DOCUMENT RESUME

ED 300 495 UD 026 491

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TITLE Dropping Out: The Educational Vulnerability of At-Risk Youth. CRS Report for Congress 88 417-EPW.
INSTITUTION Library of Congress, Washington, D.C. Congressional Research Service.
PUB DATE 24 May 88
NOTE 109p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Black Students; *Dropout Characteristics; Dropout Research; Dropouts; Educational Policy; Federal Government; Females; Grade 10; *High Risk Students; *High School Students; Hispanic Americans; Longitudinal Studies; Males; Minority Groups; *Potential Dropouts; *Racial Differences; Secondary Education; *Sex Differences; *Social Differences; Socioeconomic Background; White Students
IDENTIFIERS High School and Beyond (NCES); Hispanic American Students; Policy Implications

ABSTRACT

This study investigates the role of background characteristics and in-school and out-of-school experiences on public high school dropout rates using data on the 1980 sophomore class from the High School and Beyond Survey. Major findings include the following: (1) dropping out of high school is a complex phenomenon, influenced by an interaction of socioeconomic background characteristics and in-school experiences; (2) some groups of students are more at-risk of dropping out than others, but dropping out appears to be widespread; (3) students in at-risk groups appear to be more vulnerable, both negatively and positively, to in-school experiences than other students; (4) being above the modal age of classmates, and being enrolled in the academic track have the most consistent impact on educational success; (5) early family formation has the most serious negative educational consequences. Implications for the development of federal policies are discussed. Statistical data are included on 18 tables and 13 graphs. The appendices include the following: (1) a description of the High School and Beyond Survey; (2) a discussion of the technical approach used in this report; (3) supplementary tables; (4) description of outcomes, at-risk factors, and high school experiences; and (5) definitions of occupation categories. (FMW)

CRS REPORT FOR CONGRESS

DROPPING OUT: THE EDUCATIONAL VULNERABILITY OF AT-RISK YOUTH

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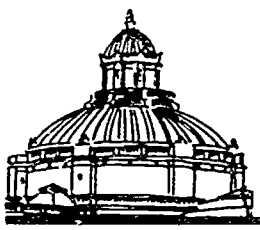

May 24, 1988

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ABSTRACT

This study addresses the following questions: How prevalent are disadvantaged youth in our secondary education system? How do their dropout rates compare to their nondisadvantaged counterparts? To what might their dropout rates be attributed? How might public policy respond? The study explores answers to these questions through a detailed analysis of the high school completion rates of youth from single parent families, youth from poor families, and youth who form families (bear a child or marry) while still in secondary school.

PREFACE

The contents of this report are the result of a collaborative effort between Congressional Research Service (CRS) analysts--James B. Stedman, Michael J. O'Grady, and Jeanne E. Griffith 1/--and analysts working under contract to CRS--Laura H. Salganik and Carin A. Celebuski of Pelavin Associates, Inc. The statistical analysis, which forms the major portion of this report (chapters 2 to 4), was prepared by the Pelavin analysts with extensive consultation with the CRS staff. 2/ The assessment of policy implications of the research (chapter 5) is primarily the work of James B. Stedman.

1/ Currently employed by the Center for Education Statistics, Department of Education.

2/ The Pelavin analysts wish to acknowledge and thank the following individuals for their work on this study. Aaron Pallas, Assistant Professor of Sociology and Education of Teachers College Columbia University provided helpful comments and suggestions at each stage of the work. At Pelavin Associates, Sanny Subowo prepared countless spreadsheets that eventually became the tables in the report, and Janan Musa and Irene Martinez were responsible for final table preparation and production of the document.

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SUMMARY

This study presents the findings from an analysis of the effects of background characteristics and various in-school and out-of-school factors on high school dropout rates.

According to data from a longitudinal survey of 1980 high school sophomores, the overall dropout rate for public high school sophomores was 14 percent. Sophomores who were members of certain at-risk groups (i.e., being low-income, coming from single-parent families, getting married while still in school, or becoming parents during the teen years) dropped out of high school at rates that were between one and a half to over five times higher than the rates of their nondisadvantaged counterparts.

Although all of the characteristics listed above are associated with increased dropout rates, early family formation (whether through marriage or child birth) appears to have the most negative effect on high school completion.

The study suggests that the school is an important piece in the dropout puzzle. For 1980 sophomores, membership in one or more of the at-risk groups was not inevitably associated with dropping out. Rather, members of these groups were vulnerable to school experiences and policies. Dropout rates of student who were not members of these at-risk groups were also sensitive to school experiences and policies, sometime even more so. The study focuses on two in-school experiences--being behind modal age (i.e., being older than one's classmates), and tracking (i.e., whether one is enrolled in the academic, vocational, or general track). Dropout rates rise for students who are behind modal age, generally more for those who are members of the at-risk groups. Dropout rates decline for students who are in the academic track, generally more for the at-risk students than for others.

The complexity of the dropping out process, with its concentration among certain groups and its widespread occurrence in the general youth population, has implications for Federal policymaking. There may be no simple, single solution. The Federal options may range across a spectrum from limited and targeted efforts to "comprehensive" programs. Given that the educational disadvantages of youth seem to be the result of an interaction of socioeconomic characteristics with schooling policies and practices, it appears appropriate to include schooling as part of the Federal policy debate on the Nation's social and economic problems involving disadvantaged youth.

CHAPTER 1: INTRODUCTION

Debate over appropriate Federal responses to the Nation's social and economic problems increasingly focus on disadvantaged youth who are at risk of low levels of educational attainment. To many observers, the educational limitations of disadvantaged youth contribute significantly to national problems ranging from the country's poor international economic position, to adult illiteracy, to welfare dependency. Federal legislative initiatives addressing these educational concerns are under consideration in policy areas such as education, labor, and welfare.

These initiatives take on added importance in light of recent increases in the percentage of disadvantaged young people in the population. For instance, after remaining relatively stable during the early and middle 1970s, the poverty rate of children rose sharply from 16 to 21 percent between 1978 and 1986. 1/ The number of female-headed families increased by 127 percent between 1970 and

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1/ U.S. Congress. House. Committee on Ways and Means. Children in Poverty. Washington, U.S. Govt. Print. Off., 1985; U.S. Department of Commerce. Bureau of the Census. Money Income and Poverty State of Families and Persons in the United States: 1986. Current Population Reports. Series P-60, no. 157. Table B. p. 5.

1985. 2/ The pregnancy rate for adolescent women has increased steadily from 9.4 per hundred women in 1972 to 10.9 per hundred women in 1984. 3/

How prevalent are disadvantaged youth in our high schools? How do their dropout rates compare to their non-disadvantaged counterparts? To what might their dropout rates be attributed? How might public policy respond? The present study addresses these questions through an analysis of longitudinal data on sophomores in public high schools in 1980. 4/ It focuses on the high school completion rates for three groups: youth from single-parent families, youth from poor families, and youth who form families (bear a child or marry) while still in secondary school.

By presenting primary research on a data base rich in educational variables, this study complements the report issued last year entitled The Education Attainment of Select Groups of "At Risk" Children and Youth (U.S. Library of Congress. Congressional Research Service. CRS Report No. 87-290 EPW, April 1, 1987). The first report provided a detailed analysis of the research literature on the educational consequences of membership in one of three at-risk groups of youth. The three groups were similar to those under analysis here. It concluded that individuals who belonged to one or more of these groups finished fewer years of school; that the practices and policies of schools might affect the extent to which students' membership in one of these groups contributed to depressed educational attainment; and that the extant research

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2/ U.S. Department of Commerce. Bureau of the Census. Household and Family Characteristics: March 1985. Current Population Report. Series P-20, no. 411. Sept. 1986. Table F. p. 9.

3/ Hayes, C. D. (ed.). Risking the Future: Adolescent Sexuality, Pregnancy and Childbearing, v. 1, 1987. Washington, National Academy Press.

4/ See appendix A for information on the Department of Education's High School and Beyond survey.

in this area had serious flaws and limitations. The present study was undertaken in an effort to avoid some of the problems that characterized available research and to test some of the hypotheses presented in the first effort.

Summary of Findings

Focusing on 1980 public high school sophomores and their high school completion, this report found that membership in these groups is strongly associated with dropping out of high school. 5/ For 1980 public high school sophomores, the overall dropout rate was 14 percent. In other words, 14 percent of the 1980 sophomores did not graduate on schedule 2 years later. 6/ The rates for members of the at-risk groups were substantially higher:

1) low-income sophomores in 1980 were twice as likely not to graduate 2 years later as were non-low-income students (24 percent to 11 percent); 7/

5/ The findings are based on an analysis of data from High School and Beyond (HS&B), a national longitudinal survey of students who were sophomores and seniors in high school in 1980. (See appendix A for a description of this survey.) When interpreting these findings, it is very important to keep in mind that those young people who dropped out before their sophomore year of high school are not included in the HS&B survey. Of particular concern, other studies have suggested that a sizeable number of Hispanic students leave school before their sophomore year. Thus, the estimates concerning Hispanics cannot be assumed to reflect the overall population of Hispanic youth, but rather only those who have stayed in high school through their sophomore year. According to the Bureau of the Census (School Enrollment--Social and Economic Characteristics of Students: October 1978, Current Population Reports, series P-20, no. 346, Mar. 1979. Table 1, p. 11-12), 95 percent of Hispanic 14- and 15-year olds, compared to 98 percent of white and black 14- and 15-year olds were enrolled in school in October 1978. This is the approximate age cohort who were sophomores in 1980, and undoubtedly underrepresents the race difference because many Hispanic students turn 16 and drop out before reaching their sophomore year.

6/ See table 3-1 and accompanying text. In addition, this dropout rate is not adjusted for the eventual return and completion of high school by some dropouts.

7/ "Low-income" students, for purposes of the study, are those who are in the lowest 20 percent of per person family income.

2) students from single-parent families left school over one and half times as frequently as students from two-parent families (20 percent to 12 percent);

3) those who married while still in school were more than five times as likely to drop out as those who did not marry (65 percent to 12 percent); and

4) those who became parents failed to graduate on schedule over four times as often as those who did not become parents (56 percent to 12 percent).

Nevertheless, there is an apparently strong desire on the part of high school dropouts to complete their high school education. As this study shows, fully 44 percent of the 1980 sophomores who dropped out before 1982 had in fact earned a high school degree or the equivalent by 1986 (a quarter of these returnees earned regular high school diplomas; three-quarters earned equivalency certificates such as the General Education Diploma (GED)). 8/ Equally important, though, is the fact that membership in these at-risk groups remained associated with educational outcomes. Those 1980 sophomores who belonged to one or more of these at-risk were less likely than other dropouts to have completed a degree or earned an equivalency certificate by 1986.

By analyzing the extent to which different background, school, and community variables contributed to 1980 sophomores' chances of dropping out before their expected graduation date in 1982, the study delineates the increased or decreased probability of dropping out uniquely associated with each of these variables. Coming from a low-income family or a single-parent family appears to have relatively little <u>direct</u> effect on whether a child will finish high school or not. 9/ Rather, the effect of membership in these groups is felt <u>indirectly</u> through its impact on other aspects of the child's life. In

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8/ See table 3-4 and accompanying text.

9/ See tables 3-2 and 3-3, and accompanying text.

contrast, early family formation appears to have a sizably negative direct effect on high school completion, as well as negative indirect effects.

The study suggests that the school is an important piece in the dropout puzzle. For 1980 sophomores, membership in one or more of the at-risk groups was not inevitably associated with dropping out. Rather, the study delineates how members of these groups were vulnerable to school experiences and policies. It also shows that the dropout rates of students who were not members of these at-risk groups are also sensitive to school experiences and policies. In some instances, at-risk students appear more vulnerable than non-at-risk students.

This difference in effect is seen when considering the negative effects on the students coming from a single-parent family as opposed to a two-parent family. Eighteen percent of average white sophomores from single-parent families dropped out before their scheduled graduation 2 years later; 10/ this rate rose by 16 percentage points for each year such white sophomores were behind the modal age for their grade (thus, the average white sophomore from a single-parent family who was 1 year behind modal age had a dropout rate of 34 percent). 11/ At the same time, the 11 percent dropout rate of average white sophomores from two-parent families increased by 6 percentage points for each

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10/ This means that the estimated dropout rate was 18 percent for white sophomores from single-parent families whose background and other characteristics had the average values for students from that group (e.g., they spent 3.6 hours on homework per week--see table C-6 in appendix C). The term "average" when applied to other groups of students in this introduction has the same meaning--background and other characteristics have the average values for the particular group.

11/ See table 4-2 and accompanying text. Modal age is the typical age of students in a particular grade. To be behind modal age is to be older than one's classmates. Being retained in grade is one way students end up behind modal age. The percentage point increases in the dropout rate presented in this paragraph and those which follow are calculated using a statistical technique that controls for other background, school, and community variables. This technique permits the calculation of the influence of discrete changes in particular background and other variables. See appendix B.

year behind modal age (being a single year behind modal age increased the dropout rate of white sophomores from two-parent families to 17 percent). Thus, the dropout rate nearly doubled for students from one-parent families, but rose by only somewhat more than half for those from two-parent families.

Similar patterns can be seen for school experiences that tend to reduce the chances of dropping out. For instance, students in the academic track generally had lower dropout rates. 12/ Considering the study's findings regarding family income, it is clear that the positive impact of academic track enrollment was greater for low-income male sophomores than for non-low-income male sophomores. For example, the dropout rate for average low-income male sophomores was 25 percent; if they were enrolled in the academic track, their dropout rate fell by nearly half (resulting in a 13 percent dropout rate). The dropout rate for average non-low-income male sophomores was 11 percent; enrollment in the academic track dropped that rate by only about a quarter (yielding an 8 percent dropout rate). 13/

Finally, among its other important findings, the study shows how seriously negative are the consequences of early family formation among high school students, particularly females. 14/ For example, early parenthood, independent of the influence of other characteristics, increased 1980 female sophomores' chances of dropping out by between 11 and 26 percentage points, depending upon race and ethnicity. Perhaps most importantly, it was found that Hispanic and white female dropouts, who bore a child while still in school, left school, on

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12/ See tables 3-2 and 3-3, and accompanying text. See, also, footnote 26 below.

13/ See table 4-1 and accompanying text.

14/ See table 3-3 and accompanying text.

average, 3 months after conception; black females left, on average, a month after delivery. 15/

The sheer complexity of the phenomenon, with its concentration among certain groups and its widespread occurrence in the general youth population, has implications for Federal policymaking. There may be no simple, single solution. The Federal options may range across a spectrum from limited and targeted efforts to "comprehensive" programs.

The educational disadvantages of youth seem to be the result of an interaction of socioeconomic characteristics with schooling policies and practices. This has broad ramifications for policy development. It appears appropriate to include schooling as part of the policy debates on the Nation's social and economic problems involving disadvantaged youth. The study finds that certain in-school experiences--being behind modal age and being enrolled in the academic track--have particularly adverse or particularly beneficial consequences for the educational success of at risk youth. As a result, it may be appropriate to consider how Federal efforts on behalf of educationally at-risk youth might affect the school practices or policies underlying these experiences. In addition, the dropout rates of students who are not members of these at-risk groups are strongly influenced by some in-school experiences, at times even more than those of at-risk groups. As a result, efforts to address the factors affecting all students' dropout rates merit consideration.

The study's findings on the effects of early family formation on high school completion rates offer additional guidance for policymaking. Principally, these findings delineate how devastating early family formation is for educational progress, suggesting the importance of efforts to address the needs of early family formers. Given the finding concerning the different

15/ See figure 3-3 and accompanying text.

timing of their dropout decisions, it should be recognized that a program to keep pregnant females in school is of little utility for many Hispanic and white dropouts if it first provides services more than 3 months after conception.

Structure of Study

Following this introduction, chapter 2 presents descriptive information about the prevalence of the at-risk factors among 1980 high school sophomores. It then looks at the extent to which the factors overlap, for example, the percentage of students whose families are poor and who also live with a single parent or have had a child before high school graduation. Lastly, chapter 2 reports on how rates for the presence of at-risk factors differ for white, black, and Hispanic young men and women. 16/

Chapter 3 considers the relationship between at-risk factors and the two outcomes discussed above: (1) students' chances of dropping out of high school after their sophomore year, and (2) dropouts' chances of receiving a high school degree or equivalency within 4 years after their class' graduation date. Because previous research suggests that the relationship between at-risk factors and outcomes is different depending on a student's sex and race, these findings are presented separately for black, white, and Hispanic young women and men. 17/

16/ The results reported in this paper include only black, white, and Hispanic students. There were not enough Asians or students of other race/ethnic backgrounds to report separate results for these groups.

17/ For example, Waite and Moore have reported that the effect of early parenthood is different for blacks and whites. (Waite, L. J. and K. A. Moore. The Impact of an Early First Birth on Young Women's Educational Achievement. Social Forces, v. 56, no. 3. 1978. p. 845-865)

Simple relationships between at-risk factors and educational outcomes are presented first. These findings show how outcomes, such as the dropout rate, are different depending on whether a student is a member of an at-risk group. However, as earlier findings indicate, students often exhibit different combinations of risk factors. Analyses presented in chapter 3 address the interrelationships among membership in at-risk groups and other factors when estimating the effects of these factors on dropping out. 18/ Four types of characteristics are considered simultaneously with the at-risk factors: individual in-school experiences, individual out-of-school experiences, the school environment, and the out-of-school environment.

Chapter 4 expands the analysis by addressing the question of whether the process leading up to dropping out is different for students whose background puts them at risk compared to those who are not at risk. Findings are presented separately for young men who are low-income and those who are not, for young women who have a child and those who do not, and for whites who live in single-parent families and those who live in two-parent families. These results can lead to a more detailed understanding of which experiences contribute to dropping out for different students.

Chapter 5 presents an analysis of the public policy implications of the research presented in the previous chapters. The chapter particularly explores how public policy might be made sensitive to the role that schools appear to play in enhancing or discouraging educational success from these at risk groups of students.

18/ Here multivariate analysis techniques that are designed to account for the simultaneous effects of a group of factors on an outcome are used. The techniques are discussed in more detail in appendix B.

CHAPTER 2: CHARACTERISTICS OF 1980 HIGH SCHOOL SOPHOMORES

This chapter presents a general description of the prevalence of four characteristics among 1980 high school sophomores that place them at risk of poor performance in the education system: living in a low-income family, living in a single-parent family, having a child before high school graduation, and getting married before high school graduation. In addition to these overall rates, it presents information about the extent to which students have multiple at-risk characteristics and the extent to which the prevalence of the at-risk characteristics varies according to the sex and race of the student.

Among the most important findings presented in this chapter are the following:

- The at-risk groups are widespread among high school students. Of 1980 sophomores, 22 percent lived with a single parent or with neither parent; 21 percent were low-income; 5 percent had a child before their scheduled graduation; and 5 percent married before their scheduled graduation.

- Students do not necessarily belong to one at-risk group or another; they belong to different combinations of groups. Students who are from low-income families are more likely to belong to other at-risk groups than those who are not.

- Membership in these at-risk groups varies significantly by race. Whites have the lowest at-risk rates. Blacks are most likely to live with one or neither parent and to have children before high school graduation. Hispanics are more likely than black and white students to live in low-income families and to marry before graduation.

- The likelihood of experiencing both marriage and child bearing differs by the race of young women. For example, the vast majority of black young women who had a child did not marry, whereas about three quarters of white women who had a child also married before high school graduation.

At-Risk Factors and Interrelationships Among Them

Overall, 5 percent of the sophomores in the HS&B survey had a child before June of 1982, the date of high school graduation for their age group. Also, 5 percent of the sophomores married before their class' high school graduation date. Eighteen percent of the students were living with a single parent during their sophomore year, and an additional 4 percent were living with neither parent nor a guardian. (The latter individuals may be living alone, with other relatives, or with non-relatives.) Twenty-one percent of the students were classified as low-income for this study. This breakdown is a result of the fact that the low-income category represents the bottom 20 percent of per person family income, not an external definition of poverty.

Students who are from low-income families are more likely to belong to other at-risk groups than those who are not. As table 2-1 shows, 29 percent of low-income students live in single-parent families, compared to 14 percent of students who are not low-income. Students from low-income families are more than twice as likely to marry before the time of their high school graduation and three times more likely to have a child.

Students who live in single-parent families are twice as likely to have had a child before their high school graduation date. Four percent of those living with two parents, compared to 8 percent of those living with one parent, had a child before their scheduled high school graduation date. Students living in single-parent and two-parent families had a similar likelihood of marrying before their graduation. See table 2-2, section A.

Table 2-1

Family Characteristics of 1980 High School Sophomores who are Low Income and Not Low-Income[1]

	All Students	Low-Income	Not Low-Income
FAMILY			
Percent in single-parent family	18	29	14
Percent living in neither-parent family	4	7	3
MARRIAGE			
Percent married before high school class graduation	5	9	4
CHILDREN			
Percent with a child before high school class graduation	5	10	3

[1] See Appendix D for definition of the characteristics.

Table 2-2

Percent of 1980 High School Sophomores Who Have Married or Had a Child Before Their High School Graduation Date By Sex and Family Characteristics

	Neither Parent	One Parent	Two Parents	All Students
A. All sophomores				
Percent married	11	4	4	5
Percent having a child	11	8	4	5
B. Females				
Percent married	16	7	7	8
Percent having a child	19	12	5	7
C. Males				
Percent married	7	2	2	2
Percent having a child	4	3	2	2

Slightly more than half the students who had a child before their class graduated did not marry before that time. Similarly, slightly more than half the students who married did not have a child. This is illustrated in figure 2-1.

At-Risk Differences by Race and Sex

It is well known that the prevalence of at-risk characteristics varies widely depending on the race and sex of the individual. This section presents additional evidence on this phenomenon. Figures 2-2 and 2-3 show the percentages of students who belong to at-risk groups for blacks, whites, and Hispanics separately. Whites have the lowest at-risk rates. Blacks are most likely to live with one or neither parent and to have children before high school graduation. Hispanics are more likely than black and white students to live in low-income families and to marry before graduation. Each of these estimates for Hispanics should be regarded as underestimates for the population of Hispanic youth because of the high dropout rate before the sophomore year among Hispanics. It is likely that the Hispanic youth who are most at risk are not in the HS&B sample.

Both the race and sex of students affect patterns of early marriage and childbearing. Young women are far more likely than young men to have children or marry early. Black young women are particularly more likely to have a child before graduation. In addition, as figure 2-4 illustrates, the likelihood that young women who have a child will also marry, and that those who marry will also have a child varies widely depending on whether they are white, black, or Hispanic. For example, the vast majority of black young women who had a child did not marry, whereas about three quarters of white women who had

FIGURE 2-1

FAMILY FORMATION PATTERNS OF 1980 HIGH SCHOOL SOPHOMORES BY MAY 1982

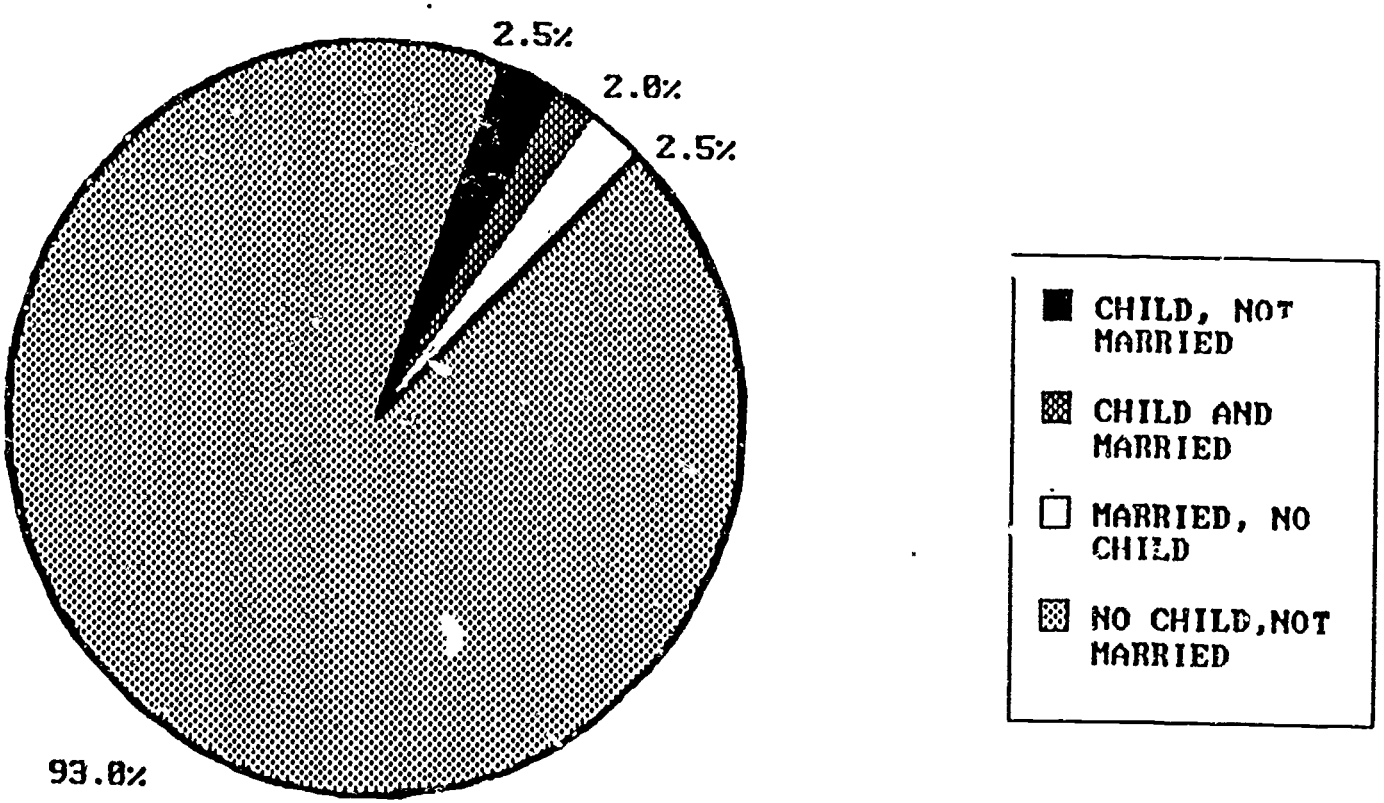

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FIGURE 2-2
AT-RISK CHARACTERISTICS OF
SOPHOMORES, BY RACE

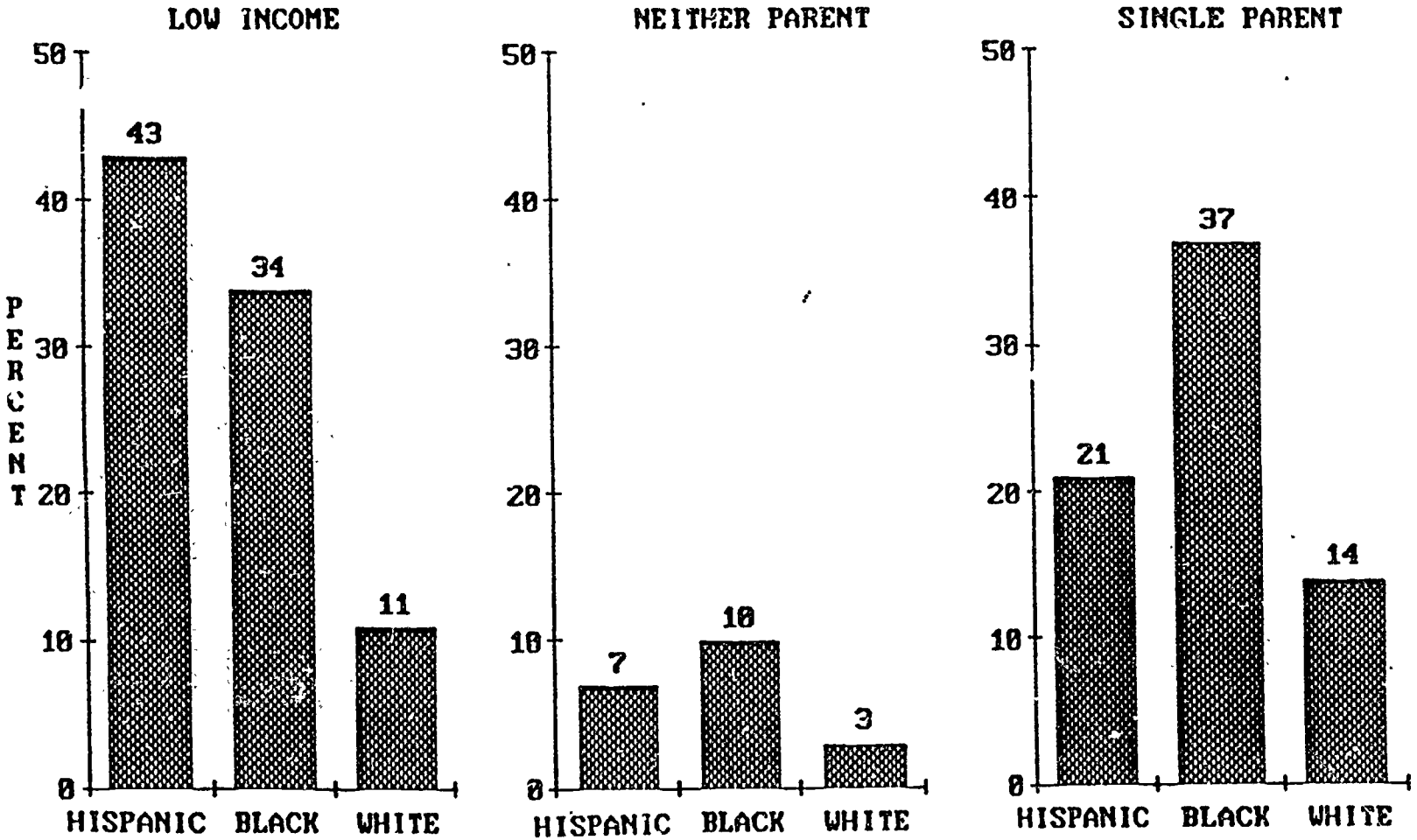


FIGURE 2-3
AT-RISK CHARACTERISTICS OF
SOPHOMORES, BY RACE

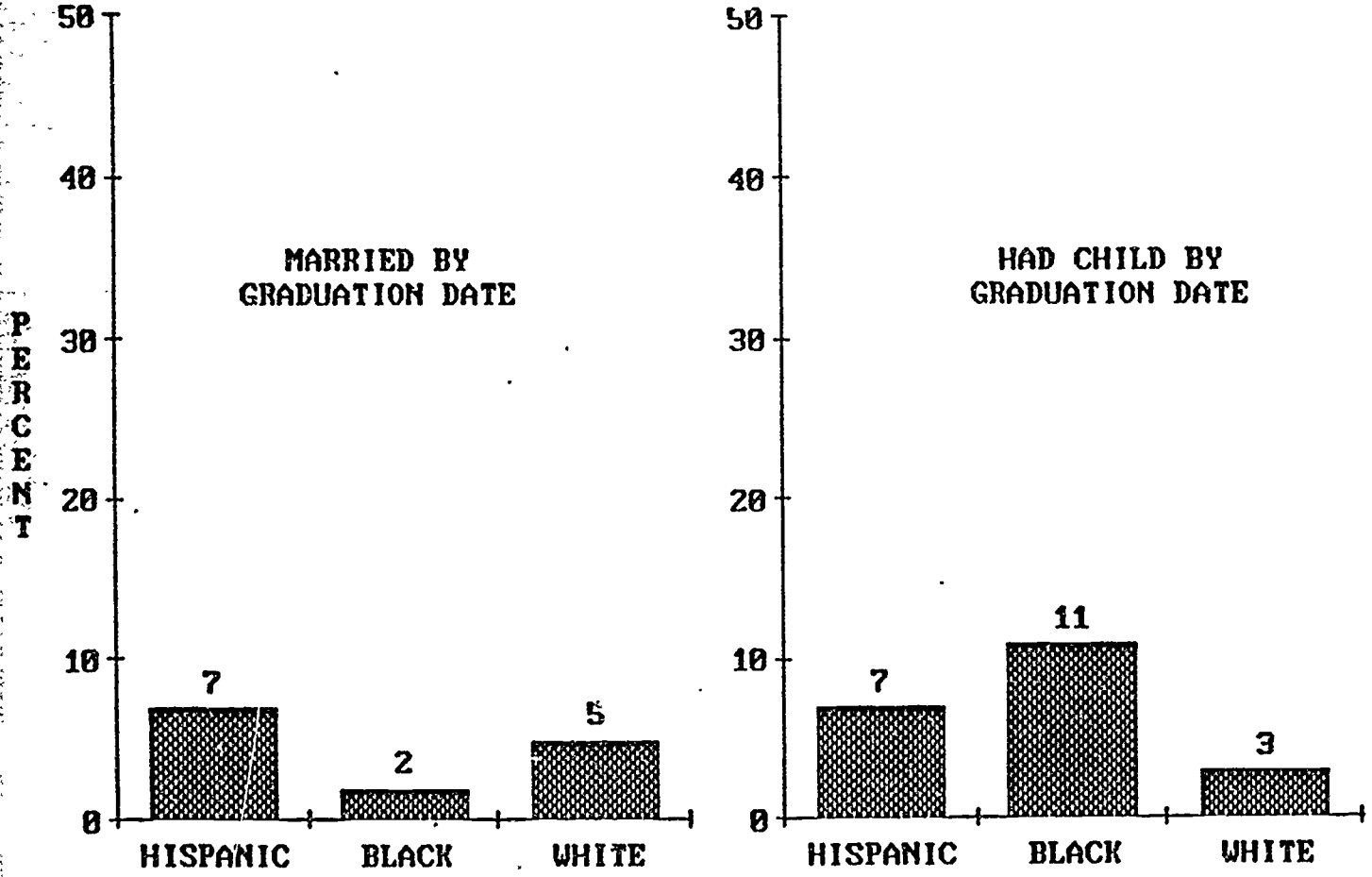
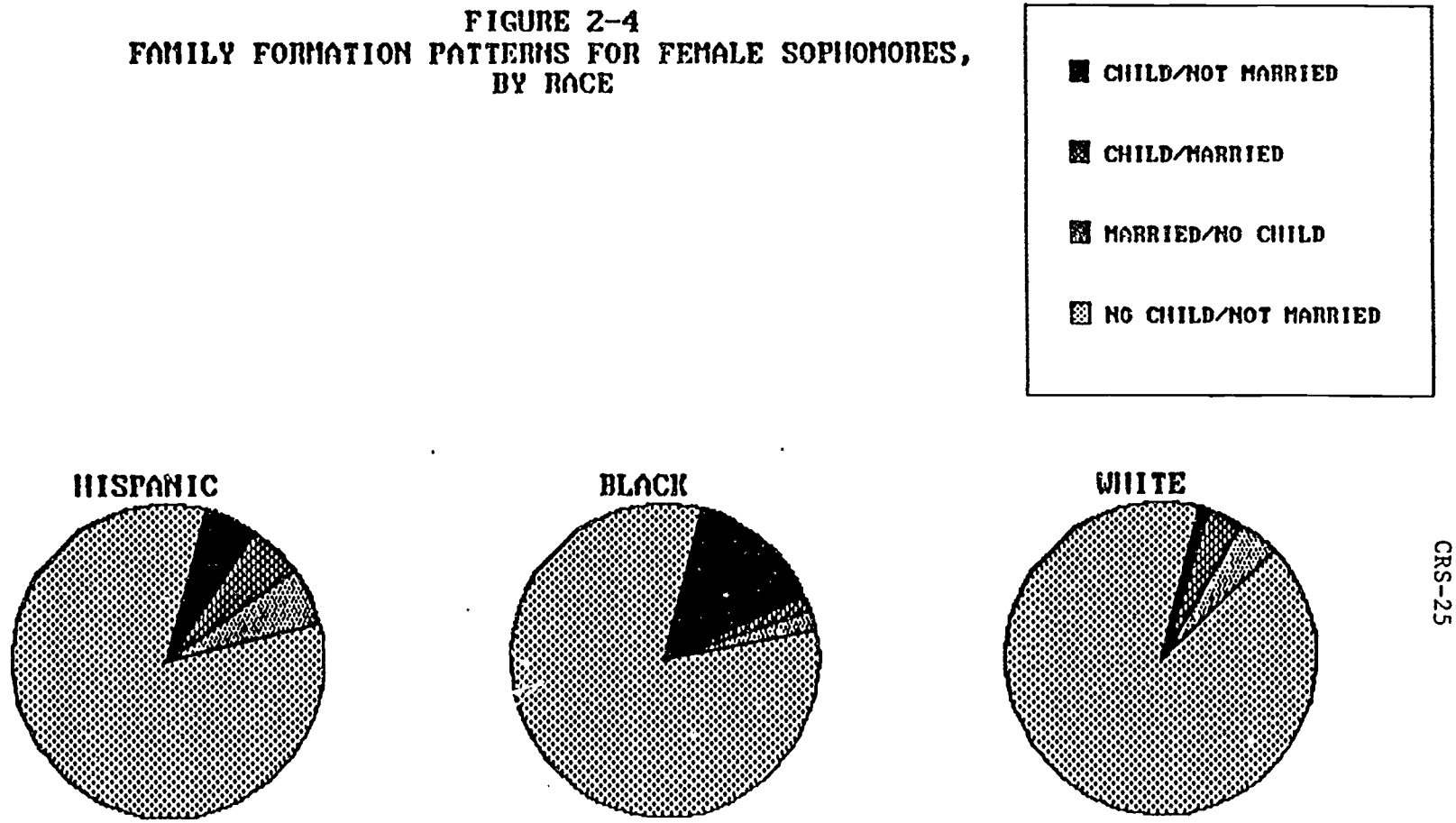


FIGURE 2-4
FAMILY FORMATION PATTERNS FOR FEMALE SOPHOMORES,
BY RACE



CRS-25

Percentages are listed in Table 2-3.

a child married before high school graduation. These estimates are also shown in table 2-3.

Lastly, the percentage of young women who had a child before their class graduated is much larger for those in a single-parent family than for those in a two-parent family, whereas the percentage for young men is similar regardless of whether they live in a single-parent family. This is shown in table 2-2, sections B and C.

Discussion

The findings presented in this chapter reinforce the fact that at-risk factors are interrelated. Students do not necessarily belong to one at-risk group or another; they belong to different combinations of groups. The findings also show that some combinations are more likely than others. For example, living in a single-parent family is more likely among students from low-income families than among other students. Early childbearing is more common among those who live in a single-parent family than among those who live in a two-parent family.

It needs to be stressed that these interrelationships among at-risk factors in no way demonstrate that any of the at-risk characteristics is the cause of another, e.g., that having a low income causes single-parent families or that living in a single-parent family causes early parenthood. However, because the factors are interrelated, it is necessary to make statistical adjustments to determine the independent effect of any one factor. The techniques used in the remainder of this study to make these adjustments are described in appendix B.

The results also highlight the fact that at-risk characteristics and their interrelationships vary depending on the sex and race of the student. For

Table 2-3

FAMILY FORMATION PATTERNS BY RACE AND SEX
OF 1980 HIGH SCHOOL SOPHOMORES BY MAY 1982

	Percent			
	Child, Not Married	Married, No Child	Child, Married	No Child, Not Married
All Students	2.5	2.5	2.0	93.0
Females				
Hispanic	5.5	5.8	5.8	82.9
Black	14.3	2.1	1.6	82.0
White	1.3	4.1	3.6	91.0
Males				
Hispanic	2.4	2.5	1.1	94.0
Black	4.6	.6	.4	94.4
White	.8	.8	.8	97.6

example, the combination of having a child and marrying is more common among white than among black young women, who are far more likely to have a child and not marry. In addition, other evidence suggests that at-risk factors may have different effects on educational outcomes for young men and women and for students of different races. Because of this, the analyses presented in the next chapter have been conducted separately for whites, blacks, and Hispanics.

CHAPTER 3: THE EFFECT OF AT-RISK CHARACTERISTICS ON HIGH SCHOOL COMPLETION

This chapter first addresses the issue of how at-risk factors are associated with students' chances of dropping out of high school. The second section then focuses on the dropouts themselves, and investigates the question of how background factors affect the chances that dropouts will later receive a high school degree or its equivalent.

The relationships are estimated separately for young men and women and for whites, blacks, and Hispanics, using data from the Sophomore Cohort of High School and Beyond (HS&B). 19/ These students were members of the high school class of 1982 (sophomores in 1980). The dropouts were followed through the spring of 1986 to determine whether they completed a high school degree or its equivalent.

The important findings presented in this chapter include the following:

- o High school sophomores who belong to at-risk groups are more likely to drop out of high school than other students.
- o Background characteristics affect students' chances of dropping out because students from different backgrounds are likely to have different experiences during the high school years.
- o Certain high school experiences appear related to increased or decreased chances of dropping out. For example, whites and blacks who are older than the modal age of students in their

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19/ The reasons for studying students separately depending on their sex and race are discussed in the previous chapter. See appendix A for a description of the HS&B survey and appendix D for a description of the variables used in the analysis.

grades have an increased chance of leaving school before graduation; whites and blacks who are in the academic track have decreased chances of dropping out.

- o A large percentage of dropouts return to education. Forty-four percent of dropouts had received a high school degree or equivalency within 4 years after their scheduled graduation date. Dropouts in at-risk groups are less likely to have returned to school than dropouts from other groups.

- o Early family formation, particularly by females, has a very negative effect on dropout rates. Early marriage has a more negative impact than does child bearing. The timing of dropping out and having a child is very different for black females than it is for Hispanic or white females.

Dropping Out of High School

High school sophomores who belong to at-risk groups are more likely to drop out of high school than other students. As the data in table 3-1 show, students from low-income families are twice as likely to drop out of high school as others. For students who are not in the low-income category, however, the dropout rate is fairly stable across the remaining income levels. Thus, the chances that students who are not low-income will drop out are relatively unaffected by their family income. This is illustrated in figure 3-1. 20/ Beginning a family, either through marriage or parenthood, is highly related to dropping out of high school. Students who have a child or marry before the time their class graduates from high school are about five times more likely to drop out than other students. In addition, black males and Hispanics, on average, are more likely to drop out of high school than are black females and whites, as shown by figure 3-2 below and table C-3 in appendix C.

20/ The dropout rates for the lowest through highest income quintiles, respectively, are 24, 14, 11, 11, and 9 percent.

Table 3-1

Dropout Rate for 1980 High School Sophomores[1]

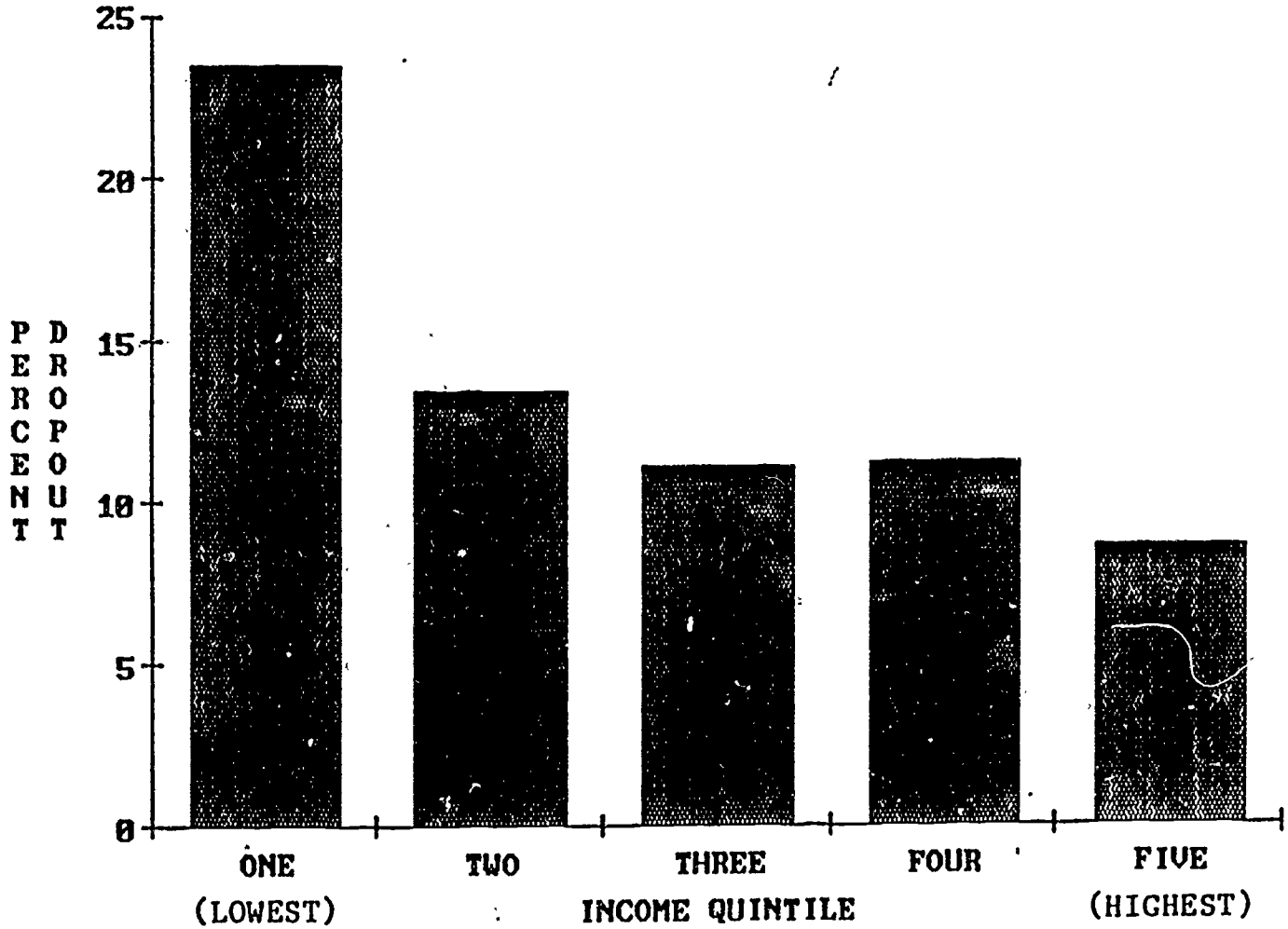
in At-Risk Groups[2]

All Students	14
INCOME	
Low income	24
Not low income	11
FAMILY	
Neither parent	33
Single parent	20
Two parents	12
MARRIAGE	
Married	65
Not married	12
CHILDREN	
Child	56
No child	12

[1]This table reports estimates for white, black, and Hispanic students in the High School & Beyond Sophomore cohort.

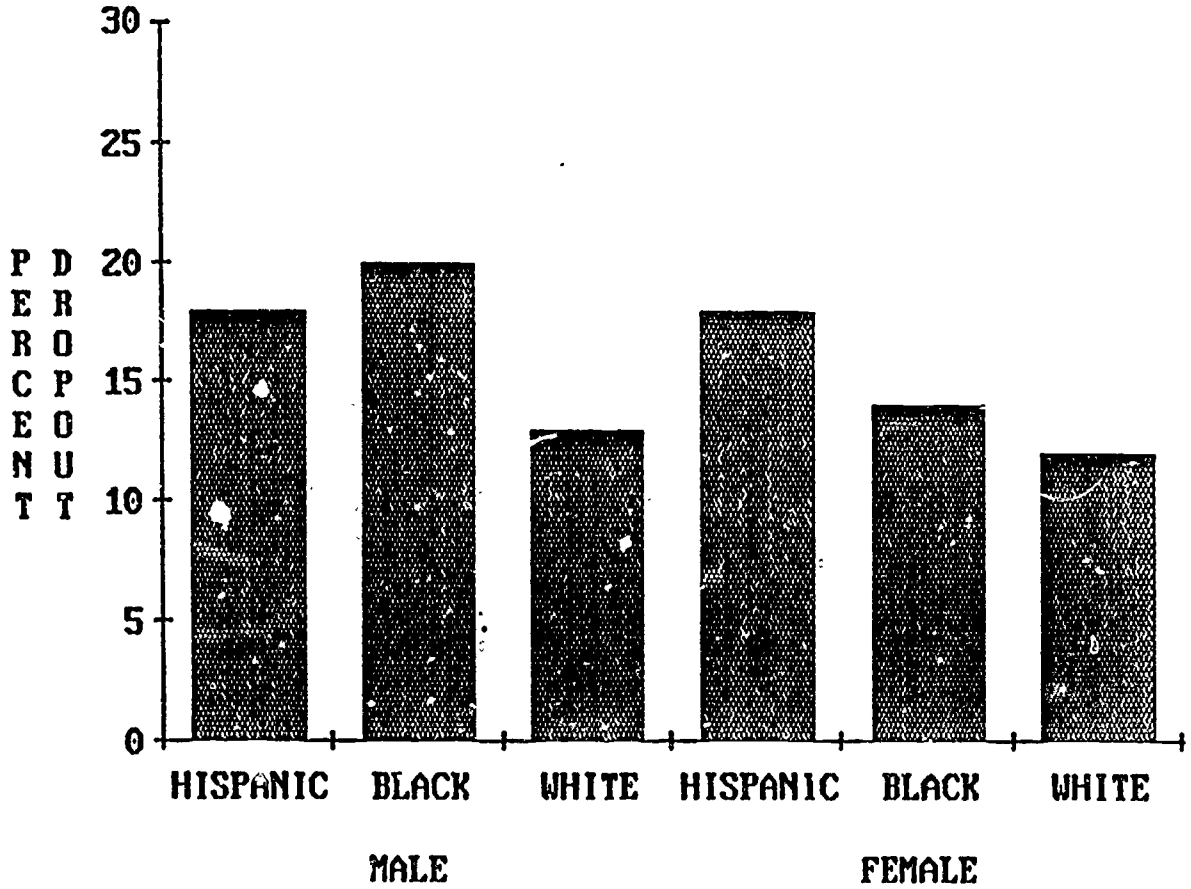
[2]See Appendix D for a description of the outcomes and student characteristics.

FIGURE 3-1
DROPOUT RATES BY INCOME QUINTILE, SOPHOMORES



CRS-33

FIGURE 3-2
PERCENT OF 1980 HIGH SCHOOL SOPHOMORES
WHO DROPPED OUT, BY RACE AND SEX



These relationships between dropping out of high school and at-risk factors do not take into account the fact that many students belong to a combination of at-risk groups and have different experiences during their high school years. The analysis in this section presents estimates for the independent effects of particular student characteristics on the chances that Hispanic, black, and white young men and women will drop out of high school. 21/

The major question addressed by this analysis is to what extent at-risk characteristics are associated with dropping out of high school, independent of other student characteristics. The results shown in tables 3-2 and 3-3 display the percentage point change in the likelihood that students will drop out that can be attributable to each separate characteristic in the analysis. 22/ These tables measure the change in dropout rate for a particular group (Hispanic males, for example) if a single variable changes while all others are kept at their average values for the particular group. For example, table 3-2 should be read as follows: "The estimated dropout rate for Hispanic males rises by 10 percentage points when they are enrolled in the vocational track rather than in the general track, if background and other characteristics

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21/ The analysis adjusts simultaneously for the at-risk factors and also for three additional background characteristics that are related to educational outcomes: the education level of the parents, the number of children in the family, and the occupation of the parents. In addition, it includes four types of experiences during the high school years: individual school experiences, individual out-of-school experiences, the school environment, and the out-of-school environment. Each of the at-risk characteristics, background factors, and high school experiences is described in appendix D.

22/ This analysis used a statistical technique called logistic regression, which is described in appendix B. It is important to keep in mind that these results are estimates because they are based on a sample of the high school student population. Different samples would produce slightly different estimates.

TABLE 3-2

Estimated Percentage Point Change In Students' Chances Of Dropping Out Of High School Associated With Student Characteristics:
MALES, BY RACE (1)

	HISPANIC MALES	BLACK MALES	WHITE MALES
INDIVIDUAL SCHOOL EXPERIENCES			
Two homework hours per week	-	-	-2 **
Job program participation	-	-	3 **
One year behind modal age	-	9 **	6 **
Academic track	-	-9 **	-4 **
Vocational track	10 **	-	3 **
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES			
Mom monitors school work	-	-	-
Dad monitors school work	-	-	-2 **
Been in serious trouble with law	24 **	14 **	6 **
Per 10 hours worked in a week	4 **	3 *	1 **
Never had a job	-	-10 *	-
Most recent job babysitting/lawn work	-	-	-5 **
SCHOOL ENVIRONMENT			
Per 10 percent black in h.s.	-	-	-
Per 10 percent Hispanic in h.s.	-	-	-
Per 10 percent dropouts in h.s.	-	3 *	3 **
Per 10 percent college enr. in h.s.	-	-	2 **
Per 10 percent low-income in h.s.	-	-	-
OUT-OF SCHOOL ENVIRONMENT			
Per $1000 of county percapita income	-	-	-1 *
Per 10 points in cnty unemploy rate	-	-	3 *
Lives in urban area	-	11 **	-
Lives in rural area	-	-	-
STUDENT BACKGROUND			
Low-income family	13 **	-	-
Early parenthood	-	-	6 *
Early marriage	54 **	low n	10 **
Single-parent family	-	-	-
Neither-parent family	-	-	9 **
Parent years of education	-	-2 *	-1 *
Children in family	-	-	1 **
Parent occupation			
Office/sales work	21 **	-	-
Low professional	10 *	-	-
High Professional	low n	low n	-

- not statistically significant * p < .05 ** p < .01
low n fewer than 20 people in group

(1) See Appendix O for a description of the student characteristics.
Estimates for characteristics that have continuous values, such as parent years of education and hours worked in a week, refer to the percentage point change associated with adding one unit to the average value. For example, the dropout rate for black males whose parents have one year of education more than the average number of years is two percentage points lower than the rate for black males whose parents have an average amount of education.

TABLE 3-3

Estimated Percentage Point Change In Students' Chances Of Dropping Out Of High School Associated With Student Characteristics:
FEMALES, BY RACE (1)

	HISPANIC FEMALES	BLACK FEMALES	WHITE FEMALES
INDIVIDUAL SCHOOL EXPERIENCES			
School has pregnant student program	10 **	-	-
School has day care	-	-	-
Two homework hours per week	-	-	-1 *
Job program participation	-	-	-
Each year behind modal age	6 **	15 **	7 **
Academic track	-	-6 **	-3 **
Vocational track	-	-	-1 *
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES			
Mom monitors school work	-	-	-2 *
Dad monitors school work	-	-	-5 **
Been in serious trouble with law	39 **	low n	-
Per 10 hours worked in a week	-	-	1 **
Never had a job	-	-	-
Most recent job babysitting/lawn work	-	-	-2 **
SCHOOL ENVIRONMENT			
Per 10 percent black in h.s.	-	-	1 *
Per 10 percent Hispanic in h.s.	-	-	1 *
Per 10 percent dropouts in h.s.	-	-	1 *
Per 10 percent college enr. in h.s.	-	1 *	-
Per 10 percent low-income in h.s.	-	-	-
OUT-OF SCHOOL ENVIRONMENT			
Per $1000 of county percapita income	-	-	1 *
Per 10 points in cnty unemploy rate	-	-	-
Lives in urban area	-	-	-
Lives in rural area	-	-4 *	-
STUDENT BACKGROUND			
Low-income family	-	-4 *	-
Early parenthood	26 **	15 **	11 **
Early marriage	46 **	74 **	41 **
Single-parent family	-	-	2 *
Neither-parent family	18 **	-	7 **
Parent years of education	-2 **	-1 *	-1 **
Children in family	-	-	-
Parent occupation			
Office/sales work	-	-	-
Low professional	-	-	-
High Professional	low n	low n	-

\- not statistically significant * $p < .05$ ** $p < .01$
low n fewer than 20 people in group

(1) See Appendix D for a description of the student characteristics. Estimates for characteristics that have continuous values, such as parent years of education and hours worked in a week, refer to the percentage point change associated with adding one unit to the average value. For example, the dropout rate for Hispanic females whose parents have one year of education more than the average number of years is two percentage points lower than the rate for Hispanic females whose parents have an average amount of education.

have the average values for students from that group (e.g., they spend 2.7 hours doing homework per week, as shown in table C-2 in appendix C)." 23/

Focusing on membership in the at-risk groups under analysis in this study, the estimates in the tables can be interpreted as the difference in percentage points between the dropout rate of students in the at-risk group and the rate for those who are not in that group, assuming the students are average on other characteristics. The tables report, for example, that the dropout rate for Hispanic young women who marry before their class' graduation date is 46 percentage points higher than the dropout rate for similar students who do not marry. Similarly, the dropout rate for low-income Hispanic males is 13 percentage points higher than the rate for similar Hispanic males who are not from low-income families. For students who have combinations of the characteristics, their chances of dropping out must be calculated separately. The effects are generally cumulative although not necessarily additive. 24/

For example, the dropout rate for white females who live in a single-parent family and have a child is about 14 percentage points higher than the rate for white females who live in two-parent families and do not have a child.

These tables generally indicate that some at-risk characteristics do not have statistically significant effects on the chances that students will drop out. It needs to be emphasized, however, that these findings do not negate or contradict the earlier findings that students with at-risk characteristics are more likely to drop out than other students. Rather, these results add to the

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23/ As is described in appendix D, the effect of enrollment in the academic track or the vocational track is measured against enrollment in the general track.

24/ See appendix B. Estimates of the probability of dropping out for students with other combinations of at-risk characteristics are available from the authors.

analysis by showing that background characteristics affect students' chances of dropping out because students from different backgrounds are likely to have different experiences during the high school years. The effects of background that remain statistically significant in the analysis reflect aspects of being a member of an at-risk group that are not associated with experiences during the high school years included in the analysis or with the other at-risk characteristics. For example, according to table 3-3, average white females' dropout rates remain unchanged regardless of membership in low-income families, but drop by 11 percentage points if members of this group bear a child before their scheduled graduation. Thus, low income appears not to affect dropout rates directly after all of the other background and schools variables are controlled. In contrast, early parenthood continues to have a direct negative impact on dropout rates even after all of the other variables are controlled.

The findings shown in table 3-2 suggest that among males, many of the relationships between at-risk characteristics and dropping out are related to experiences during the high school years. When these experiences are included in the analysis, many of the at-risk factors have small or nonsignificant direct effects on the likelihood that students will drop out. Being from a low-income family only has an independent effect on the dropout chances among Hispanic males. As shown above, early marriage and parenthood continue to affect their chances of dropping out independent of high school experiences for Hispanics and whites.

The picture is somewhat different for females. The data in table 3-3 show that for every race group, early marriage and parenthood have a large affect on students' chances of dropping out independent of experiences during high school. Having a child before her class' graduation date increases the chances that a black or white young women will drop out of high school by a

similar amount--about 10 to 15 percentage points. Among Hispanic women the increase is even larger--about 26 percentage points. Also, for each group, early marriage increases the dropout rate by a larger amount than having child.

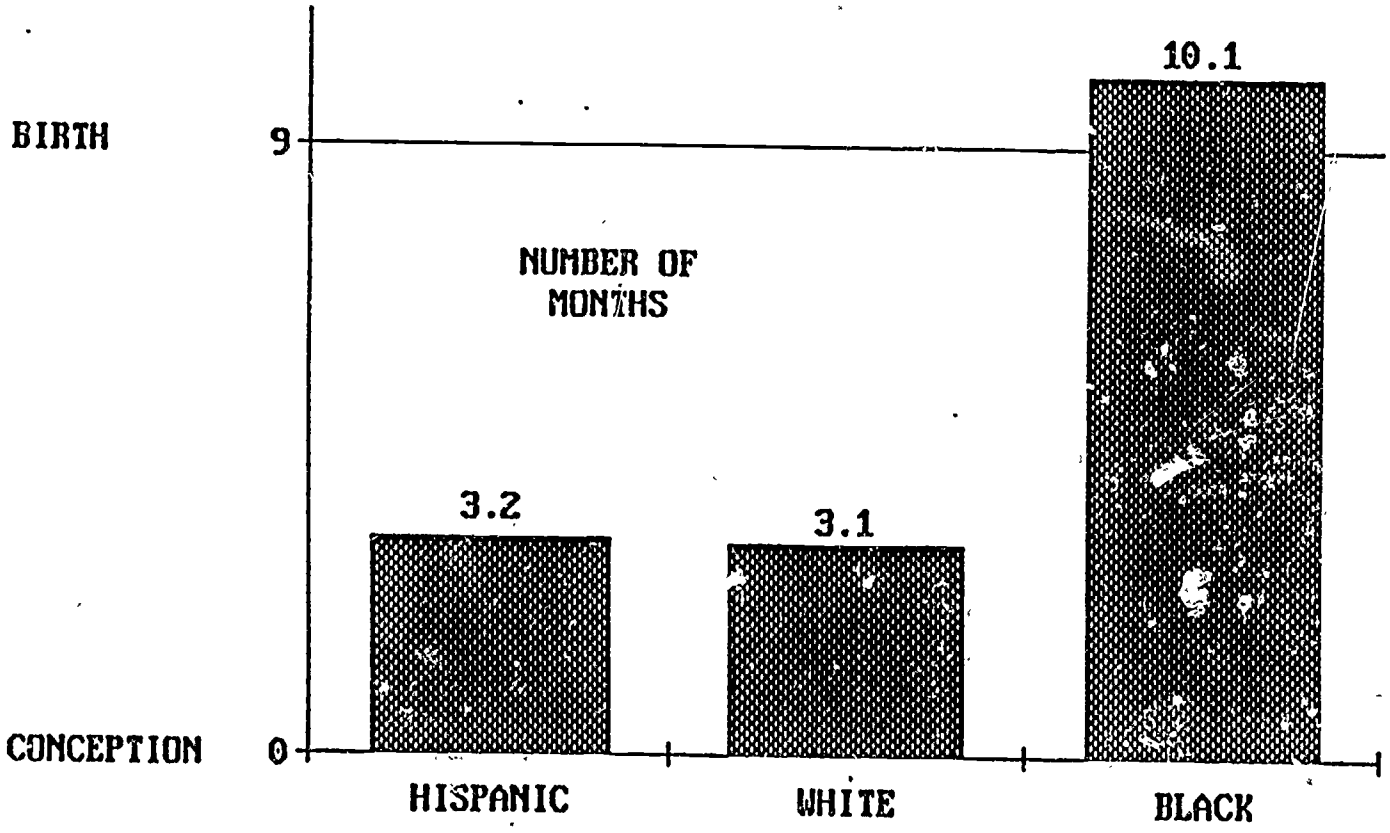
Although having a child increases the chances of dropping out for females regardless of their race, the timing of dropping out and having a child is very different among blacks than among Hispanics and whites. As figure 3-3 shows, whites and Hispanics who drop out of school do so, on average, when they are about 3 months pregnant. In contrast, black students report dropping out about 1 month after their baby is born.

White females from single-parent families are slightly more likely to drop out than similar students from two-parent families. For whites and Hispanics in low-income families and for blacks and Hispanics in single-parent families, however, the at-risk factors do not appear to affect students' chances of dropping out independent of the other characteristics in the analysis.

Interestingly, among black females, living in a low-income family decreases students' chances of dropping out. This means that among students with similar high school experiences and background, low-income black females are more likely to continue in school than their higher income black peers.

In a number of areas, young men and women, and Hispanics, blacks and whites have different experiences during their high school years. White females generally report the most academic approach to high school. They are most likely to be in the academic track and spend the most time on homework, and are on the average closest to modal age for their grade. Their orientation is also the least vocational. They are the least likely group to participate in job programs or to be enrolled in the vocational track. Black females spend a similar amount of time on homework, but other groups report spending an

FIGURE 3-3
AVERAGE MONTHS AFTER CONCEPTION THAT TEEN MOTHERS
WHO DROP OUT LEAVE HIGH SCHOOL, SOPHOMORES, BY RACE



average of at least an hour less per week than white females. Black males are most likely to be in job programs and in the vocational track.

Almost 90 percent within each of the groups of students report that their mothers monitor their school work. Fewer fathers are involved in a similar way. About three-quarters of whites, two-thirds of Hispanics, and half the blacks report that their fathers monitor their work.

Males are more involved with the formal labor market than females. All males, and particularly Hispanics, spend more hours working on jobs; among females who have jobs, more than a third of the Hispanics and blacks and half the whites report that their most recent job was babysitting or lawn work. Black and Hispanic females are also more likely to have never had a job than other students. Table C-2 in appendix C shows the average characteristics of students in the six groups that are included in this study: black, white, and Hispanic young men and women.

In addition to the findings about at-risk categories, the analysis reported in tables 3-2 and 3-3 reveals a number of patterns in the relationship between experiences during the high school years and students' likelihood of dropping out. For both whites and blacks, being older than the modal age of one's classmates increases students' chances of dropping out and being in the academic track decreases them. This is hardly a surprising finding. Being older than the modal age undoubtedly is associated with lack of success in school and being in the academic track is associated with success. Other research suggests that being enrolled in the academic track and being behind modal age exert influences on dropout rates independent of students' educational ability. 25/

25/ The analyses presented here do not include a control for achievement because of the limitations of the data, and the fact that achievement and (continued...)

Among white males, a vocational orientation to high school, as evidenced by being in the vocational track and participating in job programs, is associated with increased chances of dropping out. In contrast, white females in the vocational track, are slightly less likely to drop out of school. For both white females and males, the chances of dropping out increase slightly as the number of hours they work increases, although those whose last job was babysitting or lawn work are less likely to drop out, other things being equal.

Dropouts Receiving a Degree or Equivalency

Contrary to popular impressions about the ramifications of leaving high school, the decision to drop out does not necessarily lead to a life without a

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25/ (...continued)
dropping out are viewed in this paper as parallel, rather than sequential, outcomes of the factors in the model. In subsequent analysis, using basic skills achievement as a control, the effects of being behind modal age remained about the same as those shown in this study. The effects of academic tracks remained generally significant, but slightly smaller. Other research has shown that academic track has an effect on student success independent of academic achievement. For example, according to Karl L. Alexander and Bruce K. Eckland, academic track positively influences students' orientation to more education and results in increased educational attainment, regardless of the ability of those students. "Even after adjusting for the fact that college-bound students tend to be brighter and from more advantaged backgrounds, substantial benefits still accrue from being in the college track. [E]nrollment in an academic high school curriculum has been demonstrated to increase the support received from parents and school personnel for college, to increase the likelihood of acquiring as friends college-oriented peers, to increase appreciably plans to attend college, and finally, to increase as well actual educational attainment." (The Explorations in Equality of Opportunity Survey of 1955 High School Sophomores, appears in Research in Sociology of Education and Socialization, v. 1, 1980, p. 47). See, also, U.S. Library of Congress. Congressional Research Service. The Educational Attainment of Select Groups of "At Risk" Children and Youth. Report No. 87-290 EPW, by James B. Stedman. Washington, 1987. p. 44-46; Wheelock, Anne. The Way Out: Student Exclusion Practices in Boston Middle Schools. A Report by the Massachusetts Advocacy Center. Nov. 1986. p. 43-44.

high school degree. 26/ Forty-four percent of the dropouts in the HS&B sample had received a high school degree or equivalency within 4 years of the date they would have graduated had they not dropped out. Among the dropouts who reported that they had completed a high school credential, 26 percent reported that they had earned regular high school diplomas and 74 percent said they had earned an equivalent certificate such as a GED.

Even after students drop out of high school, their background characteristics continue to affect their chances for educational progress. At-risk students, particularly low-income students and those who lived with neither parent during high school, are less likely to return to school and receive a degree or equivalency certificate than other dropouts who are not in the at-risk groups. As the data in table 3-4 show, only 37 percent of the low-income dropouts, compared to 53 percent of the dropouts who are not from low-income families, received a high school degree or the equivalent. Only 31 percent of dropouts who lived with neither parent, compared to 42 percent from single-parent families and 47 percent from two-parent families, had received a high school degree or the equivalent. Early marriage and parenthood have a smaller effect on the chances that dropouts will return for a degree or secure an equivalency certificate than on the chances that high school students will drop out in the first place.

Combining those who graduated from high school with their class and those who later received a degree or equivalency, 92 percent of the students who were

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26/ This finding does not speak to a number of issues about the relationship between dropping out and subsequent educational, occupational, and financial outcomes. For example, it does not consider how a high school equivalency certificate compares to a regular diploma as a credential for postsecondary education or employment, or the effect of dropping out on the student's final educational attainment. Nonetheless, it does clearly show that being a high school dropout is not synonymous with never having a high school completion credential.

Table 3-4

Percent of High School Class of 1982 Dropouts

Who Had a High School Degree or Equivalent by 1986[1]

All Dropouts	44
Income	
Low Income	37
Not Low Income	53
Family	
Neither Parent	31
Single Parent	42
Two Parents	47
Marriage	
Married	40
Not Married	45
Child	
Child	40
No Child	45

[1] This table reports estimates for white, black, and Hispanic students in the High School & Beyond Sophomore cohort.

sophomores in 1980 had a high school degree or the equivalent by 1986, up 6 percentage points from 1982, when 86 percent of the sophomores graduated on schedule.

A comparison of male and female dropouts in different racial and ethnic groups presented in figure 3-4 shows that black males--the group with the highest dropout rate--have the highest likelihood of completing a high school degree or the equivalent. As a result of the high return rate for this group, the gap in receiving a high school degree or a certificate between black and white males is considerably narrowed 4 years after the class' high school graduation. As figures 3-5 and 3-6 show, the percentages of students who have not received a degree are more similar for males and females of different races 4 years after graduation than at graduation time. (These results are also shown in table C-3 in appendix C.) Four years after graduation, Hispanic females are the most likely of the six groups not to have a high school degree, a reflection of their relatively high dropout rate and low rate of receiving a degree after dropping out.

FIGURE 3-4
PERCENT OF DROPOUTS WITH DEGREE FOUR YEARS AFTER CLASS GRADUATION, BY RACE AND SEX, SOPHOMORES

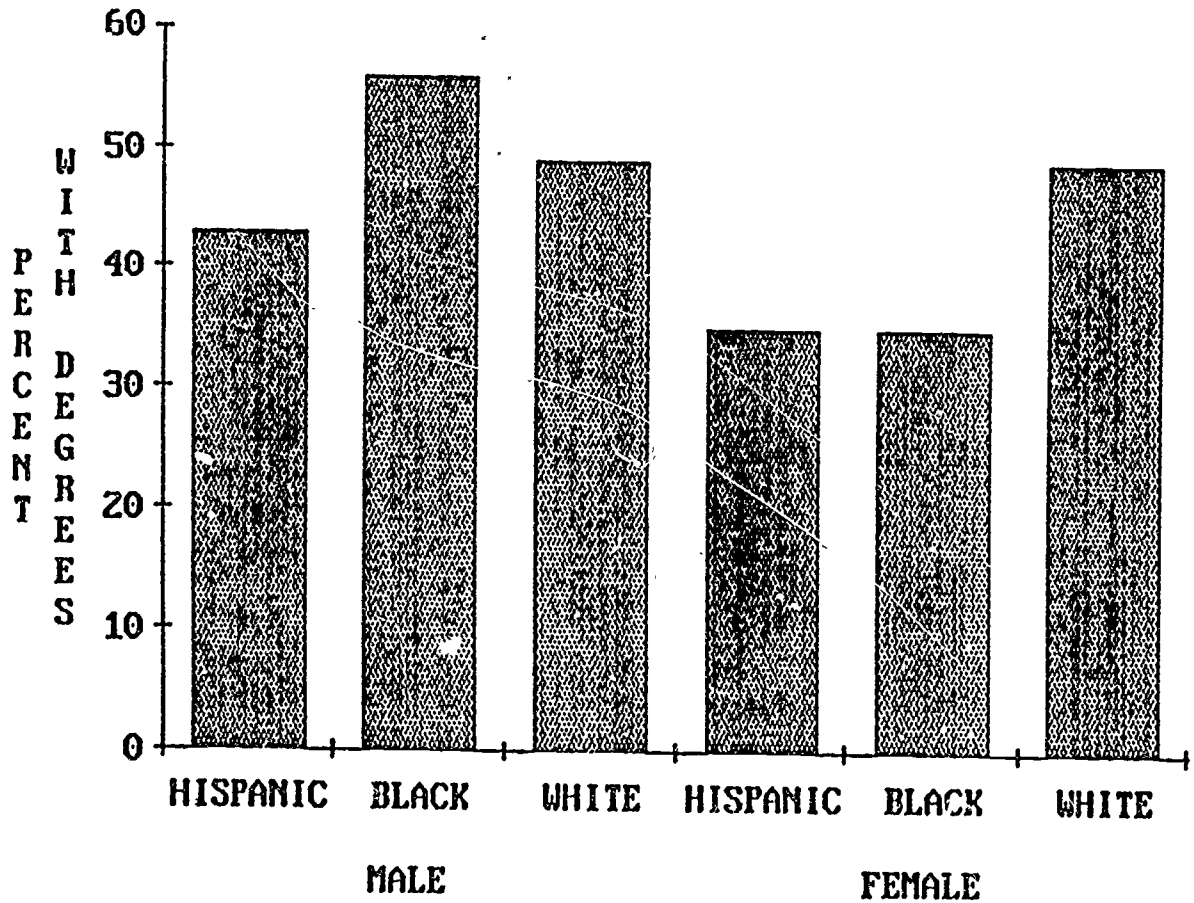
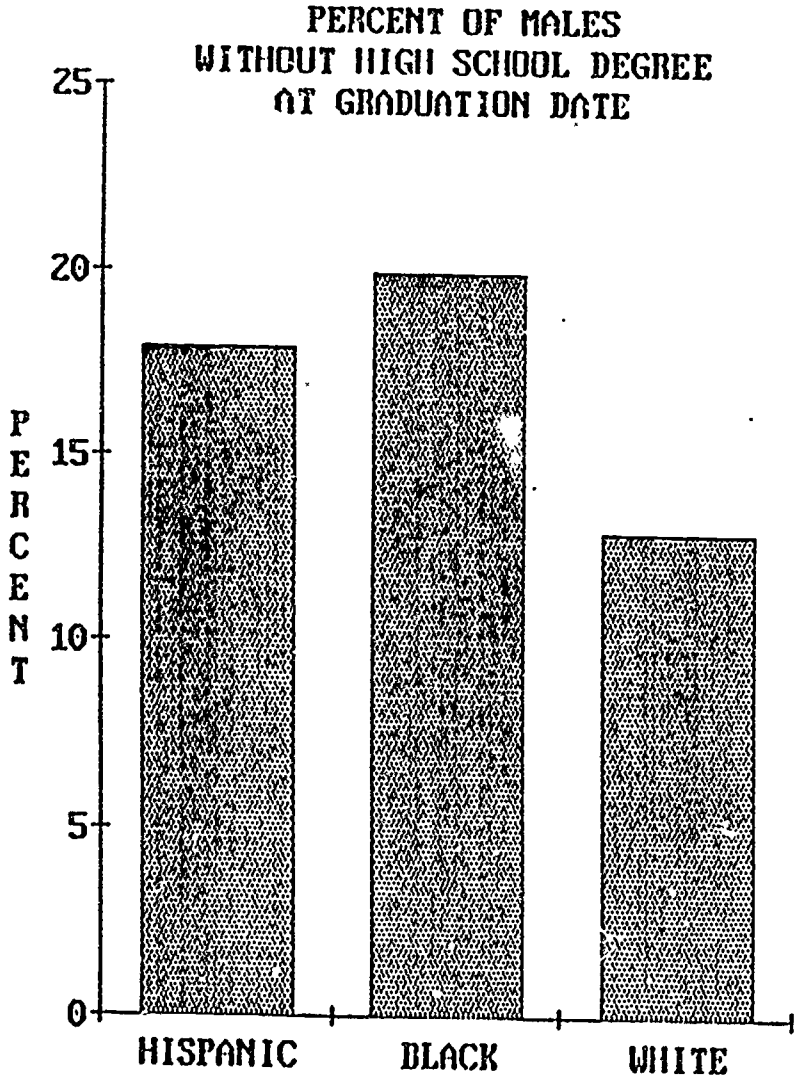


FIGURE 3-5



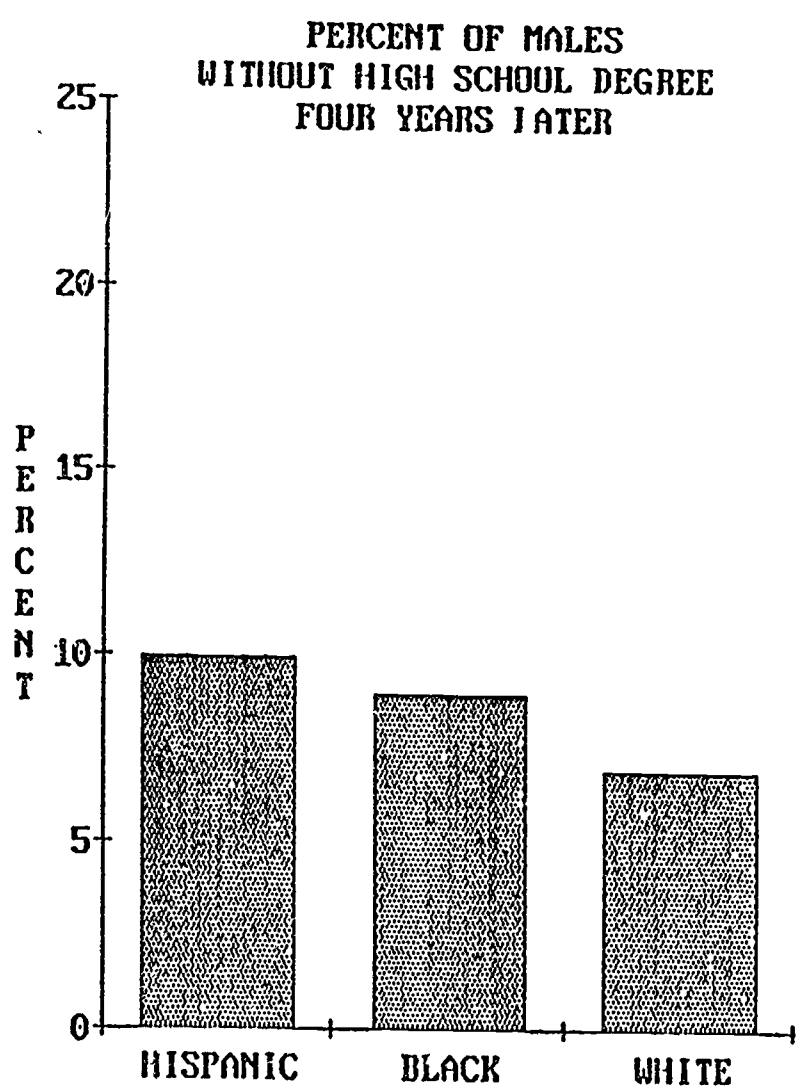


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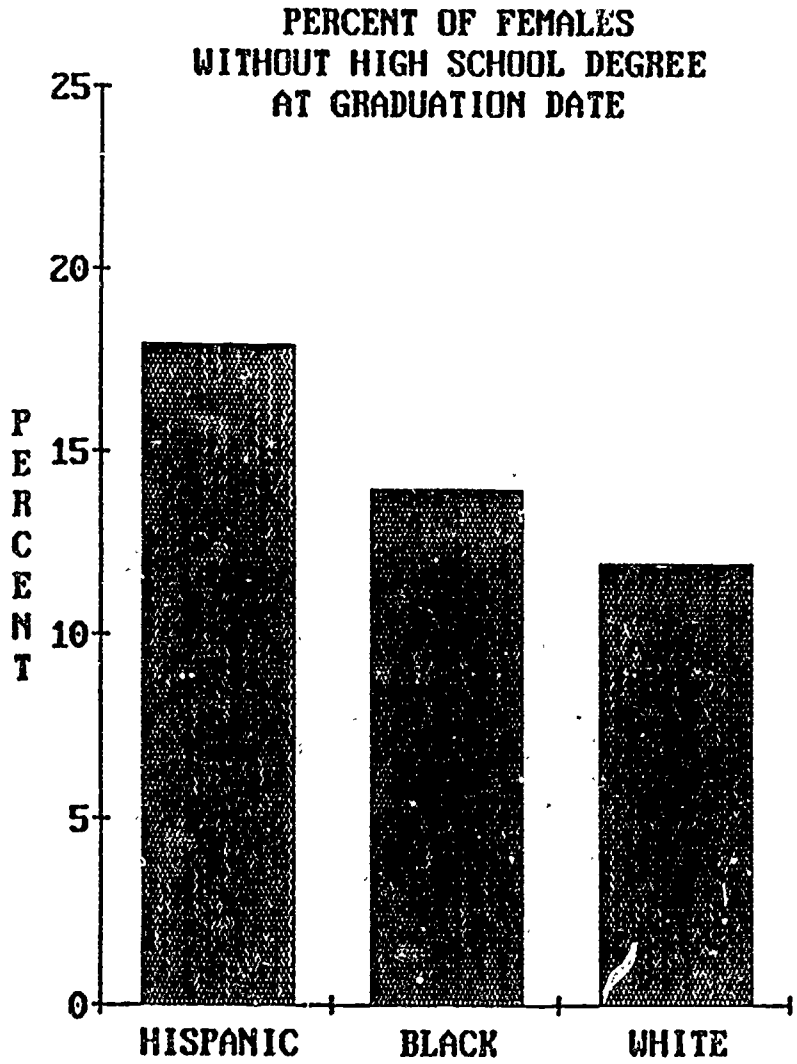
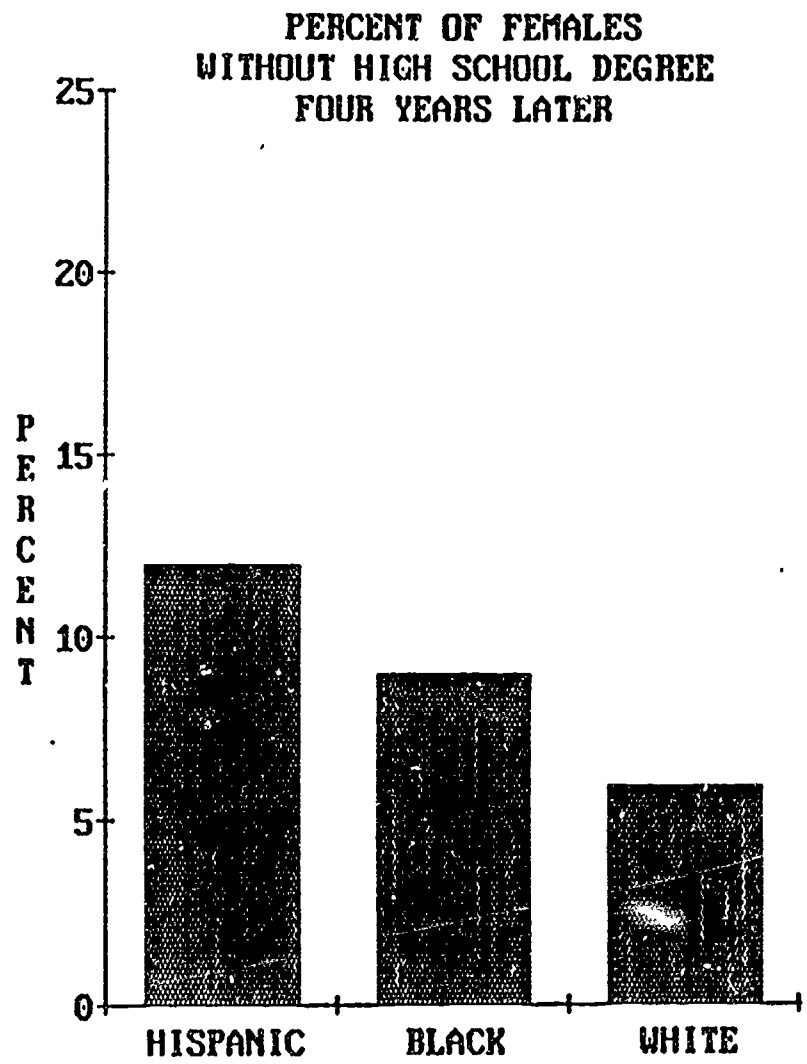
FIGURE 3-6





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CHAPTER 4: HIGH SCHOOL EXPERIENCES AND DROPPING OUT

The purpose of this chapter is to investigate whether the effect of experiences during the high school years on students' chances of dropping out is different for those whose background characteristics place them at risk of dropping out than it is for those whose background characteristics do not appear to adversely affect those chances.

Based on membership in the at-risk groups considered in this study, three types of students have been identified for the analysis in this chapter. These three types of students, whose chances of dropping out of high school are higher than those of their peers who are not at risk, include: males from low-income families, whites in single-parent families, and young women who have a child. Table C-4 in appendix C shows the predicted probabilities of dropping out for students in at-risk groups, adjusting only for their membership in other at-risk groups. The table shows first that coming from a low-income family has a consistent effect on the likelihood that young men will drop out of high school, regardless of their racial or ethnic group. Secondly, living in a single-parent family has a consistent effect on the likelihood that white students, both male and female, will drop out. Lastly, having a child before the date of their class' high school graduation reduces the chances that young

women will finish on schedule. These student groups and the factors which increase their likelihood of dropping out are summarized as follows:

Student group	At-risk factor
Young men	Low-income family
Whites	Single-parent family
Young women	Early childbearing

For the analysis, each of the student groups listed above on the left is subdivided according to whether the students are at risk based on the factor listed on the right. For example, young men are divided into two groups, those from low-income families and those not from low-income families, and the factors contributing to whether they drop out are investigated separately for the resulting two groups of students.

Among the important findings presented in this chapter are the following:

- The dropout rates of at-risk students are at times more sensitive to in-school experiences than are those of students not in the at-risk groups.
- Low-income male students have markedly different high school experiences than do non-low-income males. The higher dropout rates of low-income male students appear to be a function of overall differences in high school experiences and differences in the effect of particular experiences.
- The overall high school experiences of white sophomores who live in single-parent families are, for the most part, very similar to those of sophomores who live with two parents. Despite a similarity in experiences, the effects of some of these experiences upon dropout rates can be different depending upon students' family structure.
- The high school experiences of those who have a child before graduation are quite different from the experiences of those who do not; some of these experiences can also have a larger effect on the chances that young women who have a child will become a dropout than on the chances that young women without a child will drop out.
- Young women who have a child and are black are considerably less likely to drop out than Hispanics or whites, adjusting for other factors.

A Comparison Between Low-Income and Non-Low-Income Male Sophomores

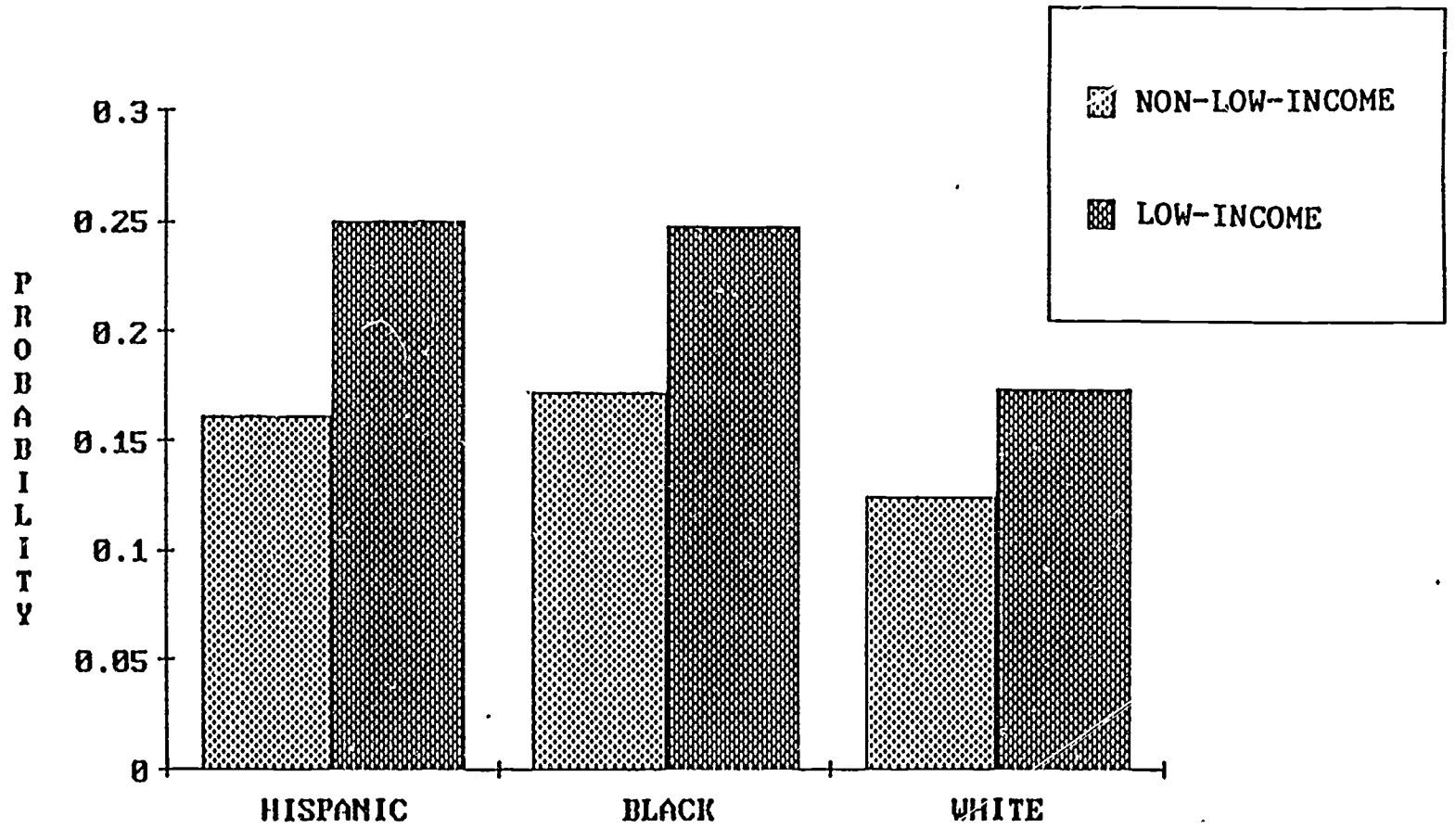
Young men who are high school sophomores are more likely to drop out of school if they are from low-income families (average dropout rate of 25 percent for low-income students, 11 percent rate for non-low-income students). Figure 4-1 shows the black, white, and Hispanic dropout rate for low-income and non-low-income students separately. Low-income students' higher dropout rates appear to be a function of differences in high school experiences and different effects of those experiences.

High school students exhibit a number of different characteristics depending on whether or not they are from low-income families. A quarter of the low-income males, compared to 11 percent of the males who are not low-income, have participated in a job program in high school. The low-income students complete on the average a half-hour less homework per week, are less likely to be in the academic track (17 percent for low-income males compared to 34 percent for non-low-income males), and more likely to be in the vocational track than non-low-income students (31 percent versus 20 percent). Their schools have a higher percentage of both black and low-income students (about 20 percent black and 30 percent low-income) than do non-low-income students' schools (10 percent black and 17 percent low-income).

Generally, the in-school experiences differ more widely between low-income and non-low-income students than do their out-of-school experiences. With regard to out-of-school experiences, for example, they have very similar work experiences, and a similar unemployment rate in their counties. These averages are shown in table C-5 in appendix C.

Further, this analysis suggests that there are sizable differences in the effects of these high school experiences on dropping out depending on whether the student is low-income. In general, high school experiences affected the

FIGURE 4-1
ESTIMATED PROBABILITY OF DROPPING OUT OF HIGH SCHOOL FOR MALE SOPHOMORES, BY INCOME



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likelihood that students will drop out more for low-income students than for non-low-income students.

As shown in table 4-1, each year behind modal age increases the chances of dropping out by about 10 percentage points among low-income male students with an average chance of dropping out (25 percent) and only 5 percentage points among non-low-income males (average dropout rate of 11 percent). Relative to their average dropout rates, these percentage point increases are proportionately nearly comparable. For low-income male students being in the vocational track increases dropout chances by 11 percentage points, while being in the academic track decreases the dropout rate by about 12 percentage points. The effects of these in-school factors are considerably smaller on students who are not from low-income families--2 point increase for being in vocational track, and 3 point decrease for being in the academic track. The proportional impact of these two high school experiences is also substantially greater for low-income males than for their counterparts (academic track enrollment decreases the low-income dropout rate by nearly half and the non-low-income rate by about a quarter; vocational track enrollment increases the low-income rate by about two-fifths and the non-low-income rate by about one-fifth).

Being in serious trouble with the law is the out-of-school experience that has the largest effect on the students' chances of dropping out. It increases the chances that a low-income student will drop out by 22 percentage points, compared to 6 percentage points for non-low-income students. It is difficult to compare these estimates, however, since there is no way to know whether low-income and non-low-income students are referring to legal problems with the same degree of severity.

TABLE 4-1

Estimated Percentage Point Change In Students' Chances Of Dropping Out Of High School Associated With Student Characteristics:
A COMPARISON BETWEEN LOW-INCOME AND NON-LOW-INCOME MALE SOPHOMORES (1)

	LOW INCOME	NOT LOW INCOME
INDIVIDUAL SCHOOL EXPERIENCES		
Each two hours homework per week	-	-1 **
Job program participation	-	-
One year behind modal age	10 **	5 **
Academic track	-12 **	-3 **
Vocational track	11 **	2 **
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES		
Mom monitors school work	-	-
Dad monitors school work	-	-2 *
Been in serious trouble with law	22 **	6 **
Per 10 hours worked in a week	4 **	2 **
Never had a job	-	-
Most recent job babysitting/lawn work	-	-5 **
SCHOOL ENVIRONMENT		
Per 10 percent black in h.s.	-1 *	1 **
Per 10 percent Hispanic in h.s.	-3 **	-
Per 10 percent dropouts in h.s.	-	3 **
Per 10 percent college enr. in h.s.	2 **	1 **
Per 10 percent low-income in h.s.	7 **	-
OUT-OF SCHOOL ENVIRONMENT		
Per $1000 of county percapita income	-	-1 *
Per 10 points in county unemploy. rate	21 **	-
Lives in urban area	-	3 **
Lives in rural area	-	-
STUDENT BACKGROUND		
Early parenthood	21 **	-
Early marriage	-	26 **
Single-parent family	7 *	-
Neither-parent family	20 **	5 *
Parent years of education	-2 *	-1 **
Children in family	-	1 **
Black	-	-
Hispanic	-	-3 **

\- not statistically significant
* $p < .05$
** $p < .01$
(1) See Appendix D for a description of the student characteristics.
Estimates for characteristics that have continuous values, such as parent years of education and hours worked in a week, refer to the percentage point change associated with adding one unit to the average value. For example, the dropout rate for low-income males whose parents have one year of education more than the average number of years is two percentage points lower than the rate for low-income males whose parents have an average amount of education.

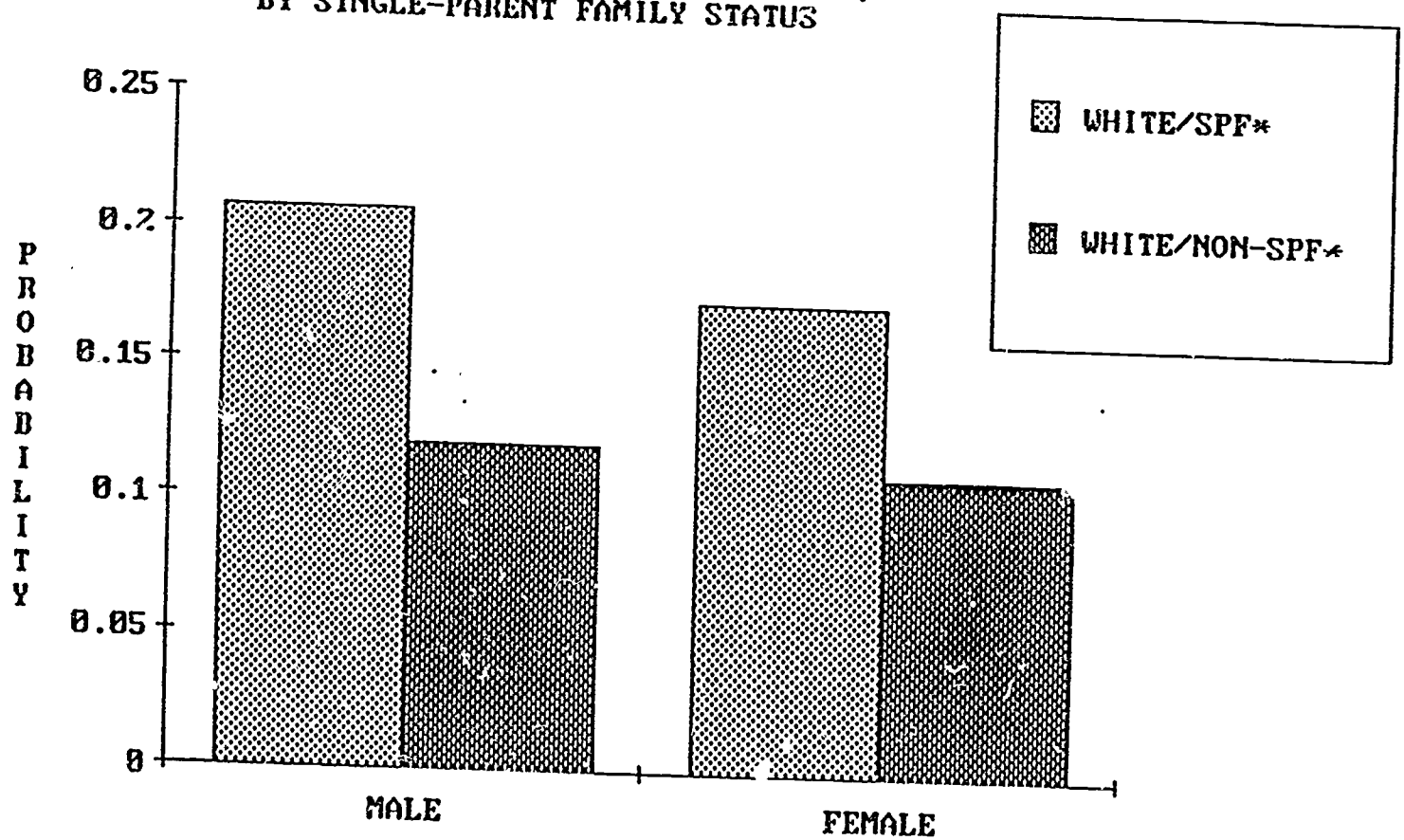
The background at-risk factors are also included in this analysis. Having a child and living with neither parent increases the dropout rate substantially for low-income male students (by 21 percentage points and 20 percentage points, respectively) and hardly at all for non-low-income male students (no change for early parenthood and 5 percentage points for living with neither parent). In contrast, marriage has a large influence on the rate for male students who are not from low-income families (increases dropout rate by 26 percentage points) and no effect for low-income students.

A Comparison Between Single- and Two-Parent Family White Sophomores

White high school sophomores are more likely to drop out of school if they live in single-parent families than if they live in two-parent families. This result is illustrated in figure 4-2. In contrast to the analysis above of low-income male sophomores, it appears that the overall high school experiences of white sophomores who live in single-parent families are, for the most part, very similar to those of sophomores who live with two parents. Those who live with two parents do slightly more homework and are somewhat less likely to participate in job programs. Not surprisingly, students from single-parent families are about half as likely to have fathers who monitor their school work. These averages are reported in table C-6 in appendix C. The general similarity in experiences contrasts with the different effect of some of those experiences on the dropout rates of students from differently structured families.

Some individual high school experiences appear to play a larger role in determining the chances that white students will drop out for those who live in single-parent families than for those who live with both parents. These results are presented in table 4-2. For example, the likelihood of dropping out

FIGURE 4-2
ESTIMATED PROBABILITY OF DROPPING OUT OF HIGH SCHOOL FOR WHITE SOPHOMORES, BY SINGLE-PARENT FAMILY STATUS



* Single-Parent family status.

TABLE 4-2

Estimated Percentage Point Change In Students' Chances Of Dropping Out Of High School Associated With Student Characteristics:
A COMPARISON BETWEEN SINGLE-PARENT AND TWO-PARENT FAMILY WHITE SOPHOMORES (1)

	SINGLE PARENT	TWO PARENT
INDIVIDUAL SCHOOL EXPERIENCES		
Two homework hours per week	-2 **	-1 **
Job program participation	12 **	-
Each year behind modal age	16 **	6 **
Academic track	-5 *	-3 **
Vocational track	-	1 *
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES		
Mom monitors school work	-	-
Dad monitors school work	-	-4 **
Been in serious trouble with law	-	6 **
Per 10 hours worked in a week	1 **	1 **
Never had a job	14 **	-
Most recent job babysitting/lawn work	-6 **	-3 **
SCHOOL ENVIRONMENT		
Per 10 percent black in h.s.	-	1 **
Per 10 percent Hispanic in h.s.	-	1 *
Per 10 percent dropouts in h.s.	4 *	2 **
Per 10 percent college enr. in h.s.	1 *	1 **
Per 10 percent low-income in h.s.	-	-
OUT-OF SCHOOL ENVIRONMENT		
Per $1000 of county percapita income	-2 *	1 **
Per 10 points in county unemploy. rate	-	2 **
Lives in urban area	-	3 **
Lives in rural area	-7 *	-
STUDENT BACKGROUND		
Low-income family	-	2 *
Early parenthood	28 **	11 **
Early marriage	45 **	43 **
Parent years of education	-	-1 **
Children in family	-	1 **
Female	-	-

\- not statistically significant
* $p < .05$
** $p < .01$
(1) See Appendix D for a description of the student characteristics. Estimates for characteristics that have continuous values, such as parent years of education and hours worked in a week, refer to the percentage point change associated with adding one unit to the average value. For example, the dropout rate for students in two-parent families whose parents have one year of education more than the average number of years is one percentage point lower than the rate for students in two-parent families whose parents have an average amount of education.

is increased by 16 percentage points for each year behind modal age among students from single-parent families, compared to six points among those from two-parent families. For the first additional year behind modal age these percentage point increases translate into nearly a doubling of the 18 percent average dropout rate for single-parent white students and an increase of about half in the 11 percent average rate for two-parent white students.

Among those in single-parent families, the out-of-school factor having the largest effect on chances of dropping out is never having had a job. Those who have never had a job have a rate that is 14 percentage points higher than the rate for those who have worked. Students from single-parent families are 7 percentage points less likely to drop out if they live in a rural area than if they live in an urban or suburban area.

Lastly, having a child results in a considerably larger increase in students' chances of dropping out for those in single-parent families (28 percentage points) than those in two-parent families (11 percentage point increase). Proportionately, childbearing has a greater impact on the single-parent white students' dropout rate (increases the dropout rate by nearly two and a half times) compared to the two-parent white students' rate (increases the rate by two times).

Although other background factors have similar effects for single- and two-parent family white students in percentage point terms (e.g., early marriage increases the average dropout rate for single-parent white students by 45 percentage points and for two-parent white students by 43 percentage points), given the differences in average dropout rates between these two groups (18 percent and 11 percent, respectively), the proportional change in dropout rates is often larger for the two-parent students.

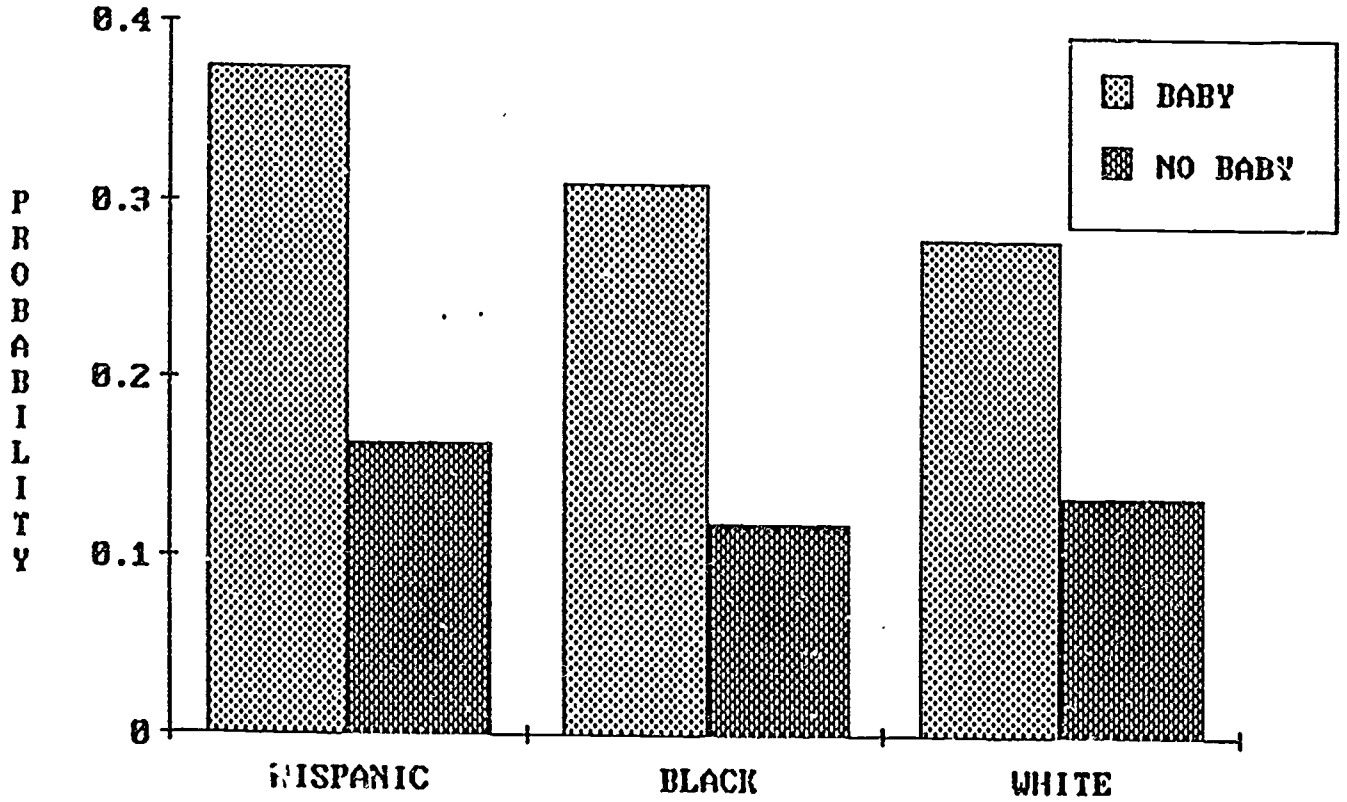
A Comparison Between Females Who Had a Baby and Those Who Did Not

Young women who have a child before the date their class graduates from high school are more likely to drop out of high school than those who do not have a child (average dropout rates of 58 percent and 9 percent, respectively). These differences also apply across racial and ethnic groups, as is illustrated in figure 4-3.

The high school experiences of those who have a child before graduation are quite different from the experiences of those who do not. Young women who have babies spend about an hour less per week on homework and are less than half as likely to be in the academic track as those who do not (16 percent versus 36 percent). Those who have babies are more likely to be in a job program (21 percent versus 8 percent) or in the vocational track (30 percent versus 18 percent). Women without babies are more likely to have fathers who monitor their work (70 percent of those without babies compared to 54 percent of those with babies). Although they are as likely to work and to work a similar number of hours as women with babies, those who do not have babies are more likely to have baby sitting or lawn work as their most recent job. Half the women without babies, compared to 35 percent of those with babies, respond that their most recent job is baby sitting or lawn work.

Young women with babies attend high schools that are more heavily low-income (an average enrollment of 29 percent low-income for parenting teens' schools compared to 20 percent for non-parents) and more heavily black (an average enrollment of nearly 25 percent for parenting teens' schools versus slightly more than 12 percent for non-parents). In addition, their schools are in counties with lower average income (slightly more than $8,600 compared to about $9,100). These results are shown in table C-7 in appendix C.

FIGURE 4-3
ESTIMATED PROBABILITY OF DROPPING OUT OF HIGH SCHOOL FOR FEMALE SOPHOMORES, BY EARLY PARENTHOOD



When the effects of the other variables are controlled for, individual school experiences frequently have a larger effect on the chances that young women who have a child will become a dropout than on the chances that young women without a child will drop out. Being in either the academic or vocational track reduces the chances that women with a child will drop out by a considerable amount--20 and 14 percentage points respectively--compared to those in the general track. These factors have a much smaller effect for young women without a child (3 points and 1 point, respectively). Job program participation (participation in a work program such as Comprehensive Employment and Training Act (CETA) or work-study) increases the chances that women with a child will drop out (24 percentage point increase versus no significant effect for non-parenting females). In contrast to prior findings in this study, being behind modal age for this at-risk group has no significant impact, while it does have a large effect on the dropout chances of those without a child (10 percentage point increase). These results are shown in table 4-3.

When these percentage point changes are compared to the average dropout rate for these two groups (58 percent for those bearing a child, 9 percent for those without a child), the proportional impact of these in-school experiences is relatively comparable between the two. For example, the 20 percentage point decrease in the parenting females' dropout rate associated with academic track enrollment is a decrease in the average rate of about a third, nearly the same as the proportional decrease in the rate for non-parenting females. The primary exceptions are job program participation (no significant impact on those without a child) and being below modal grade (no significant impact on those with a child).

For women without a child, at-risk factors--especially early marriage--continue to affect their chances of dropping out. Among those with a child,

marriage further increases their chances of dropping out (although not as much as it affects those without a child) and parent education decreases the chances. Lastly, young women who have a child and are black are considerably less likely to drop out than Hispanics or whites, adjusting for other factors. The rate for blacks is 28 percentage points lower than the rate for the average student.

The finding that black females who have a child are less likely to drop out than whites or Hispanics, adjusting for other background factors and high school experiences, appears to contradict the result from the previous chapter (see table 3-3) that the effect of early parenthood on dropping out is similar for whites and blacks. This apparent inconsistency is because the analyses speak to two different questions. The question answered by the analysis reported in table 4-3 is: "Among young women who have a child, is the dropout rate higher for blacks or whites, adjusting for other factors?" The finding that the rate is higher among whites is entirely consistent with table 4-4, which shows dropout rates for young women with a child of 38 and 71 percent for blacks and whites respectively. The questions answered by the analysis reported in table 3-3 are different. They are: "What is the difference between the dropout rates of blacks who have a child and those blacks who do not?" and "What is the difference between the dropout rates of whites who have a child and those whites who do not?" In essence, table 3-3 looks at differences between two groups of students within the same racial group. Table 4-3 looks at differences between racial groups.

Table 3-3 suggests that the difference is 11 and 15 percentage points for whites and blacks respectively. The differences associated with having a child for blacks and whites are considerably larger in table 4-4, especially for whites. The reason for the different findings with respect to the increase in

TABLE 4-3

Estimated Percentage Point Change In Students' Chances Of Dropping Out Of High School Associated With Student Characteristics:
A COMPARISON BETWEEN FEMALE SOPHOMORES IN 1980 WHO HAD A BABY BY MAY 1980 AND THOSE WHO DID NOT (1)

	WITH A CHILD	WITHOUT A CHILD
INDIVIDUAL SCHOOL EXPERIENCES		
School has pregnant student program	-	-
School has daycare	-	-
Two homework hours per week	-6 **	-1 **
Job program participation	14 *	-
Each year behind modal age	-	10 **
Academic track	-20 **	-3 **
Vocational track	-14 *	-1 *
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES		
Mom monitors school work	-	-3 **
Dad monitors school work	-	-3 **
Been in serious trouble with law		4 *
Per 10 hours worked in a week	10 **	2 **
Never had a job	-	-
Most recent job babysitting/lawn work	-	-1 **
SCHOOL ENVIRONMENT		
Per 10 percent black in h.s.	-	1 *
Per 10 percent Hispanic in h.s.	-	-
Per 10 percent dropout in h.s.	9 **	-
Per 10 percent college enr. in h.s.	-	-
Per 10 percent low-income in h.s.	-	-
OUT-OF SCHOOL ENVIRONMENT		
Per $1000 of county per capita income	-	1 **
Per 10 points in county unemploy. rate	-	-
Lives in urban area	-	-
Lives in rural area	-	-
STUDENT BACKGROUND		
Low-income family	-	-
Early marriage	32 **	50 **
Single-parent family	-	1 *
Neither-parent family	-	8 **
Parent years of education	-3 **	-1 **
Children in family	-	1 *
Black	-28 **	-3 **
Hispanic	-	-1 *

\- not statistically significant
* $p < .05$
** $p < .01$
(1) See Appendix D for a description of the student characteristics.
Estimates for characteristics that have continuous values, such as parent years of education and hours worked in a week, refer to the percentage point change associated with adding one unit to the average value. For example, the dropout rate for females with a child whose parents have one year of education more than the average number of years is three percentage points lower than the rate for females with a child whose parents have an average amount of education.

the dropout rate associated with having a child is that in table 4-4 there are no adjustments made for other factors, which are included in table 3-3 and reduce the rate differential. 27/

TABLE 4-4. High School Dropout Rate of Females By Race and Early Parenthood (in percentages)

	Not early parent	Early parent
Black	10	38
White	8	71

27/ The fact that the reduction in the dropout rate is different for blacks and whites serves as added evidence that background characteristics and high school experiences affect the dropout chances of black and white young women differently. In fact, this was the reason that the analysis was prepared separately for students of different races. Separate analyses for blacks and whites would have been preferable for the comparison analysis in this chapter, but there were not enough such young women in the High School and Beyond study to support that analysis.

CHAPTER 5: IMPLICATIONS FOR FEDERAL POLICY

The research presented in the previous chapters may offer significant guidance for the development of Federal policies and programs for high school dropouts. 28/ This chapter explores the policy implications of several of the findings from that research. These findings have been grouped as follows:

- o Complexity--The phenomenon of dropping out of high school is complex, influenced by an interaction of socioeconomic background characteristics and in-school experiences. Some groups of students are decidedly more at risk of dropping out than others; nevertheless, dropping out appears to be a widespread phenomenon affecting many groups.

- o In-School Experiences--Students in at-risk groups appear to be vulnerable to the influence of in-school experiences. They may be more vulnerable, both negatively and positively, to the same experience than are students not in at-risk groups. Being above the modal age of classmates and being enrolled in the academic track are the two in-school experiences analyzed here that have the most consistent impact on educational success.

28/ The Augustus F. Hawkins-Robert T. Stafford Elementary and Secondary School Improvement Amendments of 1988 (P.L. 100-297) authorizes two major programs addressing the current dropout problem. One of these, the School Dropout Demonstration Assistance Act of 1988, authorizes funds for FY 1989; the other, the Secondary School Programs for Basic Skills Improvement and Dropout Prevention and Reentry, authorizes funding for FY 1990 through FY 1993. In terms of the Federal policy options discussed later in the text of the report, these programs approach the dropout issue on a broad front with support for programs that can be replicated and disseminated. They authorize many different activities including some that would address in-school experiences. For example, dropout prevention programs could involve changes in where at-risk students are placed in school, teacher training, and guidance and counseling. The FY 1988 Continuing Appropriations Resolution (P.L. 100-202) appropriated $23.9 million for implementation of a similar version of the School Dropout Demonstration Assistance Act.

- o Early Family Formation--Of all at-risk characteristics under analysis in this study, early family formation has the most seriously [illegible]ive consequences, regardless of in-school experie[illegible] timing of dropout intervention for these students [illegible]portant for policymaking.

Each of these findings with its applications to policy is considered separately below.

Complexity

As the preceding analysis clearly reveals, the high school dropout phenomenon is complex, influenced by a host of interacting factors, some that can be directly affected by Federal programs, others appearing much less susceptible to government-initiated change. That analysis suggests that there is no single cause for dropping out. Even for the most at-risk groups, dropping out is not inevitable; not all members of the at-risk groups fail to complete high school on schedule. The relatively high rate of dropouts returning to school and receiving their diplomas or high school equivalency certificates adds a further dimension to the phenomenon.

This complexity may pose a dilemma for Federal policymakers. On the one hand, it would appear that there is no single, simple way to curb dropping out. On the other hand, the very complexity delineated in this analysis suggests that it might be difficult to fashion a Federal response that responds fully to the factors that do affect the dropout rate. As a result, Federal policymakers may confront a range of choices, none of which should be expected to resolve the dropout problem in its entirety. This research does suggest some of the broad contours of such choices.

At one end of this range of choices are targeted programs, addressing specific, but limited, aspects of the dropout issue. Such programs may be appropriate given the complexity of the problem. Drawing from the research

findings delineated above, some examples might be (1) Federal initiatives to support research on the appropriateness of non-promotion associated with being behind modal age and on alternatives to non-promotion, or (2) Federal support for programs facilitating continued high school enrollment by pregnant or parenting teenagers.

At the other end of the spectrum would be programs that attempt to deal with the problem on a broad front, combining many kinds of social, economic, and academic services for the potential dropout and his or her family. Given the complexity outlined in this study, one should recognize that many "comprehensive" approaches are unlikely to achieve all of their objectives. Drawing on the findings presented in previous chapters, "comprehensive" efforts could combine a host of different initiatives, including in-school reform (such as alternatives to non-promotion and tracking), economic and social support for low-income families and for single-parent families, and in- and out-of-school services for pregnant and parenting teens.

Elsewhere on this spectrum of choices, ranging from limited to comprehensive, might be other approaches that recognize the complexity of the phenomenon. For example, Federal policy might support experimentation among educators, community groups, and others, or it might seek to encourage collaboration among these actors. Providing seed money for local projects and then disseminating information about successful projects could be aspects of this kind of effort. Such an approach would not dictate a particular approach to the issue, but would allow others to design and implement programs that are tailored to local needs.

One aspect of the complexity issue that merits closer analysis is that certain groups of youth experience higher dropout rates than others. The at-risk groups under analysis here leave school at rates that run from between one

and a half times to over five times as high as the rates for students who were not members of these groups. Significantly, though, youth who were not members of these at-risk groups still experienced dropout rates that exceeded 10 percent, or 1 student out of every 10. Dropping out, apparently concentrated among certain groups of youth, is nevertheless a widespread phenomenon affecting almost all kinds of youth.

What are the implications of this dual nature of the dropout phenomenon--concentration concurrent with wide dispersion? Policymakers are confronting a problem that, while offering some dramatically prominent targets for action, may be so ubiquitous that most or all students need to be considered at risk of leaving school prematurely. With limits on available resources, the issue naturally becomes whether it is more effective to fashion separate programs only for those most at risk of dropping out, or to implement programs that direct their services more broadly across the spectrum of all students.

The research reported in this study cannot be used to resolve this dilemma, but it does suggest that some efforts, such as changes in in-school experiences for all students, might have a dual pay-off. The benefits may be important to students not in at-risk groups while, at the same time, having substantial positive effects for at-risk students. For example, being 1 year behind modal age (e.g., having failed one grade) increases low-income male sophomores' dropout rate by 10 percentage points (table 4-1). At the same time, non-low-income male sophomores suffer a 5 percentage point increase in their dropout rate for every year they are behind. Proportionately, these are roughly similar increases in respective average dropout rates. Thus, efforts to reduce the incidence of non-promotion and other practices that lead to students being behind students their own age might benefit low-income students,

but could also benefit non low-income students. Similar findings are presented in the earlier chapters for other groups of at-risk students.

In-School Experiences

The present analysis shows that in-school experiences strongly influence the dropout rates of at-risk youth. The dropout rates of these at-risk groups appear particularly vulnerable to in-school experiences. Perhaps more significant is the finding that, not only do at-risk youth often suffer greater losses in terms of high school completion from negative in-school experiences than do youth not from these groups, they often benefit more than other youth from positive experiences.

It may be useful to focus briefly on what student tracking and being behind modal age suggest for Federal policy. The present research allows us to conclude that, at-risk factors and high school experiences being equal, it would be better for at-risk youth to be enrolled with their peers in terms of chronological age and be in the academic program. 29/ In general, Federal interventions reducing the propensity for at-risk youth to fall behind their age peers and interventions increasing their enrollment in the academic track would help reduce the dropout rate.

Importantly, though, this research does not reveal how such changes might be achieved. Both tracking and practices that lead to being behind students

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29/ These findings are not absolutely consistent across the at-risk groups under analysis. Chapter 4's analysis of females with a child shows no significant effect of being overage.

their own age, such as non-promotion, are the subject of extensive research that reveals how much controversy these practices have generated. 30/

Although, such policies and practices generally have been outside the compass of traditional Federal educational activities, tracking has been the focus of significant Federal concern in the context of its civil rights implications (i.e., is a tracking policy used to segregate and isolate minority students, or does it have that effect whether intentional or not?). 31/ If the dropout problem is viewed as sufficiently urgent, the present research suggests that efforts to influence how those practices are applied and what they mean for at-risk students may be in order. The range of Federal options in this regard may be quite broad--including (1) making continued Federal education assistance contingent upon a school district modifying its policies, (2) research on alternative ways to address the educational problems for which tracking and non-promotion were developed, (3) incentives for districts to modify their practices, and (4) grants supporting demonstrations of alternative approaches in various districts. The present analysis can offer little guidance on the appropriate content of a Federal policy in this area.

Finally, it merits reiteration that the vulnerability of at-risk students to in-school experiences indicates that programs for at-risk youth not addressing their in-school experiences are unlikely to improve students' rates of educational success.

30/ See, for example, Oakes, Jeannie. Keeping Track: How Schools Structure Inequality. 1985; Stedman, The Educational Attainment of Select Groups of "At Risk" Children and Youth; Wheelock, The Way Out.

31/ Hogan, John C. The Schools, the Courts, and the Public Interest. 1974. p. 120-121.

Early Family Formation

There is no question that of the groups of youth under analysis here, those who form families (have a child or marry) while still in high school drop out at exceedingly high rates. Public school sophomores in 1980 who married before their scheduled high school graduation had a 65 percent dropout rate; those who bore or fathered a child had a 56 percent dropout rate. Even controlling for family background characteristics, in-school and out-of-school experiences, and school and community characteristics, early family formation had a direct, significant, and negative effect on high school completion. This is particularly true for females. Controlling for all other variables analyzed here, early parenthood increased dropout rates by between 11 and 26 percentage points (depending upon race) for female sophomores. Early marriage raised dropout rates by between 41 and 74 percentage points.

A relatively small percentage of all 1980 public sophomores formed families before they were scheduled to graduate in 1982--e.g., between 4 and 12 percent of female students married (the range is for students of different races) and between 5 and 16 percent experienced early parenthood. Significantly, the propensity for female dropouts to have formed families was substantially greater. For example, data in table C-7 in appendix C can be used to determine that approximately 30 percent of all female dropouts had had a baby.

Thus, early family formation would appear to be one of the most important focuses of Federal policies to curb dropping out, particularly among females.

To some degree Federal policymakers already appear to be acting in response to a growing concern with the consequences of early family formation, principally early parenthood. For example, many of the welfare reform proposals under consideration by the Congress have a consistent theme--that of

encouraging or requiring young welfare mothers who have not completed high school to do so. 32/ The present research offers only limited suggestions for the structure or focus of public policy to address the impact of early family formation on dropout rates.

Positive in-school experiences appear to be influential for early family formers. Student track may make an important contribution to dropout rates. Of all the groups analyzed in detail in chapter 4, females who bore a child enjoyed the largest benefits of being enrolled in the academic track--their dropout rate decreased by 20 percentage points. Improving the in-school experiences of early family formers may, therefore, be a fruitful approach for Federal policy. Others have suggested that the more positively female students are engaged in their schooling the less likely they are to become pregnant in the first place. 33/

In addition, the current research offers a finding that should be of substantial utility in fashioning public programs for curbing the school failure of early family formers. As delineated in chapter 3, Hispanic and white female dropouts who conceive (while still enrolled) can be expected to leave school, on average, approximately 3 months after conception. In contrast, black mothers who dropped out did so, on average, a month after delivery. At a minimum, this indicates that programs to keep pregnant and parenting teenage females from leaving school before their scheduled graduation are likely to be of little use to a majority of white and Hispanic mothers if their services begin more than 3 months after these teenagers conceive. It is possible that this difference in propensity for leaving school soon after

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32/ U.S. Library of Congress. Congressional Research Service. Welfare. Issue Brief No. IB87007, by Vee Burke. Updated regularly.

33/ See discussion in Stedman, The Educational Attainment of Select Groups of "At Risk" Children and Youth, p. 47-57.

conception means that different kinds of interventions may be needed depending upon the race or ethnic background of the mother or mother-to-be. The timing of their departure would suggest that efforts to help whites and Hispanics cope with the experience of being a pregnant high school student could be beneficial; this finding may also point toward programs that help black teens deal with life with a new born. Presumably, if intervention programs do help white or Hispanic females who have conceived to remain in school, these students might also need to be helped in the transition from pregnant teen to parent.

APPENDIX A: THE HIGH SCHOOL AND BEYOND SURVEY

High School and Beyond is a multi-year research effort sponsored by the Center for Educational Statistics, U.S. Department of Education. The Base Year survey for the study was administered in the spring of 1980, using a sample of approximately 30,000 sophomores (Sophomore Cohort) and 28,000 seniors (Senior Cohort) from over 1,000 public and private schools. The First Follow-up data collection was carried out in the spring of 1982. It included virtually the entire Sophomore Cohort, including those who had dropped out of school, and a sample of about 12,000 members of the Senior Cohort. In the spring of 1984, Second Follow-up data were collected from about 15,000 members of the Sophomore Cohort and the 12,000 members of the Senior Cohort who were in the First Follow-up. In the spring of 1986, Third Follow-up data were collected from the same sample that participated in the Second Follow-up.

A number of supplementary studies have also been conducted. As part of the base year effort about 7,000 parents, 3,500 from each cohort, were surveyed primarily concerning financial matters. The income information collected from parents was used for this study in cases for which it was available. In addition, postsecondary transcripts have been collected for members of the Senior Cohort who reported attending a postsecondary institution at any time. These data have been used to determine postsecondary attendance, retention, and credits earned. Finally, a supplementary data set containing economic information about counties in which the students' schools are located has been

developed and is the source of the data about county unemployment rates and per capita income.

APPENDIX B: TECHNICAL APPROACH

This appendix presents a brief discussion of logistic regression, the statistical method used in this report to isolate the independent contributions of various factors to the dropout rate.

"When the dependent variable under consideration is dichotomous, i.e., dropping out of high school, ordinary least squares regression is not appropriate. Logistic regression allows the marginal effect of a single variable to vary across the range of its possible values. Thus, the effects of the independent variables are nonlinear. Independent variables have a larger impact at the middle of the predicted probability range on the outcome variable than at the extremes." 34/ For example, consider the effects that parental educational level might have on the probability of dropping out of high school. Parents' educational levels range from only a few years of schooling to 20 years and more for those with advanced or professional degrees. The overall average is between slightly fewer than 12 years and about 13.5 years for the groups studied in this report. Small changes in educational attainment at either end of the spectrum (i.e., few years of education, or many years of education) do not have much effect on dropout probabilities. In the middle of that spectrum

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34/ This section draws heavily on appendix C: Technical Appendix in U.S. Library of Congress. Congressional Research Service. Teenage Sexual Activity and Childbearing: An Analysis of the Relationships of Behavior to Family and Personal Background. CRS Report for Congress No. 87-637 EPW, by Jean Griffith. Washington, 1987. The portions shown in quotes are found on page 83 of this work.

(i.e., the range that encompasses leaving school during the high school years to entering and completing a year of college), relatively small changes in the number of years of parental education may be associated with a sizeable change in dropout rates. (Large changes in the number of years of parental education (e.g., completing 6th grade as compared to finishing college) are associated with substantial differences in dropout rates.)

"The dichotomous dependent variable can be thought of as representing the probability of a given outcome (e.g. dropping out). Expressed in matrix notation, the logistic distribution is defined as follows:

$$P=1/(1+e^{-XB}) \qquad (1)$$

Unlike the analysis using ordinary least squares regression, the individual coefficients from the logistic regression model cannot be readily interpreted. The coefficient represents 'the change in the log of the odds associated with a unit change in the exogenous variable.'" 35/

One way to present results for logistic regression analysis is to report the estimated probability on the outcome variable for students with particular characteristics, by substituting specific values of the independent variables into formula (1) above. This approach was used to construct figures 4-1, 4-2, and 4-3 and for table C-4. The probabilities were estimated using the mean values of all the characteristics except for the one whose impact is the focus of the comparison.

For example, to estimate the chances that a black male who is low-income will drop out compared to the chances that a black male who is not low-income will drop out, the mean values for all the characteristics except for low-income were used in the equation. A value of 0 for low-income was used to

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35/ Hanushek, E. A. and J. E. Jackson. Statistical Methods for Social Scientists. Academic Press, New York, 1977. p. 206.

estimate the average chances that a black male who is not low-income will drop out, and a value of 1 for low-income was used to estimate the chances that a low-income black male will drop out. The two estimates then represent the chances of dropping out for low-income and non-low-income black males who are average on all other characteristics shown.

Another approach directly yields estimates for the change in probability in an outcome associated with having a particular characteristic referred to as $delta_p$. This estimate can be calculated using the following formula: 36/

$$delta_p = \exp(L_1)/[1+\exp(L_1)] - \exp(L_0)/[1+\exp(L_0)] \quad (2)$$

where:

$$L_0 = XB = Ln[p/(1-p)]$$

and

$$L_1 = L_0 + Beta$$

The first step in using this method is to calculate the estimated probability of dropping out for a student who is not low-income and is average on the other characteristics, by substituting a value of 0 for low-income and the mean value for the other variables into formula (1). The next step is to use the sum of the products of the coefficients and the means, and the logistic Beta for low-income to perform the calculations indicated in formula (2). This produces an estimate for $delta_p$ that is equal to the difference between the two probabilities (e.g., for low-income and non-low-income) produced by the first method described. For continuous variables, the percentage changes shown are those associated with having one unit more than the mean value on the variable. The $delta_p$'s could of course be calculated for any combination of values of the

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36/ Peterson, T. A Comment on Presenting Results from Logit and Probit Models. American Sociological Review, v. 50, no. 1, Feb. 1985. p. 130-131.

independent variables. This method is used to calculate the estimates in tables 3-2, 3-3, 4-1, 4-2, and 4-3.

APPENDIX C

SUPPLEMENTARY TABLES

Table C-1

At-Risk Characteristics of 1980 High School Sophomores

By Race[1]

	Hispanic	Black	White
LOW INCOME			
Percent low income	43	34	11
FAMILY			
Percent in single-parent family	21	37	14
Percent living with neither parent	7	10	3
MARRIAGE			
Percent married before class graduation	-	2	5
CHILDREN			
Percent with a child before class graduation	7	11	3

[1] See Appendix D for a description of the characteristics.

TABLE C-2

CHARACTERISTICS OF 1980 HIGH SCHOOL SOPHOMORES

STUDENT CHARACTERISTIC (1)	MALES			FEMALES		
	HISPANIC	BLACK	WHITE	HISPANIC	BLACK	WHITE
INDIVIDUAL SCHOOL EXPERIENCES						
Percent w/ pregnant student prog in school				49	42	39
Percent with daycare in school				13	15	16
Average homework hours per week	2.7	3.4	3.4	3.6	4.3	4.5
Percent in job program	16	23	12	14	18	6
Average years behind modal age	0.1	0.1	0.1	0.1	0.1	.0
Percent academic track	21	29	33	23	31	37
Percent vocational track	30	33	20	29	30	16
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES						
Percent mom monitors school work	88	88	88	87	88	87
Percent dad monitors school work	67	54	74	64	52	72
Percent been in serious trouble with law	10	9	7	3	2	2
Average hours per week last job	16	13	14	11	10	10
Percent never had a job	8	12	7	20	27	10
Percent most rec job babysitting/lawn work	19	24	21	37	37	52
SCHOOL ENVIRONMENT						
Average high school percent black	15	49	7	15	50	8
Average high school percent Hispanic	19	5	3	18	5	3
Average high school percent dropout	13	12	9	12	11	9
Average high school percent college	41	42	44	43	42	43
Average high school percent low income	26	32	17	25	31	18
OUT-OF SCHOOL ENVIRONMENT						
Average county per capita income	8,698	9,291	9,138	8,933	9,232	9,083
Average county unemployment rate	8	7	8	8	7	8
Percent in urban area	26	45	14	27	44	15
Percent in rural area	37	22	38	36	22	38
STUDENT BACKGROUND						
Percent low income	31	40	13	33	38	16
Percent early marriage	4	0	1	12	4	8
Percent early parenthood	4	4	1	10	16	5
Percent single-parent family	18	35	13	19	37	14
Percent neither-parent family	6	9	2	5	7	3
Parent years of education	12.6	12.7	13.6	12.4	12.7	13.5
Average children in family	4.2	4.4	3.7	4.3	4.5	3.7
Parent occupation						
Percent unskilled/blue collar	65	71	48	65	73	50
Percent office/sales work	10	9	13	9	9	12
Percent low professional	23	18	35	25	17	34
Percent high professional	1	2	4	1	1	4
Sample size (HS&B Sophomore Cohort)	746	527	4,484	977	712	4,873
Population size	169,735	195,363	1,090,605	206,583	171,973	1,042,698

(1) see Appendix D for a description of the student characteristics.

Table C-3

Predicted Dropout Rate for Students

Who Are Average on Other Characteristics[1]

	Males			Females		
	Hispanic	Black	White	Hispanic	Black	White
Dropout Rate of HS Sophomores	18	20	13	18	14	12
Percent of Sophomores Who Had Not Earned a HS Degree or Equivalency Four Years After Class Graduation	10	9	7	12	9	6
Percent of Dropouts Who Received HS Degree or Equivalency Within Four Years After Class Graduation	43	56	49	35	35	49

[1] This table reports estimates for white, black, and Hispanic students in the High School & Beyond Sophomore cohort.

Table C-4

Predicted Dropout Rate for Students Who Are Average on Other Characteristics[1]

	Males			Females		
	Hispanic	Black	White	Hispanic	Black	White
Married						
No	.178	low n	.129	.158	.126	.103
Yes	.623		.348	.552	.660	.529
Child						
No	---	---	.129	.165	.115	.112
Yes	---	---	.275	.458	.332	.322
Single parent family						
No	.173	---	.122	.171	---	.110
Yes	.252	---	.201	.244	---	.171
Neither parent family						
No	---	.187	.128	.181	---	.115
Yes	---	.321	.335	.303	---	.271
Low-income family						
No	.158	.167	.120	---	---	.109
Yes	.268	.248	.224	---	---	.174
Average	.186	.199	.120	.187	.136	.117

[1] Where results are not reported, the effect of the characteristic on the probability of dropping out is not statistically significant (controlling for other characteristics). Where results are reported, the characteristic is statistically significant.

TABLE C-5

Student Characteristics, High School Experiences And Dropping Out:
A COMPARISON BETWEEN LOW-INCOME AND NON-LOW-INCOME MALE SOPHOMORES (1)

	LOW-INCOME DROPOUT RATE = 25 %	NON-LOW-INCOME DROPOUT RATE = 11 %
INDIVIDUAL SCHOOL EXPERIENCES		
Average homework hours per week	2.9	3.4
Percent in job program	24	11
Average year behind modal age	0.2	0.1
Percent academic track	17	34
Percent vocational track	31	20
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES		
Percent mom monitors school work	84	89
Percent dad monitors school work	52	75
Percent been in serious trouble with law	10	7
Average hours per week last job	15	14.1
Percent never had a job	8	7
Percent most recent job babysitting/lawn work	20	22
SCHOOL ENVIRONMENT		
Average high school percent black	19.9	10.1
Average high school percent Hispanic	6.7	4.1
Average high school percent dropout	10.9	9.2
Average high school percent college	39.2	44.0
Average high school percent low income	30	17
OUT-OF SCHOOL ENVIRONMENT		
Average county percapita income	8,544	9,227
Average county unemployment rate	7.8	7.4
Percent in urban area	23	17
Percent in rural area	44	34
STUDENT BACKGROUND		
Percent early parenthood	5	1
Percent early marriage	3	1
Percent single-parent family	29	13
Percent neither-parent family	6	2
Parent years of education	12.2	13.7
Children in family	5.1	3.5
Percent black	23	7
Percent Hispanic	17	8
Sample size (HS&B Sophomore Cohort)	979	4,824
Population size	218,220	933,866

(1) see Appendix D for a description of the student characteristics.

TABLE C-6

Student Characteristics, High School Experiences And Dropping Out:
A COMPARISON BETWEEN SINGLE-PARENT AND TWO-PARENT FAMILY WHITE SOPHOMORES (1)

	SINGLE PARENT DROPOUT RATE = 18 %	TWO PARENT DROPOUT RATE = 11 %
INDIVIDUAL SCHOOL EXPERIENCES		
Average homework hours per week	3.6	4.0
Percent in job program	14	8
Average years behind modal age	0.1	.0
Percent academic track	30	36
Percent vocational track	19	18
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES		
Percent mom monitors school work	79	89
Percent dad monitors school work	37	79
Percent been in serious trouble with law	7	4
Average hours per week last job	12.5	11.7
Percent never had a job	8	9
Percent most recent job babysitting/lawn work	34	38
SCHOOL ENVIRONMENT		
Average high school percent black	8.2	7.4
Average high school percent Hispanic	3.4	2.7
Average high school percent dropout	9.2	8.8
Average high school percent college	44.6	43.1
Average high school percent low income	18	17
OUT-OF SCHOOL ENVIRONMENT		
Average county per capita income	9,324	9,089
Average county unemployment rate	7.6	7.5
Percent in urban area	17	14
Percent in rural area	34	38
STUDENT BACKGROUND		
Percent low income	24	13
Percent early parenthood	4	3
Percent early marriage	5	4
Parent years of education	13.5	13.6
Children in family	3.7	3.7
Percent female	54	52
Sample size (HS&B Sophomore Cohort)	1,244	8,169
Population size	306,938	1,784,553

(1) see Appendix D for a description of the student characteristics.

TABLE C-7

Student Characteristics, High School Experiences And Dropping Out:
A COMPARISON BETWEEN FEMALE SOPHOMORES IN 1980 WHO HAD A BABY AND THOSE WHO DID NOT (1)

	WITH BABY DROPOUT RATE = 58 %	WITHOUT BABY DROPOUT RATE = 9 %
INDIVIDUAL SCHOOL EXPERIENCES		
Percent w/ pregnant student program in school	42	41
Percent with day care center in school	15	15
Average homework hours per week	3.4	4.5
Percent in job program	21	8
Average years behind modal age	0.1	.0
Percent academic track	16	36
Percent vocational track	30	18
INDIVIDUAL OUT-OF SCHOOL EXPERIENCES		
Percent mom monitors school work	80	88
Percent dad monitors school work	54	70
Percent been in serious trouble with law	5	2
Average hours per week last job	11.3	9.7
Percent never had a job	16	13
Percent most recent job babysitting/lawn work	35	50
SCHOOL ENVIRONMENT		
Average high school percent black	24.8	12.3
Average high school percent Hispanic	6.7	4.6
Average high school percent dropout	12.2	9.4
Average high school percent college	37.2	43.0
Average high school percent low income	29.3	19.6
OUT-OF SCHOOL ENVIRONMENT		
Average county per capita income	8,613	9,107
Average county unemployment rate	7.8	7.5
Percent in urban area	28	18
Percent in rural area	38	36
STUDENT BACKGROUND		
Percent low income	41	19
Percent early marriage	55	5
Percent single-parent family	26	17
Percent neither-parent family	10	3
Parent years of education	11.9	13.4
Average children in family	4.6	3.8
Percent black	26	10
Percent Hispanic	17	10
Sample size (HS&B Sophomore Cohort)	347	6,296
Population size	92,188	1,362,480

(1) see Appendix D for a description of the student characteristics.

APPENDIX D: DESCRIPTION OF OUTCOMES, AT-RISK FACTORS, AND HIGH SCHOOL EXPERIENCES

OUTCOMES

Dropout rate:

The percent of 1980 high school sophomores who drop out of high school.

High school degree:

The percent of 1980 high school sophomores who drop out of high school and receive some kind of high school completion certification (diploma or GED) within 6 years of their original class completion date. (Those dropouts who reported not having earned a degree by the Second Follow-up date, 2 years after original class completion date, but in the third follow-up reported having graduated with their class were coded as not having a degree.)

AT-RISK CHARACTERISTICS

Low-income family:

Students are classified as low-income if they are in the bottom 20 percent of the per capita family income distribution of the weighted sample. The variable is dichotomous, coded 1 if low income, 0 if not. By definition, then, the overall low-income rate is 20 percent.

Early marriage/ early parenthood:

Students are classified as having married or become parents early if they report having married or had a child before the date they would have graduated from high school, 6/80 for the seniors and 6/82 for the sophomores. The variables are

dichotomous, coded 1 if early marriage or early parent, and 0 if not.

Single/neither parent family:

Students are classified as living in a single-parent family if they report living with only one parent or guardian, and are classified as living in a neither-parent family if they report living with no parent or guardian. Both are measured at the base year survey date, 1980. A code of 1 means the student belongs to that category, 0 means the student does not belong to that category.

Parent years of education:

The years of school completed by the student's parent or guardian with the most education.

Children in family:

The student's number of siblings, including natural and step siblings with whom they have ever lived.

Parent occupation:

A set of three dichotomous variables, where blue collar/unskilled is the omitted category in the scheme. In the first variable office/sales workers are coded 1 and all others 0. In the second low professionals are coded 1 and all others 0. And in the third, high professionals are coded 1 and all others are coded 0. Occupations listed in each of the categories are shown at the end of this appendix.

HIGH SCHOOL EXPERIENCES

Pregnant student program:

Coded 1 if the student's high school principal reports that the school has a special program for pregnant students, and 0 otherwise.

Day care:

Coded 1 if the student's high school principal reports that the school provides day care for the children of students, and 0 otherwise.

Homework time:

Number of hours the student reports spending on homework in a week.

Job program:

Students who participated in any job program while in high school (such as CETA or work study), are coded 1, others are coded 0.

Behind modal age:

Number of years the student is behind the modal age for their grade. Students were considered at modal age who turned 17 by January 1 of their senior year.

Track in school:

A set of two dichotomous variables, where the general track is the omitted category. In the first variable, students in the academic track are coded 1, and all others 0. And in the second, those in the vocational track are coded 1, and all others 0.

OUT-OF-SCHOOL EXPERIENCES

Parents monitor school work:

Two dichotomous variables taken from self reported data. The first is coded 1 if the student reports that their mother or female guardian monitors their school work, and 0 otherwise. The second is coded 1 if the student reports that their father or male guardian monitors their school work, an 0 otherwise.

Trouble with law:

A dichotomous variable coded 1 if the student reports having been in serious trouble with the law (defined by the student), and 0 otherwise.

Hours worked:

The number of hours per week the student reports having worked on their current or most recent job.

Work type:

A set of two dichotomous variables. The first variable is coded 1 if the student has never had a paying job, and 0 otherwise. The second is coded 1 if the student's current or most recent job was babysitting or lawn work, and 0 if otherwise.

SCHOOL ENVIRONMENT

The first two of these variables are taken from a questionnaire filled out by the student's high school principal.

Racial composition:

Two variables--the percent of students in the high school who are black, and the percent of students who are Hispanic.

Student outcomes:

Two variables--the percent of students in the high school who drop out, and the percent of students who enroll in college the year after graduation.

School poverty:

Percent of students in the high school who are low-income. This was created by aggregating within each school data from both sophomores and seniors during the base year of the survey.

OUT-OF-SCHOOL ENVIRONMENT

The first two of these variables are taken from information gathered from official sources by the Center for Education Statistics and added to the student files.

County per capita income:

Per capita income in the county where the student lives.

County unemployment rate:

Unemployment rate in the county where the student lives.

Population density:

A set of two dichotomous variables, where living in a suburb is the omitted category. The first variable is coded 1 if the student lives in an urban area and 0 otherwise. The second is coded 1 if the student lives in a rural area and 0 otherwise. Urban areas are those within the central-city area of a Standard Metropolitan Statistical Area (SMSA); suburban areas are in the non-central-city area of an SMSA; and rural areas are not in an SMSA. This use of the term rural corresponds more closely to the term "non-metropolitan" than to the common use of the term rural.

APPENDIX E: OCCUPATION CATEGORIES

1. UNSKILLED/BLUE COLLAR

CRAFTSMAN such as baker, automobile mechanic, painter, plumber, telephone installer, carpenter.

FARMER, FARM MANAGER.

MILITARY such as career officer, enlisted man or woman in Armed Forces.

OPERATIVE such as meat cutter, assembler, machine operator, welder, taxicab, bus, or truck driver.

PROTECTIVE SERVICE such as detective, police officer or guard, sheriff, fire fighter.

LABORER such as construction worker, car washer, sanitary worker, farm laborer.

SERVICE such as barber, beautician, practical nurse, private household worker, janitor, waiter.

2. CLERICAL/SALES/TECHNICAL

CLERICAL such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent.

SALES such as salesperson, advertising or insurance agent, real estate broker.

TECHNICAL such as draftsman, medical or dental technician, computer programmer.

3. LOW PROFESSIONAL

MANAGER, ADMINISTRATOR such as sales manager, office manager, school administrator, buyer, restaurant manager, government official.

PROFESSIONAL such as accountant, artist, registered nurse, engineer, librarian, writer, social worker, actor, actress, athlete, politician, but not including school teacher.

SCHOOL TEACHER, such as elementary or secondary.

PROPRIETOR OR OWNER such as owner of a small business, contractor, restaurant owner.

4. HIGH PROFESSIONAL

PROFESSIONAL such as clergyman, dentist, physician, lawyer, scientist, college teacher.