SCHOOL PERFORMANCE AND EARLY CHILDBEARING: IDENTIFYING GIRLS AT RISK OF TEENAGE PARENTHOOD

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Author:
Robert G. Wood

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A Research Report from the School Dropout
Demonstration Assistance Program Evaluation

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EXECUTIVE SUMMARY

The extremely poor outcomes of very young mothers and their children make teenage parenthood a particular concern for education policymakers. Women who give birth as teenagers do worse in school, earn less, and are more likely to become long-term welfare recipients than other women. Moreover, their children have lower cognitive skills than the children of older mothers and are more likely to drop out of school.

A crucial first step in combating adolescent pregnancy and parenthood is the ability to identify, at an early age, girls at risk of becoming teenage mothers. This report focuses on whether school performance and other school-related measures for teenage girls can predict whether they will go on to become teenage parents. Previous research has established a link between the risk of teenage parenthood and school performance among older teenagers. This study examines this relationship among younger teenage girls (those in middle school and early high school). Since early intervention is important for reducing rates of teenage parenthood, identifying risk factors for younger girls will be particularly useful for targeting school-based pregnancy prevention services. The results of this study indicate that, among younger teenage girls, frequent absenteeism is by far the most important school-related measure for predicting who will become a teenage parent.

DATA USED FOR THE ANALYSIS

Data from the evaluation of the School Dropout Demonstration Assistance Program (SDDAP) provide an opportunity to examine the relationship between school performance in middle school and early high school and the risk of later becoming a teenage parent. The analysis uses academic performance measures (including rates of absenteeism, grades, and standardized test scores) gathered from school records. It also draws on detailed survey data covering educational aspirations, school attitudes, and school discipline problems. The study examines data for two groups: (1) a set of 500 girls who were in the sixth, seventh, or eighth grade at the beginning of the three-year follow-up period (the middle school sample); and (2) a set of 700 girls who were in the ninth grade at the beginning of the follow-up period (the high school sample).

MAIN FINDINGS

Frequent absenteeism is the most important school-related factor in predicting who becomes a teenage parent. After adjusting for a detailed set of background characteristics, one school-related factor--frequent absenteeism--emerges as the most important for predicting which girls go on to become teenage mothers. Among middle school girls, those who were frequently absent from school are three times as likely (22 percent, versus 7 percent) to have a child during the next three years as are girls who had relatively few absences but who otherwise had similar characteristics (see Figure 1). The difference in rates of teenage parenthood between good and poor attenders in the high school sample are smaller (24 percent, versus 16 percent) but are nonetheless large and statistically significant.

FIGURE 1

THE RELATIONSHIP BETWEEN ABSENTEEISM AND THE RISK
OF BECOMING A TEENAGE PARENT

Middle School Sample

High School Sample
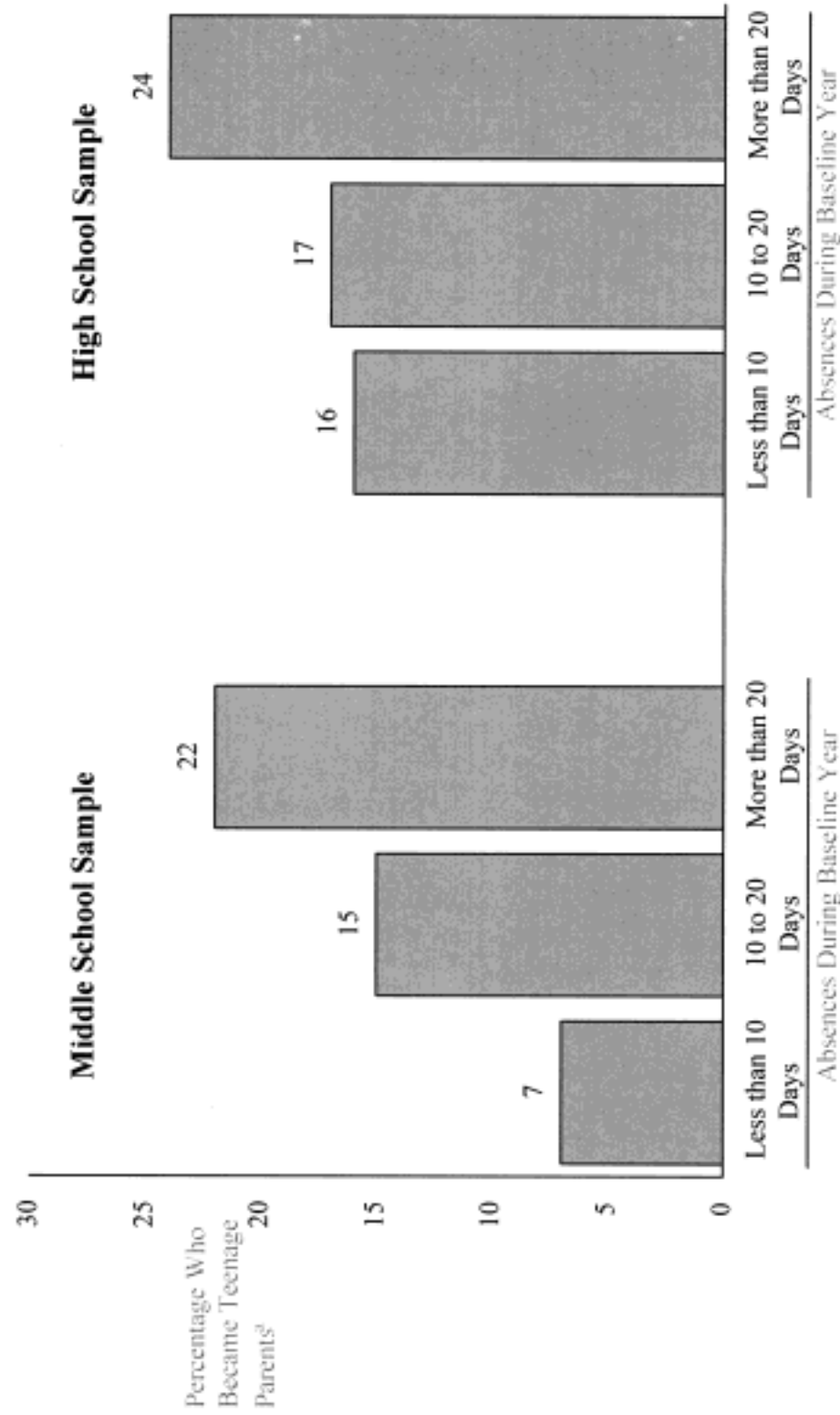
NOTE: The percentages have been adjusted for differences between the attendance groups in school performance, demographics, and family background measures.

[a] By the end of the three-year follow-up period

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Why is frequent absenteeism as a young teenager so strongly associated with going on to become a teenage parent? One possible explanation is that teenagers who miss school frequently and, thus, spend a great deal of time in unstructured and unsupervised settings have more opportunities to engage in sexual activity. Alternatively, no causal relationship may exist between absenteeism and teenage parenthood. The strong association between absenteeism and teenage parenthood may arise because teenagers who miss school frequently have characteristics (such as rebelliousness, a desire to take risks, or a disregard of future consequences of their actions) that make them more likely both to become teenage parents and to miss school frequently. The results of this study do not indicate which of these two possibilities is correct. However, the fact that the strong association between absenteeism and teenage parenthood persists even after controlling for many school and background measures makes a causal relationship between absenteeism and teenage parenthood more plausible.

Supervision, both at home and at school, appears to be crucial in reducing the risk of early parenthood among younger teenage girls. Other results from the study indicate that having a low level of parental supervision and not living with both parents place younger teenage girls (those ages 13, 14, or 15) at substantially higher risk of becoming teenage mothers. Since frequent absenteeism and not living with both parents are both indicators of a lower level of supervision, these results indicate that the relationship between supervision and teenage parenthood is extremely powerful. A middle school girl who misses school infrequently, lives with both parents, and receives a high level of supervision, but who otherwise has average characteristics, has a one-in-a-hundred chance of becoming a teenage parent over the next three years. In contrast, a middle school girl who has frequent school absences, does not live with both parents, and receives a low level of parental supervision, but who otherwise has average characteristics, has more than a one-in-four chance of becoming a teenage parent. In other words, the unsupervised teenager is 25 times more likely than the supervised one to become a teenage mother.

The relationship between supervision and teenage parenthood is substantially weaker among older teenage girls (those ages 16 or 17). Study results indicate that, among this group, living with both parents and receiving a high level of parental supervision do not reduce the risk of teenage parenthood. Moreover, absenteeism is not as strongly associated with teenage parenthood among older teenage girls as it is among younger ones. Perhaps as teenagers become older and more independent, the level of supervision received at school and at home becomes less important in determining who becomes a teenage parent, and other factors (such as attitudes toward sex and marriage and aspirations for the future) become the most important determinants of teenage parenthood.

Pregnancy prevention programs should target teenagers who are frequently absent from school. What are the policy implications of these results? They clearly indicate that pregnancy prevention programs should target teenagers--particularly middle school girls--who miss school frequently, since this group is at particularly high risk of teenage parenthood. Further research would be needed to investigate whether a causal relationship exists between absenteeism and teenage parenthood. If this relationship does prove to be a causal one, however, then focusing on truancy reduction, particularly among younger teenage girls, would be a useful strategy for reducing adolescent pregnancy. Moreover, initiatives that promote the supervision of younger teenagers outside of regular school hours (such as after-school programs) may be an effective tool for policymakers in their efforts to reduce the rate of teenage parenthood.

I. INTRODUCTION

Teenage parenthood has become a focus of policymakers in recent years because of increases in adolescent childbearing, particularly childbearing outside of marriage. The birthrate among teenagers ages 15 to 19 increased substantially during the late 1980s and early 1990s. Nonmarital teenage birthrates increased even more sharply over this period. Although teenage birthrates have declined somewhat since 1991, nonmarital teenage birthrates have held steady at historically high levels.[1]

Early childbearing is of particular concern because of the extremely poor outcomes of very young mothers and their children. Women who give birth as teenagers have lower educational attainment, lower earnings, and higher likelihood of becoming long-term welfare recipients than other women (Maynard 1997). Recent research suggests that the poorer outcomes of teenage mothers are attributable primarily to background differences between women who give birth as teenagers and women who do not. These poorer outcomes do not represent only the effect of teenage parenthood on educational attainment or earnings (Geronimous and Korenman 1992; Ribar 1994; and Hotz et al. 1997). Even when researchers adjust for these background differences, however, they find significant negative effects of early childbearing on the educational attainment of young women (Ribar 1996; Klepinger et al. 1995; and Bronars and Grogger 1994). Moreover, children born to teenage mothers have poorer outcomes than those born to older mothers, even when researchers adjust for background differences between early and later childbearers. Children of teenage mothers score much worse on standardized reading and math tests and are much more likely to drop out of

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[1]The birthrate among teenagers ages 15 to 19 increased from 50 live births per 1000 women in 1986 to 62 per 1,000 in 1991; it then fell to 57 births per 1,000 in 1995. Nonmarital teenage birthrates increased from 32 births per 1,000 unmarried women ages 15 to 19 in 1986 to 45 births per 1,000 in 1991; the nonmarital teenage birthrate in 1995 remained 45 births per 1,000 (National Center for Health Statistics 1997).

school than children born to similar women who postponed childbearing (Moore et al. 1997; and Haveman et al. 1997). Because of the negative effects of early childbearing on the educational outcomes of teenage mothers and their children, reducing teenage parenthood rates is an important goal for educators and education policymakers.

A crucial first step in combating adolescent pregnancy and parenthood is the ability to identify, at an early age, girls at risk of becoming teenage mothers. This report focuses on whether school performance and other school-related measures for teenage girls can predict whether they will go on to become teenage parents. Evidence of such a relationship could help policymakers and program administrators target resources for pregnancy prevention efforts. Previous research has established a link between the risk of teenage parenthood and school performance (Abrahamse et al. 1988; Luster and Small 1994; Ohannessian and Crockett 1993; and Zill et al. 1995). However, these previous studies often have relied on cross-sectional (rather than longitudinal) data and on self-reported school performance measures. Moreover, most of these studies have been limited to examining the relationship between teenage parenthood (or factors contributing to teenage parenthood, such as early sexual activity) and self-reported grades. A study that examines the link between teenage parenthood and performance measured by school records would be particularly useful for targeting school-based pregnancy prevention services, because this information is readily available to schools.

Data from the evaluation of the School Dropout Demonstration Assistance Program (SDDAP) provide a unique opportunity to examine the relationship between school performance in middle school and early high school and the risk of later becoming a teenage parent. The analysis presented here uses academic performance measures (including rates of absenteeism, grades, and standardized test scores) gathered from school records rather than from self-reports. It also draws on detailed

survey data covering educational aspirations, school attitudes, and school discipline problems. The study uses longitudinal data, which allow for the analysis of the relationship between school performance as a young teenager and the risk of becoming a teenage parent during the next three to four years.

The strength of the SDDAP data set over those used in previous studies is its detailed school performance measures, rather than its information on teenage pregnancy and sexual activity. Unlike data sets used in some previous studies, the SDDAP data do not provide information on sexual activity, contraceptive use, pregnancy, or abortion. Therefore, it is not possible to use these data to conduct a detailed analysis of the relationship between school performance and each of the stages leading to becoming a teenage parent: (1) being sexually active, (2) using birth control ineffectively or not at all, and (3) choosing to take a teenage pregnancy to term. In interpreting the results from this study, therefore, one must keep in mind that any factor that increases the risk of becoming a teenage parent may do so by increasing the risk of any or all of these stages leading to teenage parenthood.

Analysis of the SDDAP data reveals that girls with poorer academic performance, lower educational aspirations, and more discipline problems in middle school and early high school are substantially more likely than other girls to become teenage parents. However, after adjusting for a detailed set of background characteristics, one school-related factor--frequent absenteeism-- emerges as the most important for predicting which girls go on to become teenage mothers. Among middle school girls, those who were frequently absent from school (20 or more days during an academic year) were three times as likely to have a child during the next three years as were girls who had relatively few absences (less than 10 days during the year) but who otherwise had similar characteristics. The difference in rates of teenage parenthood among older teenage girls is smaller

but is nonetheless large and statistically significant. Furthermore, based on an analysis of data for a subsample of boys from the SDDAP evaluation, large differences in teenage parenthood rates exist between teenage boys with frequent absences and similar boys with relatively few absences. These findings suggest that pregnancy prevention programs should target teenagers who frequently miss school, since this group is clearly at high risk of teenage parenthood.

II. PREVIOUS RESEARCH

Several previous studies have established a link between school performance and other school-related measures and teenage parenthood. For example, Ohannessian and Crockett (1993) analyzed survey data from teenagers in rural Pennsylvania and found that students who reported higher grades were less sexually active. Similarly, Luster and Small (1994) analyzed survey data from teenagers from several rural Midwestern counties and found that, among sexually active teenagers, those who reported higher grades also reported using birth control more regularly.

Devaney and Hubley (1981) analyzed survey data for a nationally representative sample of 15- to 19-year-old females and found that young women with higher educational aspirations were less sexually active as teenagers, more likely to use contraceptives regularly if they were sexually active, and less likely to experience a teenage pregnancy or birth. Similarly, Plotnick (1992) analyzed data for young women from the National Longitudinal Survey of Youth and found that those with higher educational aspirations and more positive attitudes toward school were less likely to experience a teenage pregnancy. Plotnick also found that, among teenagers who experienced a pregnancy, those with higher educational aspirations were more likely to have an abortion or to marry prior to the birth.

Zill et al. (1995) analyzed data from the National Education Longitudinal Survey (NELS) and found that teenagers with low grades in the eighth grade were substantially more likely than those

with better grades to become teenage parents over the next four years. This association remained even after adjustments were made for differences in family background and socioeconomic status, and it held true for both males and females. Zill and his colleagues did not examine the relationship between other school performance measures (such as attendance and test scores) and the risk of becoming a teenage parent.

Abrahamse et al. (1988) used data from the High School and Beyond longitudinal survey to examine the factors that most strongly predict a teenage girl's likelihood of going on to become a teenage parent. They found that girls who had low academic ability (as measured through standardized test scores), had low educational aspirations, and reported frequent absences were more likely to become teenage parents.[2] They estimate that girls who are frequently absent from school in the fall of 10th grade are 1.4 percentage points more likely (or about 50 percent more likely) to experience a teenage birth during the next two years than are similar girls who are not frequently absent.

Building on the study of Abrahamse et al., the analysis presented here relates academic performance (including attendance and test scores) and other background characteristics to the risk of becoming a teenage parent. However, this study differs from that of Abrahamse et al. in several important ways. First, it examines the relationship between school performance and teenage parenthood among a younger population of teenage girls. The girls in the sample were in middle school or 9th grade at the beginning of the follow-up period; the girls in the Abrahamse et al. study were in 10th grade. School-related risk factors for teenage parenthood may be different for younger teenage girls. Moreover, if early intervention is important for reducing rates of teenage parenthood,

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[2]They defined "frequent" absenteeism as missing three or more days of school during the first semester of 10th grade for a reason other than illness.

identifying teenage parent risk factors for younger girls should be particularly useful for policymakers and program operators.[3]

Second, this analysis relies on attendance and grade information from school records, whereas Abrahamse et al. rely on self-reports. School records data are likely to be more accurate than self-reported data and, therefore, improve the ability to measure the relationship between school performance and early parenthood accurately.[4] Furthermore, records (but not self-reports) will be available to school-based programs as they decide which teenagers to serve.

Finally, this study examines a highly at-risk sample for whom teenage parenthood is relatively common, whereas Abrahamse et al. examine a nationally representative sample for whom teenage parenthood is relatively uncommon. These results may not be completely generalizable to the population of all teenage girls; however, identifying teenage parent risk factors specific to urban, low-income girls may be particularly useful for policymakers and program administrators interested in designing programs to serve this high-risk population.

III. METHODOLOGY

A. DATA AND SAMPLE

The data for this study were gathered as part of the SDDAP evaluation funded by the U.S. Department of Education (ED).[5] The SDDAP evaluation examined the effectiveness of 21 dropout

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[3]In addition, the SDDAP data provide a longer follow-up period than the Abrahamse et al. study (three years, as opposed to two years). This longer follow-up period improves the ability to identify teenage parent risk factors for younger teenage girls.

[4]An analysis of records and survey data collected as part of the SDDAP evaluation revealed that students are fairly accurate in reporting their grades but considerably less accurate in reporting their attendance (Gleason and Dynarski 1994).

[5]As part of the evaluation, longitudinal data covering a three- to four-year period (a baseline year and two or three follow-up years) were collected from school records and surveys. This period

(continued...)

prevention programs and school restructuring initiatives throughout the country. These programs were selected for the evaluation from among a set of programs receiving federal dropout prevention funds.[6] They were not selected to be statistically representative of any group of programs or students. Instead, the programs were drawn from a set of low-income, urban school districts and include students from a range of large and medium-sized cities from all parts of the country.[7] Many of these programs targeted students who were viewed by their schools as at risk of dropping out. Therefore, the SDDAP sample represents a particularly disadvantaged set of students in terms of academic performance and socioeconomic status.

This study examines data for two subgroups of the full SDDAP evaluation sample. The first subgroup is a set of 498 girls who (1) were in the sixth, seventh, or eighth grade during the baseline academic year (when school performance was measured), (2) were not parents at the end of the baseline academic year, and (3) were age 16 or older at the time of the last follow-up survey (when teenage parent status was measured).[8] This group is referred to as "the middle school sample." Average age on January 15 of the baseline year for the middle school sample was 13.2; their average age at the last follow-up survey was 16.6.

The second subgroup is a set of 688 girls who (1) were in the ninth grade during the baseline academic year, (2) were not parents at the end of the baseline academic year, and (3) whose last

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[5](...continued)
covers the academic years 1990-1991 through 1993-1994.

[6] None of these programs included pregnancy prevention as part of their program model.

[7]See Dynarski et al. (1997) for more information about the SDDAP evaluation and how the programs were selected.

[8]Two girls were eliminated from the middle school sample because they reported already being parents at the time of the baseline survey.

follow-up survey was conducted more than two years after the end of the baseline academic year.[9] This group is referred to as "the high school sample." Average age on January 15 of the baseline academic year for this sample was 14.9. Average age at the last follow-up survey was 18.1.

The girls in these two samples are disadvantaged and have performed poorly in school (Table 1). Fewer than half of both samples live in two-parent households, whereas more than three-quarters of eighth graders nationally reside with both parents. In addition, 41 and 36 percent, respectively, of the two samples have mothers who are high school dropouts, compared with only 17 percent for all eighth graders nationally.[10] Sample members also have below-average levels of academic achievement. During the baseline academic year, the average standardized reading and math test scores were in the 28th percentile for the middle school sample and the 38th percentile for the high school sample, compared to a nationally representative sample of students in the same grade.

The majority of both samples are African American or Hispanic and come from large urban areas.[11] Almost 80 percent of the middle school sample is from five cities: Albuquerque, New Mexico; San Diego; Chicago; Dallas; and Newark, New Jersey. Almost 90 percent of the high school sample is from four cities: Grand Rapids, Michigan; Dallas; Santa Ana, California; and Las Vegas.

B. MODELS ESTIMATED

The analysis begins with simple comparisons of rates of teenage parenthood by baseline academic performance and other baseline school measures. From this preliminary analysis, frequent

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[9]Twenty-eight girls were eliminated from the high school sample because they reported already being parents at the time of the baseline survey.

[10]National figures for all eighth graders are based on NELS data from 1988.

[11]The large percentage of Hispanic students reflects ED's emphasis in the SDDAP evaluation on funding and studying programs serving a large number of Hispanic students, since this population has particularly high dropout rates.

TABLE 1

CHARACTERISTICS OF THE MIDDLE SCHOOL AND HIGH SCHOOL SAMPLES

	Middle School Sample	High School Sample
Was a Parent at Last Follow-Up Survey (Percentage)	13	20
School Performance During Baseline Academic Year		
Number of days absent	13	16
Standardized test scores in reading and math (percentile)	28	38
English and math grades (100-point scale)	76	75
Age		
On January 15 of baseline academic year	13.1	14.9
At last follow-up survey	16.6	18.1
Ethnicity (Percentage)		
African American	28	30
Hispanic	49	37
White	13	29
Other	10	4
Family Background (Percentage)		
Primarily speaks language other than English at home	11	16
Family receives public assistance	27	15
Lives with both parents	40	44
Mother's Education (Percentage)		
Less than high school	41	36
High school only	33	29
Some college	26	35
Sample Size	**498**	**688**

SOURCE: School performance measures from school records. Parenthood data from follow-up surveys. Other data from baseline survey.

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absenteeism emerges as a particularly important risk factor for becoming a teenage parent. This result may arise, however, because frequent absenteeism is correlated with other background characteristics that are themselves risk factors for teenage parenthood and not because absenteeism itself increases the risk of early parenthood.

To test for the possibility that other underlying factors drive the relationship between absenteeism and teenage parenthood, a series of logit models are estimated, relating the school measures and other background characteristics to the risk of becoming a teenage parent. In the simplest specification, only the absenteeism measures are included as predictors of teenage parenthood. In the second specification, the other performance measures are added to the model, including grades and test scores. In the third specification, measures of educational expectations, school behavior, and attitudes, are added as predictors. Finally, demographic and other background controls are added to the model. If the strong relationship between absenteeism and teenage parenthood persists after adjusting for the full set of observed background differences between good and poor school attenders, this result would provide support for the conclusion that frequent absences cause a young teenager to be at higher risk of early parenthood.[12]

C. DEFINITIONS OF VARIABLES

1. Outcome Measures

The key outcome measure examined in this study is whether the sample member becomes a teenage parent by the end of the follow-up period. This information comes from follow-up surveys conducted about three years after the baseline period. Three other dependent variables, which represent other poor outcomes for teenagers, are also analyzed as part of this study. These additional

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[12]Of course, in this case, it would still be possible that unmeasured differences between good and poor school attenders (in attitudes or other characteristics) were driving the relationship between absenteeism and teenage parenthood.

outcome measures were also gathered from follow-up surveys conducted about three years after the baseline period. These additional outcomes include (1) whether the sample member was a school dropout, (2) whether the sample member reported having been arrested in the past year, and (3) whether the sample member reported using illegal drugs in the past month.

2. School Measures

School Performance. The study uses three measures of school performance as potential predictors of teenage parenthood: (1) level of absenteeism, (2) scores on standardized tests, and (3) grades in English and math classes. All performance measures were gathered from school records and measure performance during the baseline academic year (before anyone in the sample was a parent).[13] The level of absenteeism is included in the logit models as two indicator variables that represent whether sample members missed 10 to 19 days or 20 or more days during the baseline year.[14] Scores on standardized reading and math tests were combined, and these combined scores were compared to a nationally representative sample of students of the same grade level. Three indicator variables are included in the logit models that represent whether these scores were (1) below the 10th percentile nationally, (2) in the 10th to the 33rd percentile nationally, or (3) missing.[15] Finally, two indicator variables are included that measure grades during the baseline year in English and math classes. These variables indicate whether a sample member (1) failed either English or math, or (2) received a grade of "D" in one of these courses but passed them both.

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[13]The baseline academic year was sixth, seventh, or eighth grade for the middle school sample and ninth grade for the high school sample.

[14]The means and standard deviations of all explanatory variables used in the logit models are reported in Appendix Table A.1.

[15]The missing indicator is included because a substantial fraction of sample members were missing standardized test scores (13 and 20 percent of the middle and high school samples, respectively).

Other School Measures. The other school variables included in the logit models measure baseline educational aspirations, school discipline problems, and attitudes toward school. This information was gathered from a baseline survey administered several months after the end of the baseline academic year. Educational aspiration measures indicate whether the student agreed with these statements: (1) "I am very sure I will finish high school," and (2) "I expect to complete four years of college." The school discipline measures represent whether, during the past year (1) the student was sent to the school office for behavior problems three or more times, and (2) whether the school contacted the student's parents because of a behavior problem. The two school attitude measures included in the logit models indicate whether the sample members' attitudes toward school at baseline fall in the most negative third or middle third relative to other students in the SDDAP evaluation.[16]

3. Other Background Measures

Several other demographic and background measures are used as control variables in the logit models. These include sample members' age, ethnicity, and mothers' level of education. These measures also include whether sample members primarily speak a language other than English, whether their family receives public assistance, whether they live with both parents, the degree of parental supervision they receive, and their level of self-esteem.[17]

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[16]A school attitude index was constructed by averaging student responses (measured on a four-point "strongly disagree to strongly agree" scale) to the following statements about their school: "I got a lot of encouragement from my teachers," "My school offered the kinds of classes and programs that I wanted," "My classes made me think," "Most of my classes were interesting," "I learned a lot at that school," "People cared about me at that school," "I was proud to go to that school," and "Most students and teachers were trying to make that a good school." The values for these indexes were then placed into lower, middle, and upper thirds relative to the full SDDAP sample.

[17]The self-esteem measure is based on baseline survey responses to statements such as: "I feel good about myself," "I certainly feel useless at times," "I am able to do things as well as most other

The parental supervision measure is constructed by averaging responses to eight baseline survey questions that indicate how often sample members' parents did things like: limit the amount of television they watched, check whether they did their homework, and pay attention to where they went and who they were with.[18] These averages are then placed into lower, middle, and upper thirds relative to the full SDDAP evaluation sample. Two indicator variables are included in the logit models that indicate whether the level of parental supervision described by sample members placed them in the lower or middle third of the full sample.

IV. RESULTS

A. SIMPLE COMPARISONS

For those in the middle school sample, among the school performance measures examined, frequent absenteeism is the most strongly associated with teenage parenthood (Table 2). Among girls in the middle school sample, those who missed 20 or more days during the baseline academic year were four times more likely to become teenage parents during the follow-up period than were girls who missed fewer than ten days (24 percent, versus 6 percent). In contrast, differences in rates of teenage parenthood between higher and lower academic achievers based on grades and standardized test scores were relatively small and statistically insignificant.

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[17](...continued)
people," and "I feel I do not have much to be proud of." These responses were combined into a self-esteem index and then placed in lower, middle, and upper thirds relative to other similarly aged students nationally. National comparisons for self-esteem measures are from NELS data.

[18]The full list of questions asks students (on a four-point, never-to-often scale) how often their parents: (1) "check on whether you have done your homework," (2) "make you do work or chores around the house," (3) "limit the amount of time you can watch TV or tell you which shows you can or can't watch," (4) "limit the amount of time for going out with friends on weekday nights," (5) "pay attention to where you go, what you do, and who you are with," (6) "talk with parents or your friends about parties or other activities that involve you and your friends," (7) "tell you specifically you shouldn't drink alcohol or use drugs," and (8) "take you with them to sports events, museums, concerts, or other events."

TABLE 2

RATES OF TEENAGE PARENTHOOD, BY BASELINE SCHOOL PERFORMANCE,
EDUCATIONAL ASPIRATIONS, SCHOOL BEHAVIOR, AND ATTITUDES
(Percentage)

	Middle School Sample		High School Sample	
	Teenage Parent at End of Follow-Up Period	Has Baseline Characteristic	Teenage Parent at End of Follow-Up Period	Has Baseline Characteristic
School Performance During Baseline Academic Year				
Number of Days Absent	***		***	
Less than 10	6	54	15	34
10 to 19	17	25	18	31
20 or more	24	21	26	35
Standardized Test Scores in Reading and Math			***	
Above 33rd percentile	11	40	15	58
10th to 33rd percentile	13	41	25	31
Below 10th percentile	17	19	33	12
English and Math Grades			**	
"C" or above in both	11	65	16	55
"D" in at least one, passed both	14	24	22	27
Failed at least one	16	11	26	19
Educational Aspirations During Baseline Academic Year				
"Very Sure" Will Finish High School	***		***	
Yes	9	62	17	72
No	19	38	26	28
Expects to Complete Four Years of College	*		***	
Yes	10	56	16	55
No	16	44	24	45
School Behavior During Baseline Academic Year				
Sent to the Office Three or More Times for Behavior	***			
Yes	24	15	24	11
No	10	85	19	89

TABLE 2 *(continued)*

	Middle School Sample		High School Sample	
	Teenage Parent at End of Follow-Up Period	Has Baseline Characteristic	Teenage Parent at End of Follow-Up Period	Has Baseline Characteristic
School Contacted Parents About Student's Behavior	**		***	
Yes	18	27	31	12
No	11	73	18	88
Attitudes Toward School During Baseline Academic Year[a]				
Upper Third	12	36	20	32
Middle Third	13	42	18	42
Lower Third	12	22	22	26
Sample Size	**498**		**688**	

SOURCE: Teenage parenthood information from student follow-up surveys. Baseline school performance measures from school records. Other school measures from student baseline surveys.

NOTE: The baseline academic year was sixth, seventh, or eighth grade for the middle school sample and ninth grade for the high school sample. Average age during the baseline academic year (when school performance, educational aspirations, school behavior, and attitudes were measured) was 13.2 for the middle school sample and 14.9 for the high school sample. Average age at the end of the follow-up period (when teenage parent status was measured) was 16.6 for the middle school sample and 18.1 for the high school sample.

[a] A school attitude composite measure was constructed using students' responses (measured on a "strongly disagree to strongly agree" scale) to eight statements about their school, such as: "I got a lot of encouragement from my teachers," "My classes made me think," and "I was proud to go to that school." The values for this composite measure were then placed into lower, middle, and upper thirds relative to the responses of the full SDDAP sample.

SDDAP = School Dropout Demonstration Assistance Program.

*Differences in rates of teenage parenthood across the baseline categories statistically significant at the .10 level.
**Differences in rates of teenage parenthood across the baseline categories statistically significant at the .05 level.
***Differences in rates of teenage parenthood across the baseline categories statistically significant at the .01 level.

For those in the high school sample, all three of the school performance measures were strongly associated with the risk of teenage parenthood (Table 2). Among this sample, poor attenders were almost twice as likely to become teenage parents as were those with relatively good attendance (26 percent, versus 15 percent). Those with very low standardized test scores were more than twice as likely to become teenage parents as those with higher test scores (33 percent, versus 15 percent). Moreover, those with failing grades were about 60 percent more likely to become teenage parents than were those with grades of "C" or better (26 percent, versus 16 percent).

For both the middle school and high school samples, those with higher educational aspirations and fewer school discipline problems at baseline were significantly less likely to go on to become teenage parents during the follow-up period. In both samples, however, those with positive attitudes toward their school had rates of teenage parenthood similar to those with more negative attitudes.

B. LOGIT MODEL RESULTS

1. Teenage Parenthood and School Performance Measures

The strong relationship between frequent absenteeism as a young teenager and the risk of becoming a teenage parent may result from differences in school performance, educational aspirations, socioeconomic status, or other characteristics of girls with few absences and those with many absences. However, frequent absenteeism remains an important predictor of teenage parenthood even after adjusting for other measures of school performance and many background characteristics. For example, among girls in the middle school sample, those who missed 20 or more days of school during the baseline academic year were 15 percentage points more likely to become minor parents during the follow-up period--or more than three times as likely (a predicted probability of 22 percent versus 7 percent)--than were girls who missed fewer than 10 days, even after

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controlling for baseline school performance, educational aspirations, school behavior and attitudes, and other background characteristics (Table 3).[19,20]

The difference in teenage parenthood rates for good and poor attenders is not as large in the high school sample as in the middle school sample. Nonetheless, the relationship between absenteeism and teenage parenthood is strong and statistically significant, even after controlling for the full set of background characteristics and school measures. Among this sample, girls who missed 20 or more days of school during ninth grade were eight percentage points more likely to become teenage parents during the follow-up period than were otherwise similar girls who missed fewer than 10 days (Table 4, Model 4). In other words, girls with frequent absences during ninth grade were more than 50 percent more likely to become teenage parents later in high school than were similar girls with relatively few absences (a predicted probability of 24 percent versus 16 percent).

Among those in the high school sample, before the full set of background characteristics is included in the model, having poor standardized test scores is strongly associated with becoming a teenage parent (Table 4, Models 2 and 3). However, the size of this relationship is reduced substantially and becomes statistically insignificant once controls for age, ethnicity, and other

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[19]Predicted probabilities are not reported in the tables. The predicted probability associated with a particular characteristic (such as being absent 20 or more days) is generated by first calculating a predicted probability for that characteristic for each sample member and then averaging these probabilities over all sample members. A predicted probability (p_i) for an individual sample member is calculated using the formula $p_i = e^{\beta'X_i}/(1+e^{\beta'X_i})$, where β is a vector of estimated coefficients from the logistic regression and X_i is a vector of background characteristics included in the logistic model. To calculate a predicted probability associated with a particular characteristic, a sample member is assigned a value of "one" for that characteristic and her own values for all other characteristics in the X_i vector.

[20]All logistic results presented in this report are transformed to be analogous to the results from a linear regression. This transformation is done by calculating, for each sample member, the change in predicted probability that results from going from a "zero" to a "one" value for each of the binary variables. The change in predicted probability was then averaged across all sample members. These average changes are reported in the results tables.

TABLE 3

RESULTS FROM ESTIMATING TEENAGE PARENT MODELS:
MIDDLE SCHOOL SAMPLE

	Model 1	Model 2	Model 3	Model 4
Mean of Dependent Variable	0.127			
Absenteeism During Baseline Year				
Absent 20 or more days	0.177***	0.182***	0.165***	0.152**
Absent 10 to 19 days	0.105***	0.105***	0.089**	0.086*
Standardized Test Scores During Baseline Year				
Below 10th percentile		0.045	0.040	0.040
10th to 33rd percentile		0.021	0.023	0.019
Test scores missing		-0.012	-0.024	-0.015
English and Math Grades During Baseline Year				
Failed at least one		-0.022	-0.039	-0.063
"D" in at least one, passed both		-0.007	-0.015	-0.029
Educational Aspirations During Baseline Year				
"Very sure" will finish high school			-0.085**	-0.062
Expects to complete four years of college			-0.001	0.001
School Behavior During Baseline Year				
Sent to office three or more times for behavior			0.061	0.057
School warned parents about behavior			0.029	0.009
School Attitudes During Baseline Year				
Bottom third			-0.056	-0.085*
Middle third			-0.018	-0.047
Age at Last Follow-Up Survey				
16.5 to 17.0				0.111***
17.0 to 17.5				0.125*
17.5 or more				0.208*
Ethnicity				
African American				0.049
Hispanic				-0.011
Other nonwhite				-0.070
Family Background				
Receives public assistance				0.018
Public assistance status missing				-0.041
Primarily speaks language other than English				0.037
Lives with both parents				-0.075**
Parental supervision level				
Bottom third				0.073
Middle third				0.097*

TABLE 3 *(continued)*

	Model 1	Model 2	Model 3	Model 4
Mother's Education				
High school dropout				-0.038
Some college				0.012
Don't know				-0.011
Self-Esteem				
Bottom third				0.045
Middle third				0.060
City of Residence[a]				
Albuquerque, New Mexico				0.024
Chicago, Illinois				0.018
Dallas, Texas				0.123
Grand Rapids, Michigan				0.114
Newark, New Jersey				0.055
San Diego, California				0.075
Santa Ana, California				0.013

Sample Size = 498

Dependent Variable = Parent at last follow-up survey.

NOTE: These results were generated by estimating logit models. The logit results have been transformed to be analogous to the results from a linear regression. The estimated logit coefficients were used to calculate for each sample member the change in predicted probability that results from going from a "zero" to a "one" value for each of the binary variables. This change in predicted probability was then averaged across all sample members. These average changes are what are reported in the table.

[a]The omitted category represents the 10 percent of sample members living in Atlanta, Georgia; Flint, Michigan; Long Beach, California; and Rockford, Illinois.

   *Significantly different from zero at the .10 level.
  **Significantly different from zero at the .05 level.
***Significantly different from zero at the .01 level.

TABLE 4

RESULTS FROM ESTIMATING TEENAGE PARENT MODELS:
HIGH SCHOOL SAMPLE

	Model 1	Model 2	Model 3	Model 4
Mean of Dependent Variable	0.196			
Absenteeism During Baseline Year				
Absent 20 or more days	0.115***	0.097**	0.089*	0.080*
Absent 10 to 19 days	0.030	0.024	0.019	0.010
Standardized Test Scores During Baseline Year				
Below 10th percentile		0.155**	0.137**	0.075
10th to 33rd percentile		0.096**	0.094**	0.050
Test scores missing		0.004	-0.017	-0.038
English and Math Grades During Baseline Year				
Failed at least one		0.044	0.027	0.027
"D" in at least one, passed both		0.033	0.021	0.002
Educational Aspirations During Baseline Year				
"Very sure" will finish high school			-0.036	-0.048
Expects to complete four years of college			-0.035	-0.021
School Behavior During Baseline Year				
Sent to office three or more times for behavior			-0.033	-0.008
School warned parents about behavior			0.108*	0.073
School Attitudes During Baseline Year				
Bottom third			-0.029	-0.003
Middle third			-0.035	-0.015
Age at Last Follow-Up Survey				
18.0 to 18.5				0.108**
18.5 to 19.0				0.081*
19.0 or more				0.153**
Ethnicity				
African American				0.085
Hispanic				0.062
Other nonwhite				0.012
Family Background				
Receives public assistance				0.061
Public assistance status missing				-0.086*
Primarily speaks language other than English				0.093
Lives with both parents				-0.001
Parental supervision level				
Bottom third				-0.049
Middle third				-0.090**

TABLE 4 *(continued)*

	Model 1	Model 2	Model 3	Model 4
Mother's Education				
High school dropout				0.002
Some college				-0.060
Don't know				0.015
Self-Esteem				
Bottom third				0.006
Middle third				0.013
City of Residence[a]				
Dallas, Texas				-0.049
Grand Rapids, Michigan				-0.028
Phoenix, Arizona				0.004
Santa Ana, California				-0.147**
Sample Size = 688				

Dependent Variable = Parent at last follow-up survey.

NOTE: These results were generated by estimating logit models. The logit results have been transformed to be analogous to the results from a linear regression. The estimated logit coefficients were used to calculate for each sample member the change in predicted probability that results from going from a "zero" to a "one" value for each of the binary variables. This change in predicted probability was then averaged across all sample members. These average changes are what are reported in the table.

[a]The omitted category represents the 14 percent of sample members living in Las Vegas, Nevada, and Miami, Florida.

   *Significantly different from zero at the .10 level.
  **Significantly different from zero at the .05 level.
 ***Significantly different from zero at the .01 level.

background characteristics are added. In the middle school sample, having low standardized test scores is not associated with an increased likelihood of becoming a teenage parent. Moreover, poor grades are not significantly related to the risk of becoming a teenage parent in either sample, once other background characteristics are included in the model. Therefore, it appears that, among the three school performance measures analyzed (attendance, grades, and standardized test scores), attendance is the best predictor of which girls go on to become teenage parents.

2. Teenage Parenthood and Other School Measures

No consistent patterns emerge from the logit analysis in the relationships between teenage parenthood and the other school measures analyzed. Among those in the middle school sample, low educational aspirations are associated with increased risk of becoming a teenage parent. However, this relationship becomes statistically insignificant once the full set of background controls is included (Table 3, Model 3 versus Model 4). Similarly, among those in the high school sample, school discipline problems are associated with increased risk of becoming a teenage parent; however, the effect becomes insignificant when the full set of background controls is included (Table 4, Model 3 versus Model 4).

Among those in the middle school sample, having negative attitudes toward school is actually associated with reduced likelihood of becoming a teenage parent (Table 3, Model 4). Although this result seems somewhat counterintuitive, there is a possible explanation. Perhaps, among students at low-income urban schools, having negative attitudes toward school (in other words, thinking that your classes are not very challenging and that the school does not offer the kinds of classes you want) is a proxy for having higher goals and aspirations than your peers and, therefore, being more

reluctant to engage in risky sexual behavior. However, no such relationship between school attitudes and early parenthood exists for the high school sample.

3. Teenage Parenthood and Demographic/Family Background Measures

Most other background measures are not significant predictors of teenage parenthood. The exceptions are age, household structure, and the level of parental supervision. In both samples, age at last follow-up survey is a very strong predictor of teenage parenthood, with older teenagers much more likely than younger teenagers to be parents. This result is most likely due to the fact that teenage parenthood is a cumulative measure. In other words, if a teenager becomes a parent at age 16, she is still a parent at 19. Therefore, older teenagers must be more likely to be parents, all else equal.

The strong relationship between age and teenage parenthood is not due to the fact that those who are overage for grade are at greater risk of becoming teenage parents. For both the middle school and high school samples, when being overage for grade during the baseline academic year is included in the model with the full set of control variables, it is associated with a *lower* risk of teenage parenthood.[21] In addition, in both samples, the estimated relationship between age and the risk of teenage parenthood is strengthened when overage for grade is included as a control variable. This result suggests that a 13-year-old in the sixth grade (who is overage for grade) is at *lower* risk of becoming a teenage parent than a similar 13-year-old in the eighth grade (who is not overage for grade).

Among those in the middle school sample, those who lived with both parents and received a high degree of parental supervision were less likely to become teenage parents than were otherwise similar girls who did not live with both parents and received less parental supervision (Table 3).

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[21]In both samples, this relationship was statistically significant at the .15 level.

Among those in the high school sample, however, those with high levels of parental supervision appeared somewhat *more* likely to go on to become teenage parents (Table 4).

4.   Poor School Performance as Predictors for Other Poor Outcomes for Teenagers

The results presented thus far indicate that frequent absenteeism during middle school and early high school is a strong predictor of which girls go on to become teenage parents. The results presented in Tables 5 and 6 indicate that poor attendance is also associated with other poor outcomes for teenagers, such as dropping out of school, getting arrested, and using illegal drugs. For example, among those in the middle school sample, girls who missed 20 or more days of school during the baseline academic year were three times as likely to have been recently arrested (12 percent, versus 4 percent) at the time of the last follow-up survey as were similar girls who had missed fewer than 10 days (Table 5). In the high school sample, those who had missed 20 or more days of school during the baseline year were more than twice as likely to have dropped out of school (30 percent, versus 14 percent) and more than twice as likely to have recently used illegal drugs (13 percent, versus 6 percent) at the end of the follow-up period than were similar girls with relatively few absences (Table 6).

Other measures of poor school performance are not consistently related to these other outcomes measures. For example, among those in the middle school sample, low standardized test scores are *negatively* associated with drug use once other school performance and background measures are included in the model (Table 5). Poor grades and low educational expectations are not significantly associated with any of the four outcome measures examined when the full set of control variables is included. For girls in the middle school sample, school discipline problems and negative school attitudes as a young teenager are associated with an increased likelihood of later being arrested; this

TABLE 5

RESULTS FROM ESTIMATING OTHER "POOR OUTCOME" MODELS:
MIDDLE SCHOOL SAMPLE

	Dependent Variable (Measured at Last Follow-Up Survey)			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Used Illegal Drugs in Past Month
Mean of Dependent Variable	0.127	0.169	0.072	0.118
Absenteeism During Baseline Year				
Absent 20 or more days	0.152**	0.083	0.085**	0.023
Absent 10 to 19 days	0.086*	0.041	0.052*	0.023
Standardized Test Scores During Baseline Year				
Below 10th percentile	0.040	0.002	-0.024	-0.097**
10th to 33rd percentile	0.019	-0.020	-0.016	-0.101***
Test scores missing	-0.015	-0.018	-0.064	-0.043
English and Math Grades During Baseline Year				
Failed at least one	-0.063	0.067	-0.013	0.028
"D" in at least one, passed both	-0.029	0.050	-0.001	0.051
Educational Aspirations During Baseline Year				
"Very sure" will finish high school	-0.062	-0.017	0.007	0.003
Expects to complete four years of college	0.001	-0.058	0.027	-0.027
School Behavior During Baseline Year				
Sent to office three or more times for behavior	0.057	0.043	0.110***	0.024
School warned parents about behavior	0.009	0.049	-0.011	-0.019
School Attitudes During Baseline Year				
Bottom third	-0.085*	0.020	0.078**	0.028
Middle third	-0.047	0.038	-0.036	0.054
Age at Last Follow-Up Survey				
16.5 to 17.0	0.111***	0.056	-0.039	-0.053
17.0 to 17.5	0.125*	0.122*	0.011	-0.025
17.5 or more	0.208*	0.193*	-0.012	-0.013
Ethnicity				
African American	0.049	-0.073	-0.018	0.008
Hispanic	-0.011	-0.055	0.000	0.064
Other nonwhite	-0.070	-0.077	0.044	0.094
Family Background				
Receives public assistance	0.018	0.046	0.003	-0.012
Public assistance status missing	-0.041	0.033	-0.019	-0.058
Primarily speaks language other than English	0.037	-0.018	0.019	-0.127**
Lives with both parents	-0.075**	0.002	-0.004	-0.023

TABLE 5 *(continued)*

	Dependent Variable (Measured at Last Follow-Up Survey)			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Used Illegal Drugs in Past Month
Parental Supervision Level				
Bottom third	0.073	-0.034	0.036	0.001
Middle third	0.097*	-0.051	0.036	-0.063*
Mother's Education				
High school dropout	-0.038	0.018	-0.036	0.010
Some college	0.012	0.016	0.028	0.059
Don't know	-0.011	0.006	0.001	0.079*
Self-Esteem				
Bottom third	0.045	0.151***	0.035	-0.002
Middle third	0.060	0.075	-0.008	-0.025
City of Residence[a]				
Albuquerque, New Mexico	0.024	-0.023	-0.090*	0.005
Chicago, Illinois	0.018	-0.132*	-0.099*	-0.152**
Dallas, Texas	0.123	0.078	-0.095*	-0.173***
Grand Rapids, Michigan	0.114	-0.148**	-0.095*	-0.106
Newark, New Jersey	0.055	0.093	-0.060	-0.124*
San Diego, California	0.075	-0.036	-0.081	-0.053
Santa Ana, California	0.013	-0.044	-0.137**	-0.149*

Sample Size = 498

NOTE: These results were generated by estimating logit models. The logit results have been transformed to be analogous to the results from a linear regression. The estimated logit coefficients were used to calculate for each sample member the change in predicted probability that results from going from a "zero" to a "one" value for each of the binary variables. This change in predicted probability was then averaged across all sample members. These average changes are what are reported in the table.

[a]The omitted category represents the 10 percent of sample members living in Atlanta, Georgia; Flint, Michigan; Long Beach, California; and Rockford, Illinois.

*Significantly different from zero at the .10 level.
**Significantly different from zero at the .05 level.
***Significantly different from zero at the .01 level.

TABLE 6

RESULTS FROM ESTIMATING OTHER "POOR OUTCOME" MODELS:
HIGH SCHOOL SAMPLE

	Dependent Variable (Measured at Last Follow-Up Survey)			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Used Illegal Drugs in Past Month
Mean of Dependent Variable	0.196	0.233	0.045	0.110
Absenteeism During Baseline Year				
Absent 20 or more days	0.080*	0.155***	0.017	0.069
Absent 10 to 19 days	0.010	0.077	0.030	0.068*
Standardized Test Scores During Baseline Year				
Below 10th percentile	0.075	-0.001	-0.004	-0.006
10th to 33rd percentile	0.050	0.004	-0.002	0.036
Test scores missing	-0.038	0.075	0.013	0.023
English and Math Grades During Baseline Year				
Failed at least one	0.027	0.083	0.016	0.012
"D" in at least one, passed both	0.002	0.032	0.037	0.063
Educational Aspirations During Baseline Year				
"Very sure" will finish high school	-0.048	-0.025	0.017	0.030
Expects to complete four years of college	-0.021	-0.047	-0.032	0.014
School Behavior During Baseline Year				
Sent to office three or more times for behavior	-0.008	0.015	-0.006	-0.007
School warned parents about behavior	0.073	-0.002	0.042	0.072
School Attitudes During Baseline Year				
Bottom third	-0.003	-0.049	-0.011	0.055
Middle third	-0.015	-0.021	0.002	0.044
Age at Last Follow-Up Survey				
18.0 to 18.5	0.108**	-0.022	-0.024	-0.038
18.5 to 19.0	0.081*	0.004	-0.026	-0.044
19.0 or more	0.153**	0.040	-0.023	-0.033
Ethnicity				
African American	0.085	-0.050	-0.005	-0.079*
Hispanic	0.062	-0.044	-0.032	-0.119**
Other nonwhite	0.012	0.042	0.006	-0.017
Family Background				
Receives public assistance	0.061	0.039	-0.004	0.070
Public assistance status missing	-0.086*	-0.038	0.021	-0.004
Primarily speaks language other than English	0.093	0.067	-0.039**	-0.115***
Lives with both parents	-0.001	-0.034	-0.004	-0.015

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TABLE 6 *(continued)*

	Dependent Variable (Measured at Last Follow-Up Survey)			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Used Illegal Drugs in Past Month
Parental Supervision Level				
Bottom third	-0.049	0.011	0.019	0.001
Middle third	-0.090**	-0.022	0.015	-0.005
Mother's Education				
High school dropout	0.002	0.065	0.046	0.012
Some college	-0.060	-0.079*	0.009	-0.025
Don't know	0.015	-0.037	0.029	0.020
Self-Esteem				
Bottom third	0.006	0.021	-0.007	0.029
Middle third	0.013	0.007	-0.003	-0.013
City of Residence[a]				
Dallas, Texas	-0.049	-0.202**	-0.019	-0.029
Grand Rapids, Michigan	-0.028	-0.242***	-0.007	0.038
Phoenix, Arizona	0.004	-0.079	-0.002	-0.052
Santa Ana, California	-0.147**	-0.307***	0.004	0.035

Sample Size = 688

NOTE: These results were generated by estimating logit models. The logit results have been transformed to be analogous to the results from a linear regression. The estimated logit coefficients were used to calculate for each sample member the change in predicted probability that results from going from a "zero" to a "one" value for each of the binary variables. This change in predicted probability was then averaged across all sample members. These average changes are what are reported in the table.

[a]The omitted category represents the 14 percent of sample members living in Las Vegas, Nevada, and Miami, Florida.

*Significantly different from zero at the .10 level.
**Significantly different from zero at the .05 level.
***Significantly different from zero at the .01 level.

is not true for girls in the high school sample, however. Moreover, these school measures are not significantly associated with any of the other outcome measures.

5. Results for Teenage Boys

The results presented thus far indicate that girls who are frequently absent from school as young teenagers are substantially more likely than similar girls with relatively few absences to go on to become teenage parents. Moreover, girls who are frequently absent as young teenagers are more likely to experience other poor outcomes in their later teenage years, such as dropping out of school, getting arrested, and using illegal drugs. Are young teenage boys who miss school frequently also at greater risk of experiencing these negative outcomes?

To consider this question, the same set of logit models are estimated for a subsample of 731 high school boys from the SDDAP evaluation sample, relating their school performance and other characteristics measured in ninth grade to their likelihood of becoming teenage parents later in high school. Fairly small and statistically insignificant differences exist in the likelihood of becoming a parent in high school between those with frequent and infrequent absences during the ninth grade, when frequent absenteeism is defined as missing 20 or more days during the school year. When frequent absenteeism is defined as missing 30 or more days, however, large and statistically significant differences emerge. Table 7 reports these results, as well as those for other outcome measures.[22]

Boys who missed 30 or more days of school during ninth grade (16 percent of this sample) were 10 percentage points more likely--or about three times as likely (16 percent, versus 5 percent)--to

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[22]A similar analysis for middle school boys is not conducted because so few of these younger teenage boys reported being fathers at the end of the follow-up period. Of a sample of 547, only 21 (or fewer than four percent) reported on the last follow-up survey that they were parents.

TABLE 7

RESULTS FROM ESTIMATING OTHER "POOR OUTCOME" MODELS:
HIGH SCHOOL MALE SAMPLE

	Dependent Variable (Measured at Last Follow-Up Survey)			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Used Illegal Drugs in Past Month
Mean of Dependent Variable	0.082	0.233	0.176	0.210
Absenteeism During Baseline Year				
Absent 30 or more days	0.105*	0.184**	0.051	0.030
Absent 20 to 29 days	0.024	0.052	0.064	0.034
Absent 10 to 19 days	0.028	0.071	0.086*	0.084*
Standardized Test Scores During Baseline Year				
Below 10th percentile	-0.006	-0.070	-0.026	-0.069
10th to 33rd percentile	0.068*	0.000	-0.035	-0.031
Test scores missing	0.001	0.008	0.056	-0.020
English and Math Grades During Baseline Year				
Failed at least one	0.027	0.045	0.030	0.083
"D" in at least one, passed both	0.035	0.035	0.047	0.060
Educational Aspirations During Baseline Year				
"Very sure" will finish high school	-0.003	-0.138***	-0.054	0.005
Expects to complete four years of college	-0.045	-0.043	0.009	-0.099**
School Behavior During Baseline Year				
Sent to office three or more times for behavior	-0.012	0.011	0.097**	0.053
School warned parents about behavior	0.007	-0.001	0.125***	0.036
School Attitudes During Baseline Year				
Bottom third	-0.004	0.051	-0.080*	0.102**
Middle third	0.025	0.021	-0.048	0.107**
Age at Last Follow-Up Survey				
18.0 to 18.5	0.049	0.008	-0.001	0.005
18.5 to 19.0	0.058	0.023	0.007	0.011
19.0 or more	0.013	0.106	0.027	-0.039
Ethnicity				
African American	0.065*	-0.071	-0.010	-0.084
Hispanic	0.045	-0.056	0.068	-0.203***
Other nonwhite	0.069	-0.075	0.071	-0.114
Family Background				
Receives public assistance	0.041	0.069	-0.042	-0.023
Public assistance status missing	0.097*	0.113	0.013	0.077
Primarily speaks language other than English	-0.060*	0.066	-0.117***	-0.132**
Lives with both parents	-0.059	0.009	-0.060*	0.044

TABLE 7 *(continued)*

	Dependent Variable (Measured at Last Follow-Up Survey)			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Used Illegal Drugs in Past Month
Parental Supervision Level				
Bottom third	0.014	0.047	0.117***	0.006
Middle third	0.022	0.032	0.108**	0.036
Mother's Education				
High school dropout	-0.002	-0.023	-0.042	-0.057
Some college	-0.046*	-0.061	0.005	-0.069
Don't know	-0.023	-0.060	-0.078*	-0.125***
Self-Esteem				
Bottom third	-0.000	-0.064	-0.062*	-0.017
Middle third	-0.050**	0.054	0.019	-0.052
City of Residence[a]				
Dallas, Texas	0.011	-0.245***	-0.145**	-0.045
Grand Rapids, Michigan	0.011	-0.333***	-0.120*	-0.072
Phoenix, Arizona	-0.040	-0.203**	-0.116*	-0.043
Santa Ana, California	-0.063*	-0.389***	-0.179***	0.004

Sample Size = 731

NOTE: These results were generated by estimating logit models. The logit results have been transformed to be analogous to the results from a linear regression. The estimated logit coefficients were used to calculate for each sample member the change in predicted probability that results from going from a "zero" to a "one" value for each of the binary variables. This change in predicted probability was then averaged across all sample members. These average changes are what are reported in the table.

[a]The omitted category represents the 13 percent of sample members living in Las Vegas, Nevada, and Miami, Florida.

  *Significantly different from zero at the .10 level.
 **Significantly different from zero at the .05 level.
***Significantly different from zero at the .01 level.

be fathers at the end of the follow-up period than were similar boys who missed fewer than 10 days (Table 7). [23] Furthermore, boys who missed more than 30 days of school during ninth grade were twice as likely to drop out of school as were boys with relatively few absences (35 percent, versus 17 percent).

Additional school measures were significantly related to these measures of poor outcomes for high school boys. For example, low educational aspirations during the ninth grade are associated with increased risk of dropping out and using drugs (Table 7). School discipline problems during the ninth grade are strongly associated with higher risk of arrest as an older teenager. Negative school attitudes during the ninth grade are associated with increased risk of drug use as an older teenager but are associated with reduced risk of arrest. Table 8 summarizes the results for all three samples.

V. CONCLUSIONS

One clear result that emerges from this analysis is that, even after controlling for a detailed set of school performance and background characteristics, frequent absenteeism is strongly associated with the risk of becoming a teenage parent. This result holds for each of the three samples analyzed: (1) middle school girls, (2) high school girls, and (3) high school boys. Moreover, frequent absenteeism was more consistently related to teenage parenthood across the three student populations analyzed than were any of the other school measures, including standardized test scores, grades, educational expectations, school discipline problems, and attitudes toward school. Frequent

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[23]Previous research has shown that young unmarried males substantially underreport their fatherhood status (Lerman 1993). This pattern may explain why the males in the SDDAP sample report much lower rates of teenage parenthood than the females (4 percent for males versus 13 percent for females among those in the middle school subsamples; 8 percent versus 20 percent among those in the high school subsamples).

TABLE 8

SUMMARY OF STATISTICALLY SIGNIFICANT RELATIONSHIPS BETWEEN POOR OUTCOMES AND SCHOOL MEASURES

School Measure from Baseline Year	Middle School Females				High School Females				High School Males			
	Teenage Parent	Dropped Out of School	Arrested in Past Year	Illegal Drugs in Past Month	Teenage Parent	Dropped Out of School	Arrested in Past Year	Illegal Drugs in Past Month	Teenage Parent	Dropped Out of School	Arrested in Past Year	Illegal Drugs in Past Month
Frequent Absences[a]	+		+		+	+		+	+	+	+	+
Low Standardized Test Scores			−						+			
Low English and Math Grades												
Low Educational Expectations										+		+
School Discipline Problems			+								+	
Negative School Attitudes	−		+								−	+

NOTE: Results are from logit models containing full set of background controls.

[a]"Frequent Absences" defined as 20 or more absences during the school year for females and 30 or more absences for males.

+ = Statistically significant positive relationship.
− = Statistically significant negative relationship.

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absenteeism is also strongly associated with other poor outcomes for teenagers, such as dropping out of school, getting arrested, and using illegal drugs.

These results are based on a selected sample of disadvantaged youth from a mix of low-income, urban school districts throughout the country. Therefore, the results may not be generalizable to the population of all teenagers. However, the findings clearly indicate that frequent absenteeism is a key risk factor for early parenthood among highly-disadvantaged teenagers from low-income, urban areas.

Why is frequent absenteeism as a young teenager so strongly associated with going on to become a teenage parent? One possible explanation is that teenagers who miss school frequently and thus spend a great deal of time in unstructured and unsupervised settings have more opportunities to engage in sexual activity. These teenagers, therefore, are at greater risk of becoming teenage parents. Alternatively, no causal relationship may exist between absenteeism and teenage parenthood. Instead, the strong association between absenteeism and teenage parenthood may arise because teenagers who miss school frequently have characteristics (such as rebelliousness, a desire to take risks, or a disregard of future consequences of their actions) that make them more likely both to become teenage parents and to miss school frequently. The results of this study do not indicate which of these two possibilities is correct. However, the fact that the strong association between absenteeism and teenage parenthood persists even after controlling for a detailed list of school and background measures makes a causal relationship between absenteeism and teenage parenthood more plausible.

Another striking pattern in these results is that absenteeism is much more strongly associated with teenage parenthood among younger teenage girls (those in the middle school sample) than among older teenage girls (those in the high school sample). Among younger teenage girls, those

who were frequently absent from school were three times more likely to become teenage parents during the next three years than were similar girls with relatively few absences. In contrast, among high school girls, those who were frequently absent were only 50 percent more likely to become teenage parents than were similar girls with few absences.[24]

Moreover, having a low level of parental supervision and not living with both parents places younger teenage girls at substantially higher risk of becoming teenage mothers; however, this is not true for older teenage girls. Since frequent absenteeism and not living with both parents can be considered proxies for a low level of supervision, these results suggest that poor supervision is a very important risk factor for early parenthood among young teenage girls (those ages 13, 14, or 15). However, a low level of supervision appears to be a substantially less important risk factor for early parenthood among older teenage girls (those ages 16 or 17). Perhaps as teenagers become older and more independent, the level of supervision they receive at school and at home becomes less important in determining who becomes a teenage parent, and other factors (such as attitudes toward sex and marriage and aspirations for the future) become the most important determinants of teenage parenthood.

Among younger teenage girls, the cumulative effect of these supervision risk factors is huge. A middle school girl who misses school infrequently, lives with both parents, receives a high level of supervision, and otherwise has average characteristics is predicted to have only a one-in-a-hundred chance of becoming a teenage parent over the next three years. In contrast, a middle school girl who has frequent school absences, does not live with both parents, receives a low level of parental

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[24]The results for older teenage girls are similar in magnitude to the results of Abrahamse et al. (1988), who analyzed a nationally representative sample of high school students. They found that, after adjusting for differences in background characteristics and academic ability, 10th-grade girls who were frequently absent from school were about 50 percent more likely to become teenage parents during the two-year follow-up period than were girls with few absences (3.8 percent, versus 2.4 percent).

supervision, and otherwise has average characteristics is predicted to have more than a one-in-four chance of becoming a teenage parent.

What are the policy implications of these results? They clearly indicate that pregnancy prevention programs should target teenagers--particularly middle school girls--who miss school frequently, since this group is at particularly high risk of teenage parenthood. Further research is needed to determine whether a causal relationship exists between absenteeism and teenage parenthood. If this relationship does prove to be a causal one, however, then focusing on truancy reduction, particularly among younger teenage girls, would be a useful strategy for policymakers in their efforts to reduce adolescent pregnancy. Moreover, initiatives that promote the supervision of younger teenagers outside of regular school hours (such as after-school programs) may be an effective tool for policymakers in their efforts to reduce the rate of teenage parenthood.

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APPENDIX A

MEANS AND STANDARD DEVIATIONS OF
EXPLANATORY VARIABLES

MEANS AND STANDARD DEVIATIONS OF EXPLANATORY VARIABLES
USED IN THE TEENAGE PARENT MODELS

	Middle School Sample		High School Sample	
	Mean	Standard Deviation	Mean	Standard Deviation
Absenteeism During Baseline Year				
Absent 20 or more days	0.209	0.407	0.350	0.477
Absent 10 to 19 days	0.251	0.434	0.313	0.464
Standardized Test Scores During Baseline Year				
Below 10th percentile	0.161	0.368	0.093	0.291
10th to 33rd percentile	0.363	0.481	0.249	0.432
Test scores missing	0.127	0.333	0.196	0.397
English and Math Grades During Baseline Year				
Failed at least one	0.113	0.316	0.199	0.398
"D" in at least one, passed both	0.239	0.425	0.268	0.440
Educational Aspirations During Baseline Year				
"Very sure" will finish high school	0.625	0.484	0.724	0.446
Expects to complete four years of college	0.558	0.495	0.551	0.496
School Behavior During Baseline Year				
Sent to office three or more times for behavior	0.149	0.356	0.109	0.312
School warned parents about behavior	0.271	0.445	0.116	0.321
School Attitudes During Baseline Year				
Bottom third	0.219	0.414	0.264	0.441
Middle third	0.422	0.494	0.420	0.494
Age at Last Follow-Up Survey				
16.5 to 17.0	0.299	0.458	n.i.	n.i.
17.0 to 17.5	0.116	0.321	n.i.	n.i.
17.5 or more	0.086	0.281	n.i.	n.i.
18.0 to 18.5	n.i.	n.i.	0.265	0.441
18.5 to 19.0	n.i.	n.i.	0.231	0.422
19.0 or more	n.i.	n.i.	0.094	0.293
Ethnicity				
African American	0.276	0.442	0.295	0.454
Hispanic	0.492	0.494	0.372	0.481
Other nonwhite	0.099	0.295	0.044	0.204
Family Background				
Receives public assistance	0.229	0.421	0.141	0.348
Public assistance status missing	0.143	0.350	0.065	0.247
Primarily speaks language other than English	0.115	0.316	0.158	0.360
Lives with both parents	0.401	0.486	0.442	0.493

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	Middle School Sample		High School Sample	
	Mean	Standard Deviation	Mean	Standard Deviation
Parental Supervision Level				
Bottom third	0.285	0.452	0.376	0.485
Middle third	0.317	0.466	0.297	0.457
Mother's Education				
High school dropout	0.279	0.449	0.295	0.456
Some college	0.177	0.382	0.286	0.452
Don't know	0.319	0.467	0.182	0.386
Self-Esteem				
Bottom third	0.424	0.495	0.302	0.460
Middle third	0.309	0.463	0.279	0.449
City of Residence				
Albuquerque, New Mexico	0.191	0.393	n.i.	n.i.
Chicago, Illinois	0.151	0.358	n.i.	n.i.
Dallas, Texas	0.106	0.309	0.190	0.393
Grand Rapids, Michigan	0.094	0.293	0.350	0.477
Newark, New Jersey	0.112	0.316	n.i.	n.i.
Phoenix, Arizona	n.i.	n.i.	0.078	0.269
San Diego, California	0.185	0.388	n.i.	n.i.
Santa Ana, California	0.056	0.231	0.243	0.429
Sample Size	**498**		**688**	

SOURCE: Absenteeism, standardized test scores, and grades from school records. Other variables from student baseline surveys.

NOTE: All explanatory variables are binary (zero-one) variables.

n.i. = not included in the models.