not significant in predicting whether female students would complete the program and graduate high school. Perhaps, grade retention as a predictor of high school graduation may be related to the differential reasons surrounding grade retention for male and female adolescents (Hickman et al., 2008). Research has demonstrated that for males, grade retention appears to be centered on school detachment and poor academics while grade retention for females appears to be centered on pregnancy. Indeed, those females who are pregnant may still be attached to school despite being held back a year as a result of the birth process (Kirby, 2002).

Several limitations were inherent in this study. For example, the data prior to the adolescents entering the mentoring program were not examined. The data used to determine the outcome of the study were collected from the starting point which was taken when the students entered the mentoring program. Knowledge of the students' behavior and academic history prior to program entry may have aided in targeting interventions suitable for the specific needs of each child. Along similar lines, academic and behavioral data of those adolescents who terminated the program were unavailable for analyses. The status of high school graduation is clear for those adolescents who graduated and dropped out of school. However, it may be possible that those adolescents who terminated the program actually completed their high school education. The current method of data collection employed by the mentoring program would be unable to render such conclusions.

The intrapersonal characteristics of each student were not examined. These students were not tested for learning disabilities, Conduct Disorder, Attention Deficit Hyperactivity Disorder, and/or any other psychological characteristics that may have influenced the developmental process. Such predisposing and maintaining factors may have influenced at-risk behaviors and detachment from school (Moffit, 1993). Moreover, adolescents who have been diagnosed with such disorders typically need more comprehensive treatment(s) as opposed to just mentoring. Differential diagnoses regarding an "at-risk" population should be considered by program designers to determine

if an individual can benefit from a program like mentoring.

Demographic data regarding the adolescents' families were not available for this study. Family background information such as socioeconomic status, family structure, family size, parental drug use/abuse, and/or stress may have influenced the students' academic achievement and behavior (Heckman & Kruger, 2003; Education Policy Studies Laboratory, 2004; Orfield, 2004; Western Interstate Commission for Higher Education, 2003). Research has demonstrated that the aforementioned factors are significant predictors of attachment to academic and social endeavors (Heckman & Kruger, 2003; Orfield, 2004; Sampson & Laub, 1993). Future research may look to examine comparative analyses of family background variables to the aforementioned variables of this study.

Mentor and mentee interactions during the program were not explored. Since behavior tends to be embedded in social interactions (Patterson, 1982), having knowledge of mentor/mentee interactions may have been helpful in determining which adolescents received more positive attention than others and which techniques used by the mentors may have been more helpful in directing the adolescents toward graduation.

## Implications and Conclusions

Despite such inherent limitations, this study offered several germane findings and implications for program designers. First, this study used official school data. Using official school data increased the validity of this study, as the information obtained was more valid and less prone to error. Furthermore, using official school records prevents the possibility of biased teacher and/or parental reports of adolescent behaviors.

Second, these data were collected over a 10-year period. Not only was one specific cohort of at-risk youth who participated in the mentoring program examined, but several cohorts who participated in the program and the effect that it had over time were also examined. Because data were collected over a lengthy time period and the outcomes were similar for many adolescents with many different mentors, it appears that this study demonstrated good external validity.

Third, by using logistic regression, the independent variables that had the most effect on predicting those who completed the program and graduated high school were determined. Mentoring is being used to increase the likelihood of positive future outcomes for at-risk youth (Schargel & Smink, 2001). Determining which at-risk youth would benefit from such programs will increase the likelihood of programmatic success (Andrews & Hickman, 1998).

This study indicated which variables might need to be more addressed in future program designs. Effective mentoring programs should target an appropriate audience. By focusing efforts on variables associated with program completion (whatever that particular goal may be), program designers can better concentrate on improving program outcomes and goals while simultaneously impacting youth in a positive manner.

Mentoring programs are not a panacea. By examining demographic data and predisposing and maintaining characteristics that may influence adolescents' academic achievement and behavior, it may be possible to determine which type of adolescent may or may not benefit by these types of programs. Students who have multiple

problems appearing at an earlier age may need more intensive and comprehensive programs than mentoring alone can provide. Determining these factors ahead of time may afford adolescents more opportunities to seek the appropriate help they need and prevent the practice of placing adolescents in treatment programs that may not benefit them.

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