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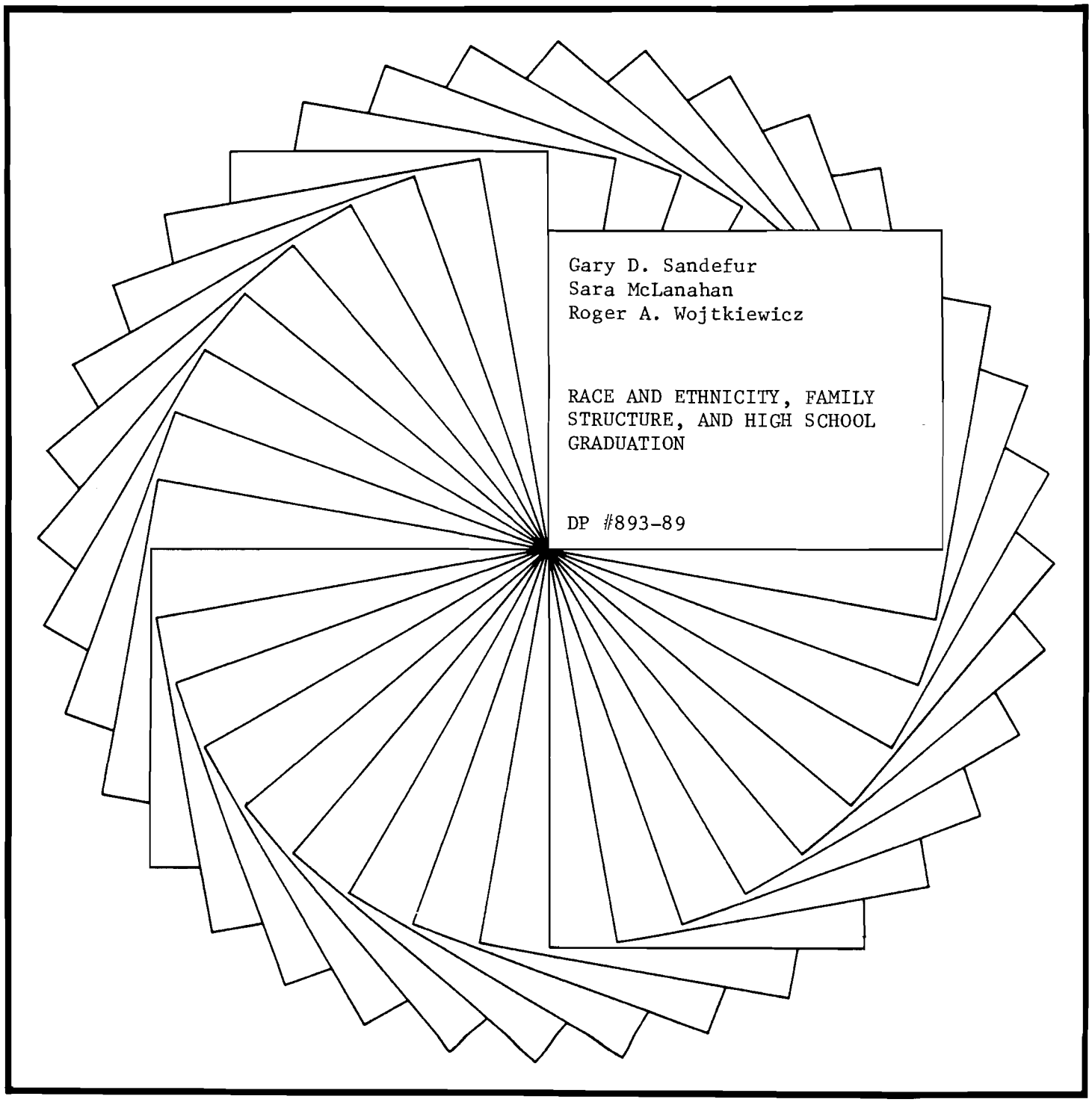

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Abstract

Using data from the 1979-1985 waves of the National Longitudinal Survey of Youth, we focus on two questions: (1) Can racial and ethnic differences in family structure and single parenthood account for differences in high school graduation rates of white and minority youth? (2) What explains the relationship between family structure and school achievement? We find that parental education is more important than family structure in accounting for differences in schooling among whites, Mexican Americans, Puerto Ricans, and Native Americans, and that family structure and parental education are equally important in accounting for differences between whites and blacks. Family income moderates some of the impact of family structure on children's graduation. Statistical controls for the endogeneity of family structure suggest that not all of the family structure effect on school graduation is due to unmeasured heterogeneity.

INTRODUCTION

A considerable amount of research during the past few years has shown that family structure during childhood and adolescence affects the subsequent life chances of adults. Individuals who live apart from one or both parents when they are growing up are less likely to graduate from high school, more likely to work at low-wage jobs, and more likely to form unstable families themselves than individuals who grow up with both biological parents (Hogan and Kitagawa, 1985; McLanahan, 1985; Krein and Beller, 1986; McLanahan and Bumpass, 1988, McLanahan, 1988; Astone and McLanahan, 1989; Corcoran et al., 1987; Hill, Augustyniak, and Ponza, 1987). These findings have been replicated with other data sets and appear to be consistent across a variety of racial and ethnic groups.

Given the increase in marital disruption and single parenthood, it is essential that we understand the nature of the relationship between family structure and children's attainment and the extent to which it accounts for the reproduction of inequality across different racial and ethnic groups. For example, Moynihan (1965) and more recently Wilson (1987) have argued that the higher prevalence of single-parent families among blacks is part of the reason black children have lower socioeconomic mobility than white children. This hypothesis has not, however, been examined carefully, nor has it been tested with respect to other minorities.

There is also disagreement over the mechanisms through which family structure alters children's attainment. Some analysts argue that economic deprivation is the primary cause of lower mobility, whereas

others blame lower attainment on poor socialization or a lack of community resources. Still others claim that the relationship between single parenthood and achievement is due to some unmeasured attribute of the parents (low ability, lack of family commitment) that affects both marital stability and the long-term attainment of children.

We explore these issues by examining the effects of family structure on high school graduation. We begin by asking whether family structure can account for differences in high school graduation rates across different racial and ethnic groups, including whites, blacks, Hispanics, and Native Americans. Next we examine the extent to which economic resources, community resources, and parental socialization practices moderate the association between family structure and schooling. Finally, we address the selectivity issue by examining changes in family structure, by controlling directly for cognitive ability, and by using statistical techniques to control for unmeasured heterogeneity.

A MODEL OF FAMILY INSTABILITY AND HIGH SCHOOL GRADUATION

Our model of family instability and children's high school graduation draws on three bodies of theory: economic theory, socialization theory, and sociological theory. Each of these perspectives deals with a somewhat different aspect of family disruption or single parenthood and each has received some support in the empirical literature.

Economic theory treats children's educational attainment as a function of household production and parental investment. According to economists, marital dissolution (or nonmarriage) reduces parental

investment which, in turn, lowers the intellectual capacity of children and reduces their expected returns to secondary education.[1] Weiss and Willis (1985) have shown that the costs of a child are greater when the parents live apart, which may lead them to invest less time and money in children. Since the nonresidential parent (usually the father) cannot control how the money is spent, he has an incentive to contribute less to the support of the child. The decline in sharing also increases the costs of the child for the residential parent (usually the mother). Finally, the income of the residential parent is usually lower in a single-parent household than in a two-parent household, which also reduces investment in children. Attempts on the part of the residential parent to increase family income by increasing work hours reduces the time available to the child, which may also lower achievement.[2]

Socialization theory views educational attainment as a consequence of parents' aspirations and their ability to instill in their children the motivation and skills necessary for school achievement. Family disruption or nonmarriage can undermine the socialization process in several ways. First, it may weaken the parent-child relationship and reduce the internalization of parental values and role models (Hess and Camara, 1979).[3] Second, divorce and remarriage (as well as informal coupling and uncoupling) are highly stressful events which may temporarily lead to inconsistent and ineffective parenting (Hetherington, Cox, and Cox, 1978). Finally, children who live with only one parent are subject to a different hierarchy than children in two-parent households, which may reduce direct supervision and undermine parental control (Weiss, 1979; Coleman, 1988; Hechter, 1988).

Whereas economists and socialization theorists focus on family investments and the production of human capital, sociologists emphasize community institutions and social networks as determinants of children's achievement. They note that individual and family behavior is shaped by environmental constraints, such as the quality of local schools and labor markets and the degree of social integration or solidarity in the community (Wilson, 1987; Granovetter, 1985; Hechter, 1988; Coleman, 1988; Jencks and Mayer, 1988).[4] Strong labor markets promote the development of high-quality schools and good jobs, which in turn promote educational achievement. Similarly, community resources promote the development of neighborhood solidarity, which reinforces parental control. Parents' marital disruption or failure to marry reduce children's access to community resources by increasing the likelihood that they will live in a neighborhood with poor-quality schools and weak social controls. In addition, single mothers may have more difficulty managing their children in weakly integrated communities as opposed to communities with high levels of solidarity (Sampson, 1987).[5]

Finally, some analysts argue that the association between family structure and children's achievement is due to a third, unmeasured variable that determines both selection into family structure and children's school achievement. According to this view, adults with low ability or weak family commitments are less likely to form stable relationships, and their children are less likely to succeed in school. Whereas the three previous explanations assume that marital disruption and nonmarriage <u>cause</u> lower parental investment and lower child attainment, the selection argument assumes that a third variable causes both outcomes. Selection implies that children from nonintact families

would have done poorly in school regardless of whether or not their parents stayed together. While the selection argument is frequently mentioned as an explanation for the negative outcomes associated with family disruption or out-of wedlock childbearing or parenting, it has not been dealt with systematically in previous research.[6]

DATA AND METHODS

Data

The data are taken from the 1979-1985 waves of the National Longitudinal Survey of Youth (NLSY). The NLSY was initiated in 1979 with a national sample of men and women aged 14-21. We confine our sample to individuals aged 14-17 in 1979 and for whom we have information on family income and parents' marital status. We also exclude respondents in the special military sample and the supplemental poor white sample. The final sample contains 4,721 respondents, including 1,720 whites, 1,403 blacks, 671 Mexican American or Puerto Ricans, 187 Native Americans, and 709 "others." Thirty-one respondents refused to report any racial/ethnic classification.

Measures

Table 1 contains the means (or proportions) for the variables used in the analysis. These statistics are not weighted and therefore are not descriptive of the U.S. population. Rather, they indicate the characteristics of the sample used in this study.

Table 1: Measures of Variables and Descriptive Statistics

Variable and Definition	Mean or Proportion
A. High School Graduation	
(high school diploma or GED = 1)	.786
B. Background and Family Variables	
Race and ethnic identity	
Black, Mexican/Puerto Rican, Native American, Other, White, Missing information (see Table 2)	--
Female	
(female = 1)	.501
Mother's education	
Less than high school	.404
High school	.378
Some college	.158
Never knew mother	.037
Missing information	.023
Father's education	
Less than high school	.345
High school	.293
Some college	.210
Never knew father	.112
Missing information	.040
Residential location	
Northeast	.182
North Central	.255
South	.377
West	.186
SMSA	
1 = resided in Standard Metropolitan Statistical Area; 0 = other	.701
Family structure at age 14	
Two parents	.657
Stepparent and parent	.085
Single parent	.218
No parent	.040

Table 1, continued

Variable and Definition	Mean or Proportion
Family Change at age 14-17	
Intact to nonintact	.096
Nonintact to intact	.015
No change	.847
Missing information	.042
Family economic resources	
Newspaper: At age 14, household regularly received newspaper	.564
Missing information	.005
Magazine: At age 14, household regularly received magazine	.729
Missing information	.004
Adjusted Family Income	
1979 Family income in thous./(family size**.5)	7.858
No. of siblings	3.737
C. County and School Characteristics	
County unemployment rate	
(1970 unemployment rate for 1979 county)	4.627
County female headship rate	
(1970 percentage of families headed by women for 1979 county)	11.362
Dropout rate	
(Percentage of 10th grade students who do not finish 12th grade for 1979 school)	13.596
Dropout information missing	
(Did not participate in school survey or school had no tenth grade)	.358
D. Social Psychological Attributes	
Esteem	
(Standard self-esteem scale)	3.597
Esteem information missing	
(Did not answer self-esteem questions)	.008

Table 1, continued

Variable and Definition	Mean or Proportion
Influential other's perceived attitude toward college	
Parent college (Respondent perceives parent's desire for respondent to go to college)	.469
Parent no (respondent perceives parent does not care if he/she goes to college)	.166
Other college (respondent perceives influential other's desire for college attendance)	.179
Other no college (respondent perceives influential other does not care if he/she goes to college)	.079
Missing (respondent refuses to answer or says there is no influential other person in his/her life)	.107
Test score (respondent's 1979 standardized score on verbal and math parts of Armed Services Vocational Aptitude Battery)	-.123[a]

Source: Computations with data from the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1979.

[a]The mean of this standardized variable is 0 for the entire sample, but slightly lower for those aged 14-17 in 1979.

High school graduation is a dichotomous variable indicating whether or not an individual had received a high school diploma or GED certificate by 1985.

Race and ethnic identity are based on self-reports. The Mexican/Puerto Rican category contains both groups, since preliminary analyses indicated that there were no significant differences in their rates of high school graduation or the effects of independent variables on their graduation rates. The "other" category includes other Hispanics (e.g., Cubans, individuals from Central America), Asians, individuals who reported "American" as their racial/ethnic classification, and those who reported "other." Those individuals with no racial/ethnic classification (n = 31) were included in the multivariate analyses as a separate racial group, but we do not report coefficients for this category. Table 2 reports breakdowns for high school graduation by race/ethnicity and sex.[7]

Sex is measured by a dummy variable indicating whether the respondent is female. **Residential location** is measured by a set of dummy variables--Northeast, North Central, West, and South--and by a variable indicating whether respondent resides in an SMSA. In the analyses, we also included interaction terms for region and SMSA.

Mother's education and **Father's education** are measured by a set of dummy variables indicating whether parents received high school diplomas and whether they attended college. Each measure includes a category for "never knew mother (father)." Individuals in this category stated that they could not report parental education because they never knew their mother (father). In this case, the missing-values code is a crude indicator of whether or not respondent was born out of wedlock.

Table 2: Percentage and Number of High School Graduates by 1985, and and Percentage of Respondents in Types of Families at Age 14

A. High School Diploma or GED: Rates by Race and Sex (19-22-year-olds in 1985)

	Whites	Blacks	Others	Mexicans and Puerto Ricans	Native Americans
Men	83.8	73.8	80.3	65.8	75.6
Women	84.8	80.2	83.3	71.3	75.3
Unweighted N	1,720	1,403	709	671	187

B. Family Structure at Age 14, by Race

	Whites	Blacks	Others	Mexicans and Puerto Ricans	Native Americans
Intact	77.7	45.8	72.6	67.7	68.4
Stepparent	8.0	7.8	9.6	8.0	15.0
Single parent	12.8	38.4	14.8	21.0	11.8
Neither parent	1.4	8.0	3.0	3.3	4.8

Source: Computations with data from the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1979.

Family structure is measured by a set of dummy variables indicating respondent's living arrangements at age 14 (whether she or he lived with both biological parents, one parent only, one parent and a stepparent, or neither parent). We distinguish between single and stepparent families in order to determine whether remarriage mitigates or exacerbates the effect of family disruption. Table 2 reports breakdowns for family structure for racial/ethnic groups. If time (direct supervision) and money are the major factors accounting for educational achievement, one would expect children living in stepparent families to be similar to those living with both biological parents. On the other hand, if parental commitment and the quality of the parent-child relationship are more important, individuals living with a parent and stepparent should be less well off than those living with both biological parents. In addition to the family-structure-at-age-14 variable, we created dummy variables indicating whether the respondent experienced a **change in family structure** between ages 14 and 17. Intact-to-nonintact indicates that a marital disruption occurred; nonintact-to-intact indicates a reunification of the biological parents of the respondent.

Family economic resources are measured by four variables. Family income is taken from the household-screener part of the questionnaire in 1979 and is based on parent's report of income. Income is adjusted for family size by using a standard equivalence scale (Buhman et al., 1988). In addition to adjusted family income, we also measure number of **siblings** and whether **newspapers** and **magazines** are available in the household.[8]

Community and neighborhood are measured by a set of county indicators, including unemployment rate, female headship rate, and school dropout rate. The county characteristics are taken from published 1970 Census data on the counties in which individuals resided in 1979.[9] The unemployment rate reflects the ability of a county to afford high-quality public institutions as well as the availability of economically active role models. Female headship serves as a measure of the availability of male role models and the degree of social control. The school dropout rate is based on a survey of schools in which individuals were enrolled or had last been enrolled at the time of their seventeenth birthday. Schools were asked to report the percentage of tenth-grade students who dropped out before completing high school. Some respondents refused to participate in this part of the data collection effort, and so we lack information on this item, as we do for those schools without a tenth grade. In both cases, individuals were coded as having missing information on this variable.[10]

Parental socialization is measured by two variables: self-esteem and parents' (or another influential person's) college expectations of the respondent. Unfortunately, the NLSY does not contain direct measures of parental aspirations or parenting practices, but the survey asks respondents to identify the most influential person in their lives and to report how this person would feel if they (respondent) decided not to attend college. These two questions were used to create a variable that measures whether the respondent had a "significant other" with high educational aspirations. The survey also measures respondents' self-esteem, which may be viewed as a proxy for the parent-child

relationship. Presumably a major consequence of poor parenting is reduced self-confidence in the child.

Cognitive ability is measured with the math and language parts of the Armed Services Vocational Aptitude Battery. This test was administered to the respondents in 1981.

Methods

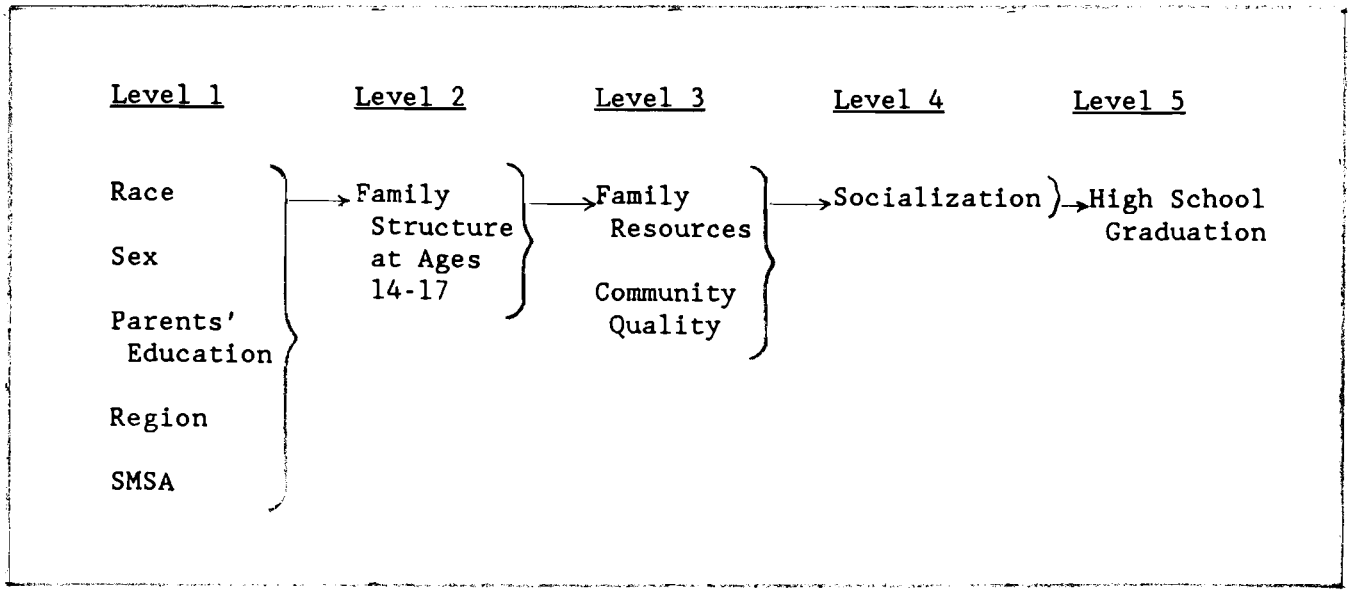
Figure 1 describes our model of race, family structure, and educational attainment. The model incorporates key variables from each of the perspectives described in the introduction, above, including family economic resources, socialization practices, and community resources. According to the model, race, sex, parents' education, and region of the country affect family structure, which in turn affects economic resources, socialization, and community resources. Ultimately, parental investment and community resources affect children's high school graduation.[11]

We assume that high school graduation (y = 1 if graduated) is a dichotomous indicator of an underlying continuous variable y*, which may be thought of as an individual's stock of skills, abilities, and knowledge. Once these reach a certain level, an individual receives a diploma or GED certificate. It is appropriate to estimate such models with probit regression techniques. The probit model takes the following form:

$$y^* = BX + e, \qquad (1)$$

where X is a set of individual, family, and community characteristics that affect skills and knowledge, and B is a vector of coefficients for

Figure 1: A Model of the Effects of Race and Family Structure on High School Graduation



this set of variables. If we assume that the error terms in the equations for each of the endogenous variables in Figure 1 are not correlated, then estimating the effects of the variables on high school graduation is fairly straightforward. Most of our analyses make this assumption.

In the final portion of the paper, we relax the assumption of no correlation between error terms and assume that the same set of unobservables may affect both family structure at age 14 and high school graduation. Here we must try to estimate the following system of equations:

$$y^*(1) = BX(1) + e(1), \qquad (2)$$

$$y^*(2) = BX(2) + ay(1) + e(2), \qquad (3)$$

where $y^*(1)$ is a continuous variable that measures family disharmony. When $y^*(1)$ reaches a certain level, a family disruption results. The dependent variable in the second equation has high school graduation as a binary indicator [$y(2) = 1$ if graduated; 0, otherwise].[12] The model assumes that cov [$e(1)$, $e(2)$] is not equal to 0, i.e., that unmeasured "family commitment" or "personal ability" affects both $y^*(1)$ and $y^*(2)$.

Ideally, we would like to estimate equations 1 and 2 by the method of maximum likelihood; however, this complex estimation problem has not been solved to our knowledge. Instead, we use a two-step technique in which the first step is to estimate the likelihood of living in a nonintact family at age 14 and the second step to the estimate the effect of predicted family structure on respondent's graduation. This effect serves as a proxy for the effect of actual family structure.

To identify this model we must be able to specify at least one variable in X(1) that is not in X(2) (Maddala, 1983, pp. 122-125). For this purpose we use educational heterogamy, based on the assortative mating literature.[13] More specifically, we assume that if the education of the mother exceeds that of the father, a disruption is more likely to occur. Although parents' education should affect respondent's high school graduation, there is no reason to believe a **difference** in parents' education affects respondent's graduation.

RACE, FAMILY STRUCTURE, AND GRADUATION

To what extent can race and ethnic differences in family structure account for differences in high school graduation? Table 3 reports estimates based on a model that treats graduation as a function of race, family structure, parental education, residential location, and sex. The first column shows that blacks, Mexicans and Puerto Ricans, and Native Americans are significantly less likely than whites to graduate from high school, controlling for sex and residential location. Women are more likely to finish school than men, whereas region and SMSA residence have very little effect on graduation.[14]

The second column reports estimates based on a model that includes family structure. The latter coefficients indicate that individuals living apart from one or both parents are less likely to finish high school than individuals living with both parents. They also show that family dissolution in adolescence (intact to nonintact) has a negative effect on schooling, whereas remarriage (nonintact to intact) has no significant impact.[15]

Table 3: The Effects of Family Structure and Parents' Education on High School Graduation

	Race and Location	Family Structure	Parental Education	Family Structure and Parental Education
Constant	.960	1.20	.469	.684
Blacks	-.247*	-.09	.026	.106
	(-4.53)	(-1.58)	(.446)	(1.72)
Mexicans/PR	-.499*	-.488*	.076	-.103
	(-7.50)	(-7.19)	(-1.04)	(-1.40)
Native Americans	-.303*	-.264*	-.198	-.174
	(-2.81)	(-2.42)	(-1.77)	(-1.54)
Other	-.104	-.077	-.028	-.014
	(-1.57)	(-1.13)	(-.404)	(-.196)
Female	.122*	.153*	.143*	.166*
	(2.92)	(3.57)	(3.30)	(3.77)
Northeast	.388	.356	.353	.317
	(1.80)	(1.64)	(1.59)	(1.43)
North Central	.179	.150	.144	.125
	(1.36)	(1.12)	(1.05)	(.905)
South	-.104	-.144	.032	-.079
	(-.930)	(-.127)	(-.275)	(-.678)
SMSA	-.109	-.067	-.241*	-.199
	(-.999)	(-.609)	(-2.14)	(-1.76)
Northeast*SMSA	-.274	-.251	-.162	-.142
	(-1.21)	(-1.10)	(-.696)	(-.608)
North Central*SMSA	-.157	-.181	-.106	-.134
	(-1.06)	(-1.20)	(-.690)	(-.862)
South*SMSA	.264*	.267*	.285*	.292*
	(2.06)	(2.05)	(2.15)	(2.18)
Single parent		-.561*		-.453*
		(-10.3)		(-7.71)
Stepparent		-.625*		-.539*
		(-8.37)		(-6.95)
Neither parent		-.558*		-.371*
		(-5.32)		(-3.40)
Change to nonintact		-.704*		-.619*
		(-10.2)		(-8.69)
Change to intact		.193		.161
		(1.14)		(.911)

Table 3, continued

	Race and Location	Family Structure	Parental Education	Family Structure and Parental Education
Mother's Education				
High school			.429*	.400*
			(7.90)	(7.24)
Some college			.481*	.471*
			(5.82)	(5.60)
Never knew mother			-.149	-.186
			(-1.39)	(-.171)
Father's Education				
High school			.350*	.357*
			(6.01)	(6.04)
Some college			.577*	.533*
			(7.43)	(6.76)
Never knew mother			-.210*	-.063
			(-3.00)	(-.859)
Chi-square	113.39	308.56	433.02	556.57
Degrees of freedom	13	19	21	27

Source: Computations with the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1979.

Note: The numbers in parentheses are the t-statistics for the coefficients. An * indicates that the coefficient was significant at the .05 level in a two-tailed test. These equations also included missing value dummies for race, family status change, and parental education.

The race coefficients in column 2 confirm the impressions of Wilson and Moynihan with respect to black-white differences in graduation. Once differences in family structure are taken into account, blacks are nearly as likely to graduate as whites. Conversely, family structure does not explain the disparity between whites and other racial minorities. Mexicans, Puerto Ricans, and Native Americans continue to have a higher risk of dropping out of school even after controlling for family structure.

Column 3 reports coefficients from a model that controls for mother's and father's education. These estimates indicate that differences in parental education account for nearly all of the differences in high school graduation among whites and blacks, and whites and Mexicans/Puerto Ricans, and for most of the difference between whites and Native Americans. Note however, that part of the parental education effect is due to "never knew father," which is really a certain type of family structure effect.

The last column in Table 3 reports estimates based on a model that includes both family structure and parents' education. Here the family-structure coefficients are slightly smaller than in column 2 and the black coefficient changes from -.09 to +.11. The latter suggests that family structure and parents' education are equally important in accounting for black-white differences in schooling.

In sum, parental education appears to be the key factor in accounting for the higher dropout rates of Mexicans, Puerto Ricans, and Native Americans as compared with whites, whereas family structure and parental education are equally important in accounting for the higher dropout rates of blacks as compared with whites.

Racial Differences in the Effects of Family Structure

To determine whether the impact of family structure is similar across racial/ethnic groups, we estimated separate equations for whites, blacks, and Mexicans/Puerto Ricans.[16] The results are presented in Table 4.

The coefficients in Table 4 show some interesting race differences in the effects of family structure at age 14. For whites, all types of nonintact families have a significant, negative effect, whereas for blacks only single motherhood has a negative effect and for Mexican Americans and Puerto Ricans only stepparenthood has a negative effect.[17] Note that the variable for "never knew father" is significant for Mexicans and Puerto Ricans and about the same size as the stepparent effect. This suggests that certain types of single parenthood (nonmarital births and early disruptions) are disadvantageous for Hispanics as well as for whites.

Change in family stucture (intact to nonintact) between ages 14 and 17 also has a significant, negative effect on all racial/ethnic groups. For whites, the change coefficient is similar to the coefficients for the other family structure variables (living with a single parent, stepparent, or neither parent at age 14), whereas for blacks, Mexicans Americans, and Puerto Ricans, it is larger than the coefficients for family structure at age 14. This indicates that the initial effect of family disruption, i.e. the "stress effect," is similar for whites and minorities, whereas the cumulative effect, i.e. the "state effect," is different. The latter could be due to a difference in composition; for example, minority respondents are more likely to be living with a never-

Table 4: The Effects of Family Structure and Parents' Education on High School Graduation of Whites, Blacks, Mexicans and Puerto Ricans

Variables	Whites	Blacks	Mexicans and Puerto Ricans
Constant	.456	.980	.337
Single parent	-.640*	-.354*	-.009
	(-5.53)	(-3.45)	(-.06)
Stepparent	-.702*	-.272	-.448*
	(-5.10)	(-1.70)	(-2.24)
Neither parent	-.815*	-.293	.052
	(-2.90)	(-1.89)	(.16)
Change to nonintact	-.659*	-.518*	-.651*
	(-5.48)	(-3.78)	(-3.83)
Change to intact	.190	.149	.022
	(.57)	(.55)	(.05)
Mother's Education			
High school	.463*	.257*	.130
	(4.68)	(2.69)	(.75)
Some college	.437*	.483*	.006
	(3.13)	(2.91)	(.02)
Never knew mother	.065	-.418*	-.027
	(.25)	(-2.55)	(-.10)
Father's Education			
High school	.258*	.323*	.447*
	(2.52)	(3.00)	(2.61)
Some college	.524*	.454*	.614*
	(4.05)	(2.61)	(2.34)
Never knew father	-.036	.023	-.459*
	(-.20)	(.20)	(-2.68)
Female	.127	.229*	.169
	(1.57)	(2.93)	(1.57)
Chi-square	244.25	113.52	77.74
Degrees of freedom	23	23	23

Source: Computations with the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1979.

Note: The numbers in parentheses are the standard errors of the coefficients. An * indicates that the coefficient is significant at the .05 level in a two-tailed test. These models also included region, SMSA, region x SMSA, adjusted family income, and missing value dummies.

married mother, whereas whites are more likely to be living with a divorced mother and/or a stepparent. If never-married motherhood is less harmful for offspring than family disruption, we would expect the coefficients for the family-structure variables to be smaller for minorities as compared with whites. Alternatively, the difference in the "state" effect could indicate that family structure makes less of a difference for minority youth than for white youth, either because there is more institutional support for single parents in minority communities or because there is more stress among minority intact families.

EXPLAINING FAMILY STRUCTURE DIFFERENCES

The next step in the analysis is to explain why family structure is associated with lower high school graduation rates. As noted above, social scientists have focused on different mechanisms for explaining differences in child outcomes, depending on their disciplinary backgrounds. Economists emphasize the quantity of parental investments, social psychologists emphasize the quality of parenting, and sociologists emphasize community resources and social capital.

Our primary interest in this paper is the extent to which family income, community characteristics, and socialization practices moderate the effect of family structure on graduation. To answer this question we estimate a series of models that allow us to examine changes in the family structure coefficients, controlling for this set of moderating factors. We assume that family income determines community quality and that community quality affects socialization and vice versa. Here, however, we are interested in the <u>additional</u> moderating effect of

community quality on family structure, controlling for family income, and the additional moderating effect of socialization, controlling for family income and community quality.

Ideally, we would like to distinguish between pre- and postdivorce family and community characteristics. Unfortunately, the NLSY provides only postdivorce measures. Since there are theoretical reasons for expecting divorce to alter family income, socialization, and community quality, we treat our measures as endogenous to family structure. However, the reader should be aware that part of the effect attributed to each variable may represent predivorce conditions.

Table 5 reports estimates from a model that treats each of the moderating variables as a function of family structure, race, sex, residence, and parental education. In the equations for commmunity quality we control for family income, and in the equations for parental socialization we control for family income and community quality.

Not surprisingly, children who live with single mothers or in stepparent families at age 14 have lower family income than children in intact families, including those whose parents break up during respondent's adolescence. In the latter case, income measured in 1979 may be before or after the divorce. Changes from intact to nonintact families occurred between 1976 and 1982, whereas family income is measured in 1979. With respect to community and school characteristics, children in mother-only families are disadvantaged as compared with children in intact families, whereas children in stepparent families are no different from the latter. With respect to socialization, the children of single mothers and those living with neither parent are less likely to identify a parent as the most influential person in their life

Table 5: The Effects of Family Structure on Family Economic Resources, Community Characteristics, and Socialization

	Family Resources		Community Characteristics			Socialization	
Variables	Adjusted Income	Number of Siblings	County Unemployment Rate	Female Headship by County	High School Dropout Rate	Self-Esteem	Educational Aspiration of Influential Other or Parent
Constant	7.79	4.86	6.25	7.83	18.16	3.44	.314
Single parent	-2.58*	-.273*	.16*	.54*	1.29*	.01	-.16*
	(-14.0)	(-2.76)	(2.57)	(4.57)	(2.16)	(.32)	(-2.73)
Stepparent	-1.09*	.101	.10	-.01	.43	-.10*	-.06
	(-4.32)	(.760)	(1.20)	(.05)	(.51)	(-2.14)	(-.71)
Neither parent	-2.22*	-.486*	.20	.17	2.01	-.05	-.91*
	(-6.21)	(-2.59)	(1.75)	(1.38)	(1.76)	(-.76)	(8.36)
Change to nonintact	-1.15*	.049	.03	.20	1.57*	-.12*	-.02
	(-5.05)	(.411)	(.33)	(1.38)	(2.13)	(-2.83)	(-.21)
Change to intact	.553	-.030	.08	.15	-1.63	.02	.04
	(1.02)	(-.105)	(.44)	(.44)	(.91)	(.02)	(.30)
Black	-2.89*	1.11*	.435*	2.29*	3.24	.184*	.12
	(-15.7)	(11.2)	(5.61)	(19.33)	(5.39)	(5.03)	(1.85)
Mexican/PR	-2.48*	.971*	.52*	1.69	3.97	-.11*	-.03
	(-10.5)	(7.80)	(6.62)	(11.4)	(5.09)	(-2.44)	(-.36)
Native American	-.941*	.576*	.17	.16	-.93	-.01	-.07
	(-2.66)	(3.11)	(1.42)	(.73)	(.85)	(-.20)	(-.66)
Other	-.861*	-.104	.03	.81*	1.64	.02	.08
	(-4.23)	(-.973)	(.51)	(6.38)	(1.69)	(.55)	(1.16)
Chi-square	1712.89	1014.90	1749.98	1678.80	478.24	370.66	129.52
Degrees of freedom	27	28	28	28	28	33	33

Source: Computations with data from the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1979.

Note: The numbers in parentheses are the t-statistics for the coefficients. An * indicates that the coefficient is significant at the .05 level in a two-tailed test. The equation for adjusted income also included parental education, sex, region, SMSA, region x SMSA, and dummies for missing values. The equations for unemployment rate, female headship rate, and dropout rate included adjusted income as well. The equations for self-esteem and influential other included adjusted income and the area characteristics.

than children in intact families, and children in stepparent families report lower self-esteem. Note also that respondents who experience a family disruption between ages 14 and 17 have lower self-esteem.[18]

The effects of race and ethnicity are generally as expected for family income and community quality. Minority children live in families with less income and more siblings than white children. Similarly, blacks, Mexican Americans, and Puerto Ricans are more likely to live in areas with high unemployment rates, high female headship rates, and high dropout rates. Blacks report higher levels of self-esteem than whites, and Mexican Americans and Puerto Ricans report lower esteem, controlling for other variables.

A critical question in this analysis is whether differences in family income, community quality, and socialization can account for the relationship between family structure and high school graduation. Table 6 reports results obtained from models that examine this question. Column 1 reports the effects of family structure on graduation after controlling for family income, number of siblings, and availability of reading materials in the home; column 2 reports similar results, controlling for community and school characteristics; and column 3 reports coefficients that control for self-esteem and educational aspirations.

Differences in family resources (income, number of children, reading material) account for about 20 percent of the difference in high school completion among children in intact as opposed to single-parent families, and for less than 10 percent of the difference among children in other categories of nonintact families (compare the coefficients in column 1 of Table 6 with those in column 4 of Table 3). Our measure of

Table 6: The Effects of Family Resources, County and School Quality, and Socialization on High School Graduation

Variable	Family Resources	County and School Characteristics	Socialization Characteristics
Constant	.455	-.006	.102
Single parent	-.373*	-.368*	-.376*
	(-6.13)	(-6.00)	(-6.03)
Stepparent	-.504*	-.485*	-.471*
	(-6.44)	(-6.14)	(-5.89)
Neither parent	-.308*	-.320*	-.315*
	(-2.77)	(-2.86)	(-2.75)
Change to nonintact	-.572*	-.541*	-.531*
	(-7.93)	(-7.41)	(-7.18)
Change to intact	.136	.124	.128
	(.769)	(.703)	(.717)
Adjusted income	.020*	.018*	.016*
	(3.49)	(3.14)	(2.79)
No. of siblings	-.027*	-.031*	-.025*
	(-3.06)	(-3.46)	(-2.78)
Newspaper in home	.203*	.20*	.170*
	(4.02)	(3.92)	(3.29)
Magazine in home	.115*	.114*	.097
	(2.21)	(2.17)	(1.83)
County unemployment rate		-.014	-.019
		(-.526)	(-.709)
Black unemployment rate		.075*	.076*
		(2.28)	(2.27)
Mexican\PR unemployment rate		.061	.079*
		(1.59)	(2.03)
Female headship rate in county		-.010	-.010
		(-1.21)	(-1.26)
High school dropout rate		-.005*	-.005*
		(-2.14)	(-2.21)

Table 6, continued

Variable	Family Resources	County and School Characteristics	Socialization Characteristics
Self-esteem			.232*
			(8.39)
Influential Other:			
Parent does not expect college			-.154*
			(-2.41)
Other expects college			.045
			(.701)
Other does not expect college			-.307*
			(-3.77)
Chi-square	617.68	683.85	786.35
Degrees of freedom	33	44	50

Source: Computations with the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1979.

Note: The numbers in parentheses are the t-statistics for the coefficients. An * indicates that the coefficient is significant at or below the .05 level in a two-tailed test. These models also included race, parental education, sex, region, SMSA, region x SMSA, and dummies for missing values.

family income is imprecise, capturing only current income as opposed to wealth and access to financial resources. Since nonintact families have less wealth than intact families, it is reasonable to assume that the income variable is an underestimate of the difference in economic resources between families. Nevertheless, the reduction in the effect of family structure due to income in these data is smaller than that reported in studies using the Panel Study of Income Dynamics and the High School and Beyond survey (McLanahan, 1985; Astone and McLanahan, 1989). One should not make too much of these differences, however, owing to the differences in samples (e.g., High School and Beyond excludes people who dropped out before sophomore year) and differences in the dependent variables (e.g., the PSID study uses ever-dropped-out-by-age-17 as the dependent variable). Moreover, when we examined the effects of income for the racial groups separately, we found that income explained much more of the effect of family structure for whites than for the other minority groups, which is consistent with the PSID results (McLanahan, 1985).

The second column in Table 6 reports the effect of family structure on school completion after controlling for county and school variables. This model includes an interaction term for race and unemployment rates. According to column 2 in Table 6, attending a school with high dropout rates reduces the likelihood of graduation, whereas for blacks (and Mexicans and Puerto Ricans in column 3), living in a county with high unemployment <u>increases</u> the likelihood of graduation. The latter result is surprising, in that we expected unemployment to be negatively related to community resources. This seemingly perverse result may simply reflect the unreliability of our measure, i.e., the 1979 geocodes are

based on the 1970 Census and the relative unemployment rates of some counties changed between 1970 and 1979. Alternatively, ethnographic studies have shown that within poor communities employment may compete with school. When jobs are readily available, adolescents are more likely to quit school and work, whereas when unemployment is high, they are more likely to finish high school (Sullivan, 1989). If the latter interpretation is true, it suggests that short-term opportunities may be more powerful than long-term payoffs in accounting for the school behavior of minority youth.[19] In either case the county variables do not account for differences in high school graduation rates of children from intact and nonintact families.

The last column in Table 6 reports the effect of family structure after controlling for self-esteem and college expectations. As in the case of the community variables, we are interested in whether the socialization variables moderate the family structure effect once income and community quality are taken into account. According to column 3, the socialization measures improve the fit of the model, but the size of the family structure coefficients remain the same. Note that respondents who report that their "influential person" does not expect them to attend college are much less likely to finish high school, and the effect is even stronger when the influential person is **not** the parent. Influential persons other than parents include adult relatives (e.g., an aunt or uncle), teachers, siblings, and peers.

The Endogeneity of Family Structure

All of the models presented above assume that family structure is exogenous to family income and parenting behavior and that family

disruption has a causal effect on the likelihood of graduating from high school. One must be concerned, however, about whether observed differences between children from intact and nonintact families are due to family structure per se or to some third variable or set of variables that account for both divorce and high school graduation. As we noted in the opening section of the paper, family disruption and children's school failure may both reflect unobserved characteristics of the parents, such as low ability or lack of family commitment. If this were true, the children of such parents might be expected to have lower school achievement regardless of whether the parents divorced or stayed together.

Since we cannot randomly assign individuals to different family configurations, this issue can never be fully resolved. However, there are several ways of obtaining better estimates of the "true" family structure effect. One strategy is to examine the effect of a <u>change</u> in family structure on respondents' graduation as opposed to simply comparing school achievement across different family types. Our measure of change in family structure is based on what happens between ages 14 and 17, and thus is more proximate to high school graduation than family events that occurred at some point prior to age 14. Ideally, we would like to know whether <u>changes</u> in family structure lead to <u>changes</u> in family income, community quality, and parenting behavior. The NLSY data provide little information on changes in any of the intervening variables used in our models, and therefore we can only examine the effect of change in family structure on future high school graduation. The reader will note that the models presented in Tables 3 through 6 contain a change measure for family structure--intact to nonintact--and

the effect of this variable is similar to that of the static measures. The results in Table 4 showed that this change had very similar effects for whites, blacks, Mexicans, and Puerto Ricans.

A second way of dealing with the problem is to attempt direct measurement of the variables that presumably are associated with both family structure and school achievement, namely parental instability or lack of family commitment.[20] Although the NLSY survey does not measure these particular characteristics, it does report respondents' scores on the Armed Services Vocational Aptitude Battery (ASVAB) test. Assuming that test scores at least partly reflect inherited ability and assuming that ability is related to parenting skills and children's academic achievement, these scores may provide us with a means of obtaining a better estimate of the family structure effect. Table 7 reports coefficients for family structure after controlling for test scores.

According to Table 7, cognitive ability has a very strong effect on high school graduation. Furthermore, the effects of family income, number of siblings, newspapers, magazines, and county unemployment rates become insignificant after controlling for test scores. Nevertheless, ability does not explain any of the difference in achievement between children from intact and nonintact families. The coefficients for family structure in Table 7 are very similar to those reported in Table 6, before test scores were added to the model. Thus, we can reject the hypothesis that differences in inherited ability account for differences in school achievement across family types. Note that had the results been different--if test scores had explained the family structure effect--we would have faced the problem of determining whether these scores were a cause or consequence of family disruption. However, the

Table 7: The Effects of Test Scores on High School Graduation

Variable	Coefficient	T-test
Constant	.730	
Single parent	-.391*	-6.05
Stepparent	-.423*	-5.10
Neither parent	-.322*	-2.72
Change to nonintact	-.497*	-6.45
Change to intact	.091	.487
Adjusted income	.004	.701
No. of siblings	-.013	-1.43
Newspaper in home	.095	1.78
Magazine in home	.026	.471
County unemployment rate	-.016	-.568
Black unemployment rate	.064	1.85
Hsp unemployment rate	.064	1.60
Female headship rate	-.001	-.135
High school dropout rate	-.005*	-1.97
Self-esteem	.104*	3.52
Influential other:		
Parent does not expect college	-.096	-1.45
Other expects college	.042	.629
Other does not expect college	-.276*	-3.27
Test scores	.611*	17.0
Chi-square	1098.9	
Degrees of freedom	51	

Source: Computations with data from the 1979-1985 National Longitudinal Surveys of Youth for individuals aged 14-17 in 1979.

Note: The numbers in parentheses are the t-tests of the coefficients. An * indicates that the coefficient is significant at or below the .05 level in a two-tailed test. The equation also included race, parental education, sex, region, SMSA, region x SMSA, and dummies for missing values.

fact that they do not account for differences in family structure allows us to reject the heritability hypothesis.

A final strategy for dealing with the endogeneity problem is to use statistical techniques to purge the family-structure indicator of its association with unmeasured variables. Table 8 reports estimates obtained from a two-stage model which treats both family structure and children's graduation as endogenous. We also report the coefficients from a single-equation model based on the same sample. Recall from above that we use parents' educational heterogamy (higher education of the mother as compared to the father) as a predictor of family disruption. To avoid confounding the effects of family structure and parental education, we excluded individuals with missing values on mother's or father's education. These individuals are more likely to be from single-parent families, and many report that they "never knew their parent." In addition, we use region and SMSA in the family-disruption equation, but not in the high school graduation equation, since the effects of region on high school graduation are very small. The results show that the coefficient for predicted family structure is statistically significant, but the t-statistic is considerably smaller than that obtained in the single-equation model.[21] These results should be viewed as highly tentative, since our model for predicting family structure is very poor.[22]

Table 8: Two-Stage Probit Model of the Effects of Family Instability on High School Graduation

	Two-Stage Model:				Single Equation Model:	
	Nonintact Family at Age 14		High School Graduation		High School Graduation	
	coefficient	t-test	coefficient	t-test	coefficient	t-test
Constant	-.730		.622		.521	
Black	.820*	(14.17)	.297*	(2.15)	.096	(1.47)
Mexican/PR	.099	(1.33)	-.042	(-.50)	-.110	(-1.42)
Native American	.286*	(2.45)	-.036	(-.28)	-.103	(-.82)
Other	.129	(1.91)	.008	(.11)	-.025	(-.34)
Female	.003	(.07)	.145*	(2.96)	.145*	(2.96)
Mother's Education						
High school			.400*	(6.61)	.363*	(6.05)
Some college			.440*	(4.81)	.400*	(4.45)
Father's Education						
High school			.358*	(6.01)	.384*	(6.38)
Some college			.589*	(7.30)	.586*	(7.20)
Nonintact family			-1.115*	(-2.41)	- .393*	(-7.33)
Chi-square	297.15		273.54		320.39	
Degrees of freedom	14		11		11	

Source: Computations with data from the 1979-1985 waves of the National Longitudinal Survey of Youth for individuals aged 14-17 in 1985.

Note: The numbers in the parentheses are the t-tests of the coefficients. An * indicates that the coefficient is significant at the .05 level in a two-tailed test.

SUMMARY AND CONCLUSIONS

Until recently, many analysts believed that divorce had no serious consequences for children beyond the temporary stress associated with the initial breakup of the family. Similarly, many believed that never-married mothers were able to compensate for the lack of support from the child's father by relying on extended kin and friendship networks (Stack, 1974). The findings presented here tell a different story. They show that children who live apart from one or both parents during childhood or adolescence are less likely to graduate from high school than those who live with both natural parents. They also show that while this effect is stronger among whites than among other racial groups, the disadvantage of living in a nonintact family is common to all groups. The results presented here are consistent with those of two other national longitudinal surveys--the Panel Study of Income Dynamics and the High School and Beyond survey. These studies together raise serious questions about the optimistic view of divorce and single parenthood that has prevailed since the early 1970s.

How large is the effect of family dissolution or nonmarriage? Can it account for inequality in educational attainment across different racial groups? The answer depends on whose point of view is taken. Our estimates indicate that family disruption increases the risk of dropping out of school by about 7 percentage points, from 13 percent to 20 percent for the average individual. From the individual's point of view, this represents a 50 percent increase in the risk of leaving school--a sizable increase by most accounts. Viewed another way, if all children lived in intact families, high school graduation rates at the

national level would be about 86 percent instead of the current 84 percent--a less dramatic improvement from the point of view of the population as a whole.

Differences in family structure account for most of the difference in high school graduation between whites and blacks, but not for the difference between whites and other minorities. Parental education is much more important than family structure in explaining the contrast in achievement between whites on the one hand and Mexican Americans, Puerto Ricans, and Native Americans on the other hand; and parents' education is as important as family structure in explaining differences between whites and blacks.

What accounts for the lower attainment of children in nonintact families? Does family disruption or single parenthood itself lower children's school achievement, or is the negative correlation between high school graduation and growing up in a nonintact family due to some preexisting factor that would have lowered the attainment of the child even if the parents had remained together? The conventional explanations for the negative relationship between nonintact family structure and children's attainment attribute differences in children's outcomes to differences in the quantity and quality of family and community resources. Our findings are consistent with this view insofar as they show that children from nonintact families have less income, fewer community resources, and lower educational aspirations than children in intact families. Family income accounts for <u>some</u> of the educational disadvantages of children from nonintact families. Neighborhood quality and parental socialization have significant effects on high school graduation, but do not account for any additional

disadvantage of children from nonintact families, once income is taken into account. The lack of support for an intervening effect of community and socialization may, however, be due to the fact that our measures are limited and subject to a good deal of error.

Finally, the results suggest that the negative consequences associated with single parenthood are not due entirely to selectivity into the single-parent status. This conclusion is based on several pieces of information: the fact that changes in family structure (from intact to nonintact) increase the risk of dropping out of school, the fact that differences in cognitive ability do not account for differences in achievement across family types, and the fact that family structure continues to have a significant impact on children's graduation in models that adjust for unobserved heterogeneity. The results regarding the endogeneity of family structure are problematic, since the results are quite sensitive to different specifications of the statistical model; however, when viewed along with the evidence discussed above, they lend support to the idea that family structure itself makes a difference.

What, if anything, can society do to reduce the vulnerability of children who live in single-parent families? Relevant to this question is the finding that a mother's remarriage does not seem to improve the likelihood that her child will finish high school: children from step-parent families are just as likely to drop out of school as those from single-parent families. This finding is consistent with the results of other recent studies and suggests that remarriage is not necessarily a solution to the "problem" of single parenthood (Astone and McLanahan, 1989). The most obvious means of improving the life chances of children

living with single mothers is to increase family income by increasing public and/or private investment in children. Our results indicate that raising family incomes would reduce some, but not all, of the income-related disadvantage of children who live with single mothers. It would also increase access to community resources and strengthen parental socialization, which may reduce the risk of dropping out of school. With respect to the last point, further research is needed before we can make any definitive judgments about the kinds of communities and types of parenting behavior that might close the gap between children from intact and nonintact families.

Notes

[1]For example, children of poor parents are less likely to attend college than children of middle-class parents, even if they graduate from high school. Thus, holding ability constant, poor children have less incentive to finish school than do middle-class children.

[2]There is a large literature on the effects of mother's employment on children, and the results are mixed. In the past, researchers have generally concluded that mother's employment had no negative consequences on school achievement and personality development (Hoffman, 1979), whereas recent studies have found that mother's employment reduces the school achievement of sons in middle-class families (Desai, Chase-Lansdale, Desai, and Michael, forthcoming, 1989).

[3]At present, parental conflict over child support is almost inevitable. In families where fathers pay a substantial amount of child support, fathers often resent the fact that child support contributions are public goods and cannot be separated from spouse support. In families where fathers pay a small amount of child support, mothers resent the fact that the parenting burden is unequally distributed.

[4]Coleman (1988) distinguishes between physical capital, which refers to the material resources of a community or neighborhood, and social capital, which refers to the nature of relationships within a community. Social capital includes information networks, obligations and expectations, and social norms. Most discussions of neighborhood

effects on school achievement include all three forms of social capital as well as physical capital.

[5]Despite recent interest in the neighborhood argument, there is very little empirical evidence to support the notion that neighborhood has an independent effect on school achievement, net of family and individual characteristics. An important exception is a study by Corcoran et al. (1987), which found that children who grow up in communities with high welfare participation rates have lower income and wages in young adulthood than children from communities with lower participation rates. Part of the reason for the lack of empirical support is the absence of good indicators of community characteristics. At best, surveys contain information on state or county characteristics. The study by Corcoran et al. used zip code information in the PSID.

[6]A few studies have attempted to relate child outcomes to predivorce differences in families. In a longitudinal study that covered 10 years, Block, Block, and Gjerde (1986) found that children from divorced families were exhibiting symptoms of distress prior to their parents' marital disruption. Similarly, at least two studies have found that children in "unhappy" intact families do just as poorly as children in divorced families (Zill, 1978; Nye, 1957).

[7]The results in Panel A give graduation rates that are somewhat lower than those reported for blacks and whites based on the Current Population Survey in 1986, which showed that 86.4 percent of whites and 82.5 percent of blacks aged 18-21 in 1985 had completed high school.

Weighting the statistics in Panel A does increase the graduation rates, but they are still somewhat below those based on the CPS.

[8]As noted earlier, we would prefer to have measures of both expected income if the family had remained intact and observed income pre- and postdivorce. This would allow us to measure the effect of a change in family income as well as the effect of the income loss due to divorce or nonmarriage. Unfortunately, we have only a single indicator of family income which confounds both pre- and postdisruption income.

[9]Whether counties are good proxies for neighborhoods depends on the size of the population and area of the county. For example, the characteristics of Cook County are not good proxies for the characteristics of many neighborhoods in the central city of Chicago.

[10]Ideally, we would like to have information about the quality of the neighborhoods in which respondents live and the quality of the relationships between respondents and their neighbors. This information is not available in the NLSY.

[11]For children of divorced parents, the total investment in children is a combination of both pre- and postdivorce family income, socialization practices, and community resources. The family structure effect includes a shock effect (the change in family income, socialization, and community resources due to family breakup) as well as a level effect (the amount of postdisruption income and community resources and the quality of postdisruption parenting practices). Ideally, we would like to have indicators of both pre- and post-disruption variables.

[12]Although we would prefer to continue using a four-category family structure variable, this is not feasible. Thus we specify y(1) = 0 if respondent lives with both biological parents and y(1) = 1 if respondent does not.

[13]We thank Nan Astone for suggesting this possibility to us.

[14]The effects for different geographical locations relative to those living in nonmetropolitan areas in the West vary from -.20 to .39. In order of decreasing size, they are: non-SMSA Northeast = .39, non-SMSA North Central = .18, SMSA South = .05, SMSA Northeast = .01, SMSA West = -.11, non-SMSA South = -.10, and SMSA North Central = -.20.

[15]The statistics in Table 1 show that a much higher percentage of couples break up than reunite during this three-year period, so the estimated effect of family reconstitution is based on a very small percentage (less than 2 percent) of families.

[16]Owing to small sample size, the estimates for Native Americans were unreliable and are not reported in Table 4.

[17]The interactions between race and family structure are statistically significant at the .05 level.

[18]Self-esteem is measured in 1981 and change in family structure is measured between 1976 and 1982. Thus, our indicator of self-esteem measures esteem "around the time of divorce" as opposed to predivorce or postdivorce esteem. Since divorce, from a sociological point of view, is a process that occurs over several years, the self-esteem measure should be a fairly accurate indicator of the effect of the divorce

process on children's self-esteem. The fact that the **change** in family structure is significant, whereas living with a single parent is not, suggests that stress is more important than family structure per se in determining self-esteem.

[19]We tested for interactions between family structure and the county/school variables, but none were significant.

[20]Another likely candidate for the unmeasured variable is parental conflict. There is a good deal of empirical evidence which suggests that children from intact families with high conflict experience the same disadvantage as children from nonintact families.

[21]Using a standard probit program to estimate the effects of the variables in the second-stage equation produces the correct coefficients, but not the correct standard errors. We are grateful to Charles Michalopoulos for deriving the formula for computing the correct standard errors.

[22]The results from the two-stage models are sensitive to the specifications of the two stages. For example, a model that uses region, but not educational differences, in the first stage results in a significant effect for family structure, but another model that uses heterogamy and region in the first equation, and also region in the second stage, yields an estimate for the effect of family structure that is insignificant. This sensitivity of the model and the simplicity of our specification suggests that these results should be viewed with caution.

Another way to relax the assumption of no correlation between the error terms in the equations for family structure and high school graduation is to conceptualize the process as a choice model. Some analysts have argued that parents or one parent choose to live in an intact or nonintact family based at least in part on their expectations about how their children will fare in alternative living situations. For example, a mother may choose to raise her child out of wedlock because she feels the child will be better off than if she were to marry the father. Or, a father and mother may agree to divorce because they fear their conflict is harming the children. So, some parents assume they are helping their children by living in nonintact families, and it could be that some children are actually better off in nonintact families than in intact families. If this is what happens, then parent's expectations about how their children will fare in alternative living arrangements affect their decisions, and family structure is endogenous to expected outcomes. More specifically, parents may well consider the impact of alternative family situations on their children's educational achievement in making such decisions. Such a process is appropriately modeled as an endogenous switching regression model (Maddala, 1983; Mare and Winship, 1988; Gamoran and Mare, 1989). We estimated a number of these models and found no evidence of an association between the unobserved factors that affect family disruption and the unobserved factors that affect high school graduation.

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