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ABSTRACT

We use data from the National Longitudinal Study of Adolescent Health (N=7,686) to determine whether racial and ethnic differences in socioeconomic stress and social protection explain group differences in the association between family structure instability and three outcomes for white, black, and Mexican-American adolescents: delinquent behavior, age at first sex, and age at first nonmarital birth. We find that the positive association between mothers' union transitions and each outcome for white adolescents is attenuated by social protection. The association of instability with age at first sex and first nonmarital birth is weaker for black adolescents, but not for Mexican-American adolescents. The weaker association is explained by black adolescents' more frequent exposure to socioeconomic stress in the context of union instability.

A growing body of research supports the *instability hypothesis*, which states that multiple changes in family structure affect children's behavioral development as much as or more than the characteristics of the family systems they reside in at any given point (Cavanagh, 2008; Cavanagh et al., 2008; Fomby & Cherlin, 2007; Heard, 2007; Wu & Martinson, 1993). However, there has been little research to explain a provocative finding: instability appears to have a strong association with some aspects of behavioral development for white children, but not for black children. To address this discrepancy, we test two theories that have been posited to explain racial and ethnic differences in children's adjustment to family change: *social protection* and *socioeconomic stress* (McLoyd et al., 2000). We use nationally representative data to compare the relative importance of these mechanisms for explaining differences in the association of family structure instability with three outcomes for white, black, and Mexican-American adolescents: self-reported delinquent behavior, age at nonmarital sexual initiation, and age at first nonmarital birth.

<u>Literature review</u>

Tests of the instability hypothesis have become increasingly salient as the prevalence of births within cohabiting unions has increased (Chandra et al., 2005) while cohabiting unions have remained relatively unstable union types compared to marriage (Manning et al., 2004). Additionally, as research has suggested, children born to single mothers who remain unmarried fare at least as well and perhaps better than children residing in stepfamilies (Cherlin & Furstenberg Jr., 1994); therefore, researchers have evaluated the consequences of federal policies to promote marriage among low-income single mothers (Graefe & Lichter, 2007).

Studies of family structure instability have added to earlier research that used static measures of family structure by testing the theory that repeated disruptions to the family system, caused by either the addition or departure of a household member, may lead to behaviors with potentially deleterious long-term consequences. Although a full causal chain has not been identified, various explanations for why instability matters for children's behavior have been

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supported by empirical research. These include children's repeated exposure to poor union quality in the context of dissolving or newly forming unions (Fomby & Osborne, 2008), compromised parent-child relationships in response to persistent instability (Cavanagh, 2008), and maternal stress following a family structure transition (Osborne & McLanahan, 2007).

A subset of literature testing the instability hypothesis has identified significant differences between black and white children in the association of family structure transitions with some behavioral outcomes. In sum, this work indicates that family structure transitions, as measured by the entry into or exit from a household of a mother's married or cohabiting partners, has deleterious consequences for white children, but not for black children. Using data from the 1979 National Longitudinal Survey of Youth (NLSY79), Wu and Thomson (2001) found that family structure transitions were associated with a higher risk of first intercourse at an early age for white women, but not for black women. Wu and Martinson (1993, using the National Survey of Families and Households) and Wu (1996, using the NLSY79) found that the effect of family structure instability on nonmarital births was weaker for black than for white young women.

Using the NLSY79 and the Children of the NLSY (CNLSY), Fomby and Cherlin (2007) reported that white children aged 5 to 14 who experienced more family structure transitions had more externalizing behavior problems; and for children 10 to 14, transitions were positively associated with self-reported delinquent behavior after controlling for attributes of the mother's background. For black children, these associations were absent. To date, research on family structure instability has not reported differences in the effect of family structure instability on these outcomes for racial and ethnic groups other than white and black children; nor has research explicitly reported that there *are not* racial and ethnic differences in the effects of family structure instability on other outcomes or in other data sources.

Two hypotheses suggested by research on children's exposure to family conflict and divorce may explain why family instability has a stronger association with behavior for white adolescents than for black adolescents (see McLoyd et al., 2000 for a review). First, black adolescents, who

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tend to reside in more economically stressful environments than white adolescents, may absorb the addition or departure of a household member as one more change in a context defined by turbulence (the *socioeconomic stress hypothesis*). Second, black adolescents may have greater average access than white adolescents to extended kin and other adult role models inside or outside of the parental household, and those adults may help the child to absorb the impact of family structure change (referred to as the *protection hypothesis*). To our knowledge, these hypotheses have not been tested together previously in an attempt to explain racial and ethnic differences in the effects of family structure change.

Socioeconomic Stress Hypothesis

The socioeconomic stress hypothesis asserts that factors related to persistent poverty and unemployment overwhelm the effect of changes in family structure on adolescents' development. Racial and ethnic differences in exposure to these factors will explain observed racial and ethnic variation in the association of instability with adolescent outcomes. Evidence for this hypothesis comes from a variety of sources. In a meta-analysis of the effects of divorce on children in adulthood, Amato and Keith (1991) posited that many children of color experience more generally stressful environments that diminish the unique impact of a single event like a divorce. Additional evidence comes from a longitudinal study in which African-American children in married-parent families that eventually divorced had lower family incomes prior to divorce and were less likely to have increased externalizing behavior problems following divorce compared to European-American children (Shaw et al., 1999). The authors concluded that among the African-American families considered, but not among the European-American families, the risk of divorce or separation is tied to poverty and unemployment, conditions that potentially influence adolescents' development at least as much as family structure instability itself. In a sample of middle school students, scholastic performance was lower among white students who had experienced a parental divorce since the second grade; among black students, scholastic performance was lower among those who had experienced a divorce prior

to kindergarten (Smith, 1997). The author concludes that white children's response to divorce was related to exposure to conflict and the emotional trauma of separation, while black children's response resulted from the economic disadvantage associated with residing in a single-parent family.

Beyond individual and family-level indicators of socioeconomic stress and poverty, race/ethnic differences in socioeconomic context at the neighborhood level also may explain group differences in the association of family structure instability with adolescent risk behavior. In neighborhood contexts where nonmarital family organization and family structure instability are more pervasive, the dissolution and formation of unions within an adolescent's household may be relatively less stressful to adolescents. Whereas those changes are more normative whether family instability is characterized locally by changes in cohabiting union status (Edin & Kefalas, 2006) or by divorce and remarriage. At the same time, adolescents residing in neighborhoods characterized by high levels of concentrated poverty and minority racial segregation are relatively more likely to engage in delinquency and early family formation (Browning, Leventhal, & Brooks-Gunn 2004; Baumer & South 2001; South & Baumer 2000, Billy, Brewster, & Grady 1994, Frank et al., 2007; Wilson 1987; Massey & Denton, 1994). Concentrated neighborhood poverty may influence adolescents' risk-taking behavior through greater exposure to social disorganization and lower social cohesion (Billy, Brewster, & Grady 1994), peer attitudes that promote risk-taking behavior (Baumer & South, 2001; South & Baumer, 2000), and a perceived shortage of long-term economic prospects (MacLeod, 1995).

Compositional differences between the families of black adolescents and white adolescents that are predictive of union disruption also may be indicative of socioeconomic strain. Among children in married unions, compositional factors include age at first birth, nonmarital childbearing, educational attainment, and age at union formation (Sweeney & Phillips, 2004). Black adolescents are also more likely than white adolescents to have been born to single mothers or into cohabiting unions, family forms that are associated with a higher likelihood of

poverty, lower educational attainment, and unemployment (Bumpass & Lu, 2000; Manning & Lichter, 1996; McLanahan & Sandefur, 1994).

Protection Hypothesis

An alternative explanation for the racial differences observed in the effects of partner instability is the *protection hypothesis.* Protection hypothesis asserts that children of color are insulated from the impacts of parental separation and the conflict that precedes separation by having access to a broader network of kin and kin-like figures who can provide emotional and instrumental support both to children and to parents during disruptive periods. We include measures of relationships with adult kin, adult nonkin, and adolescent romantic partners; however, our argument focuses primarily on relationships with adult kin and participation in religious networks because we anticipate greater ethnic variation in the frequency and quality of these relationships than in other relationships. Relevant empirical support provides evidence that adolescents who report high levels of parent involvement, satisfying relationships with parents, and attachment to school and/or religious institutions are more likely than similar adolescents to abstain from delinquent behavior (Cook et al., 2008) and to defer sexual initiation (Small & Luster, 1994) and less likely to experience a nonmarital birth (Bearman & Brueckner, 2001).

The protection hypothesis is founded on two premises. The first is that embeddedness in broader social networks protects children against negative emotional and social effects of conflict between parents and union instability (McLoyd et al., 2000). Kin and nonkin social support may operate directly by providing a resource for adolescents seeking emotional or instrumental support (Hetherington & Kelly, 2002; Mason et al., 1994) or indirectly by providing support to parents, thereby enabling parents to maintain positive parenting practices with adolescents during disruptive periods (Mason et al., 1994; Taylor, 1996; Taylor et al., 2008).

The second premise is that non-white adolescents and families have greater access to kin networks and use them more than do white adolescents and families. Research shows that

organization in African-American families has historically extended beyond the nuclear household (McAdoo, 1982; Newman, 1999; Sarkisian, 2007; Wilson, 1986); black families are more likely to reside in extended kin households than are white families (Casper & Bryson, 1999); and non-coresident black kin are more likely to reside near one another (Parish et al., 1991; Wilson, 1986). Critics argue that structural and socioeconomic factors have diminished the capacity for kin support in black families over time (Anderson, 1990; Brewster & Padavic, 2002; McDonald & Armstrong, 2001; Wilson, 1987), but recent research indicates that instrumental kin support such as child care in black families remains available and effective (Sarkisian & Gerstel, 2004).

Adolescents also may differ by race in their contact with unrelated adults through religious institutions. Nearly three-quarters of black adolescents and two-thirds of Hispanic adolescents reside in families that attend religious services at least monthly compared to half of white adolescents. Among black female adolescents, moderately frequent attendance at places of worship is associated with lower odds of sexual activity, independent of personal and family religiosity (Ball et al., 2003). Overall, teens with greater religious orientation and more frequent church attendance are more likely to defer sexual initiation until late adolescence (Hardy & Raffaelli, 2003; Sinha et al., 2007).

Incorporating Mexican-American Families

Research identifying ethnic differences in the effect of family structure instability on adolescent outcomes has been restricted mostly to comparisons of black and white adolescents, although Hispanics represent a growing share of the U.S. population. An important exception is Heard (2007), which considered race and ethnic differences in the effects of family structure on self-reported grades for white, black, and Hispanic adolescents in the National Longitudinal Study of Adolescent Health (Add Health). Heard found that the association of instability with grades was similar for all ethnic groups, but Hispanics were distinctive in that time spent residing outside of a parental household with relatives or foster parents was not

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associated with negative academic consequences.

Given the variety of family structure experiences and norms among Hispanic subgroups, our analysis is restricted to Mexican-American adolescents. Compositionally, Mexican-American families are similar to black families in their rates of poverty and involvement in extended kin networks (Sarkisian et al., 2007; Sarkisian et al., 2006). This suggests that hypotheses to explain differences in the effects of instability between black and white adolescents may be germane for Mexican-Americans as well. On the other hand, low-income Mexican-Americans have higher rates of marriage compared to blacks (Raley et al., 2004). Additionally, descriptive evidence supports the notion that among Latinos in the United States, cohabitation is a distinctive family form characterized by greater prevalence of childbearing, more frequent pregnancy intendedness, and more stability compared to cohabiting unions among non-Latino couples (Bumpass & Lu, 2000; Manning, 2004; Musick, 2002; Osborne et al., 2007). These attributes of Latinos' cohabiting unions and marriages imply that children born into those unions experience greater stability compared to black children, which may in turn imply a distinctive pattern of effects of instability on adolescent outcomes. We explore these competing explanations to determine whether the effects of family structure instability among Mexican-American adolescents are distinctive or whether they resemble patterns observed among white or black adolescents.

Differences in Race/Ethnic Variation by Outcome and Data Source

Work by Wu and collaborators and Fomby and Cherlin highlights discrepant results for black and white children; however, other studies have not reported racial differences in the effects of instability. An exception to this pattern is the finding from Add Health that states black adolescents' grade point averages are more affected by a *recent* family structure transition than are whites', perhaps because of greater income loss following a union dissolution (Heard, 2007). The general absence of reported racial differences in the effect of instability raises questions about the following: (1) whether racial differences on child well-being vary depending

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on the outcome or age group considered; (2) whether differences in how instability is measured in various studies produce discrepant estimates of the effect of instability by race/ethnicity; or (3) whether there are research design differences in the major cohort studies that contribute to different conclusions about racial difference. Using NLSY79/CNLSY data observed for three specific outcomes, the current study tests the first explanation by asking whether racial differences in the effect of family structure instability can be replicated on another nationally representative data set, the National Longitudinal Study of Adolescent Health, or Add Health.

Data, Methods, and Research Design

Add Health (Udry, 2003) is a nationally representative, school-based longitudinal study of students who were in grades 7-12 during the 1994-1995 school year. A sample of 80 high schools and 52 middle schools from the United States was selected with unequal probability of selection. The sample is representative of U.S. schools with respect to region of country, urbanicity, school size, school type, and ethnicity (Harris et al., 2003). A sample of rostered students was drawn from each participating school for a follow-up home interview with the adolescent and the adolescent's parent (usually the mother). Adolescents who participated in in-home interviews (N=20,745, response rate=79%) and who were not high school seniors at wave I were re-interviewed in 1996 and 2000. Wave I high school seniors were excluded at wave II and re-introduced in wave III. The wave I to wave III longitudinal weight is used in models predicting nonmarital sexual initiation and first nonmarital childbirth, and the wave I weight is used in models predicting delinquent behavior at wave I. The analysis is stratified by region. Results from the weighted sample adjusted for complex sampling design are representative of adolescents who were enrolled in 7th to 12th grade in the 1994-1995 school year (Chantala & Tabor, 1999).

Exclusions and Attrition

To replicate prior research, we restrict our analysis to include only adolescents who have always resided with their biological or adoptive mother and whose mothers provide complete

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histories of their own unions. Regardless of whether they participated at wave II, we include adolescents who participated at wave I and wave III and whose mothers self-identified as non-Hispanic white, non-Hispanic black, or Mexican-American (excluding 740 adolescents). Approximately 1,600 adolescents are lost due to missing data on independent variables. Our baseline analytic sample includes 7,686 adolescents. Because of these exclusions, the analytic sample is distinctive from the overall sample in important ways. Where we are able to make group comparisons, we find that the adolescents in the analytic sample have experienced fewer family structure transitions on average (.77 transitions vs. .87 transitions for excluded adolescents) and reside in higher-income households and neighborhoods at wave 1. Mothers of adolescents in the analytic sample are more often non-Hispanic white than are mothers of excluded adolescents. The two groups are statistically equivalent in their adolescent delinquency scores and age at first nonmarital birth. The analytic sample experienced sexual initiation somewhat later than the excluded adolescents. Because of the relatively better circumstances of adolescents in the analytic sample, we expect that our analysis will provide a conservative test of our hypotheses.

Dependent Variables

We develop analytic models for three dependent variables for which differential associations with family structure instability by race for black and white adolescents have been established: self-reported delinquency at wave I; age at first nonmarital intercourse, as reported by wave III; and age at first nonmarital birth, as reported by wave III. Self-reported delinquency is a summed score based on 15 items addressing how frequently in the last year an adolescent has engaged in a variety of behaviors, ranging from rowdy public behavior to theft and assault. Respondents recorded their responses to these items using audio computer-assisted self-interviews in order to reduce nonresponse and increase validity. Response values to each item range from 0 (never) to 3 (5 or more times). The summed score has a valid range from 0 to 45 (alpha=.95 for the full sample).

Age at first nonmarital sexual intercourse is based on the adolescent's report at wave II if s/he has had first intercourse at that point and participated in the wave II interview and by wave III otherwise. The analysis excludes adolescents who have had first intercourse before the wave I interview. Age at first birth is also based on the adolescent's report at wave II if the event had occurred by then and the adolescent participated at wave II and by wave III otherwise. The analysis excludes adolescents who have experienced a live birth prior to wave I or within 10 months of the wave I interview. Analyses include boys and girls, and models include a control variable for gender.

Independent Variables

Race and ethnicity are based on the mother's report of her own race and ethnicity, with adolescents with multiracial mothers recoded into the single category that mothers report best describes their own race. If the mother does not report her own race, we rely on the interviewer's recorded observation. We focus on mother's race and ethnicity because our primary interest is in how her union history relates to her adolescent's development, and we expect union history to be associated with a mother's own race, rather than with her adolescent's race.

The number of family structure transitions an adolescent experienced from birth to wave I is derived from mother's self-reported union history, mother's self-reported current union status, the adolescent-reported household roster, and the adolescent's report of relationship with his/her biological father. A transition is defined as a mother's entry into or exit from a cohabiting or marital union. Transitions from cohabitation to marriage and from separation to divorce are not counted as additional transitions. In describing their union histories, mothers report on their three most recent unions. In addition, mothers report their union status at the time of their adolescent's birth. If she is single at birth and reports marrying or cohabiting with the biological father later, that is counted as an additional transition. In total, an adolescent might have experienced up to nine reported changes in family structure by wave I. Because the mother's

union history is truncated at the third most recent union, the number of transitions is potentially

underestimated.

Based on prior research, we expect to find that family structure instability has selective

independent effects on child outcomes beyond adolescents' particular family structure at any

single point in time. Therefore, our family structure history model accounts for family structure at

birth and at the time of the wave I interview. At each time point, family structure is characterized

by whether the adolescent's mother was single, married, or cohabiting. If the mother was

married or cohabiting at the time of the child's birth, we assume she resided with the child's

biological (or adoptive) father. If the mother was married or cohabiting at wave I, she might have

been residing with the child's biological (or adoptive) father or with another partner. Due to small

cell sizes in some categories, our model of wave I family structure accounts only for mother's

marital status and not the relationship of the mother's partner to the adolescent.

We employ a variety of indicators to test the *socioeconomic stress* hypothesis. Attributes

related to the adolescent's home environment include mother's age at adolescent's birth;

mother's highest level of education at wave I (no high school diploma or GED, diploma or GED,

or at least some college); family income as a percentage of the federal poverty level in 1994

(with regression-based imputed values assigned for 7.5 percent of cases with missing data);

mother's employment status at wave I (employed at all vs. not employed); and mother and

adolescent health status at wave I (excellent or good vs. fair or poor). Six attributes relate to the

adolescent's neighborhood context. The first is an average score based on a 5-item scale,

assessing mother's perception of neighborhood quality, with a higher score indicating more

perceived problems in the neighborhood. The remaining five indicators are drawn from

aggregated 1990 Census data reported at the tract level for the adolescent's neighborhood.

These attributes are converted to standardized Z-scores for analysis. They include a composite

measure of socioeconomic status at the Census tract-level (based on the proportion of adult

residents who are unemployed, the average income in the tract, the proportion of adult residents

with a college degree, and the proportion of adult residents who are in a managerial or professional occupation); the proportion of residents who are African-American; the proportion of residents who are Hispanic; the proportion of households that are female-headed; and the proportion of housing units that are owner-occupied.

Factors pertaining to the *protection hypothesis* reflect children's connectedness with adults and social institutions. We test four sets of protective factors. First, coresidence with extended kin is based on the adolescent-reported household roster. In addition to identifying their relationship to each current household member, adolescents report on how long each member has resided in the adolescent's household. From this information, we develop a three-category measure of coresidence with extended kin: not residing with kin at wave I; residing with kin who have been present in the household for at least the last quarter of an adolescent's life; and residing with kin who have been present for more than one quarter of an adolescent's life. Because kin coresidence is based on the adolescent's household roster at wave I, our measure only captures ongoing coresidence.

Second, neighborhood embeddedness is represented by three indicators: the mother's identification of either contact with kin or being born in the neighborhood as the primary reason for residing in her current neighborhood; a two-item summed scale based on a maternal report of willingness to intervene in solving neighborhood problems, with a higher score indicating greater willingness; and an average score from a 4-item series of questions asking adolescents about their contact with neighbors and perceived safety in their neighborhood (alpha=.72), with a higher score indicating more frequent contact and greater perceived safety.

Third, quality of relationships with adults is represented by two variables. Mother/adolescent relationship quality is represented as a single-item adolescent report from wave 1, indicating the adolescent's general satisfaction with the relationship, with a higher score indicating greater satisfaction (scale=1 to 5). Protective relationships with others is represented by the adolescent's average score in response to seven items about his/her sense that adults, peers,

and family members care about him/her, with a higher score indicating more positive feelings (alpha=.98). We also include an indicator of whether an adolescent was involved in a romantic relationship at wave I because we expect that romantic unions are predictive of sexual initiation and nonmarital childbearing, and adolescents who have experienced family structure instability are more likely than those from stable families to enter romantic relationships in adolescence (Cavanagh et al., 2008).

Fourth, connection to social institutions is represented by three variables. Adolescent's weekly or more frequent attendance at religious services during the last year is a dichotomous self-reported measure. The adolescent's report of positive school attachment is based on an average score from a 6-item scale assessing students' feelings of connectedness at school and satisfaction with the school environment (alpha=.80). His/her report of negative school attachment is based on a 4-item scale assessing the frequency of problems with peers, teachers, or coursework (alpha=.87).

All independent variables are drawn from wave I. We have not developed indicators of wave I to wave II family structure transitions because our wave I measures are based on mother's reports, and wave II measures rely on the adolescent's report of change. Prior research on the Add Health sample suggests that mother and adolescent reports of household membership are often inconsistent, particularly where there is a cohabiting stepparent in the household (Brown & Manning, 2009). Our control measures include adolescent's gender and age at wave I, mother's nativity, and a dichotomous indicator of whether an adolescent considers religion very important or fairly important (1) or not important (0).

Methods

Our models estimate predicted outcome scores on three dependent variables as a function of the number of family structure transitions an adolescent has experienced by wave I, other family structure indicators, and indicators of socioeconomic stress and social protection. The adolescent's number of delinquent behaviors exhibited in the year prior to wave I is estimated

using a negative binomial regression to account for the skewed distribution of the dependent variable. Age at first nonmarital sexual intercourse and age at first nonmarital childbirth by wave III are predicted using Cox proportional hazard models. All models are weighted and standard error adjustments are made using the *svyset* commands available in Stata to account for the stratified and clustered nature of the data. Because our analyses include Census tract-level data, we treat observations as clustered at the neighborhood tract level, rather than at the school level.

The first stage of our analysis estimates the strength of the association between the number of family structure transitions experienced and each of the outcomes considered for non-Hispanic white, black, and Mexican-American adolescents in a pooled model with interaction terms to determine whether between-group differences can be identified. The second stage of our analysis tests the socioeconomic stress hypothesis against the protection hypothesis to explain racial and ethnic differences in the association of instability with adolescent outcomes. Our one-tailed hypothesis is that family structure instability is *less* consequential for non-whites compared to whites. Therefore, while our tables report two-tailed significance tests for our race/ethnicity interactions with family structure instability in order to be consistent with significance tests for other variables, our discussion emphasizes one-tailed test.

<u>Results</u>

Descriptive Results

Table 1 presents unweighted summary statistics for the analytic sample. Within each race/ethnic category, summary statistics are reported for adolescents who have experienced no transitions or one or more transitions. Black adolescents have experienced about fifty percent more maternal union transitions by wave I on average compared to white adolescents, and Mexican-American adolescents have experienced about the same number of transitions as whites. Within each racial/ethnic group, adolescents who have experienced at least one transition are more likely than those who have been in a stable family structure to have been

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born to a single or cohabiting mother and to reside with a single or cohabiting mother at wave I.

White adolescents have more socioeconomic resources on average compared to black and Mexican-American adolescents at both the household and neighborhood levels (race-ethnic group differences significant at p<.05). All race-ethnic groups are more likely to have fewer socioeconomic resources when they have experienced union transitions compared to when they have not. Black adolescents are less likely than white adolescents to experience a dropoff in their access to social protection when they have experienced family structure instability. Specifically, black adolescents have high relationship quality with their mothers regardless of instability and only small differences in their relationship quality with other adults. Black adolescents also report higher religiosity and more frequent church attendance compared to white adolescents regardless of their instability history, and their levels of positive and negative school attachment do not vary significantly by instability experience. Mexican-American adolescents are mixed, experiencing the absence of social protection on relationship quality with mother and other adults and poorer school attachment when they have experienced family structure transitions, but heightened social protection in terms of mother's perception of neighborhood connectedness.

With regard to the dependent variables, white adolescents who have experienced family structure transitions have significantly higher delinquency scores compared to those in stable families. Black adolescents' delinquency scores are similar to those in stable white families regardless of union instability, and Mexican-American adolescents have higher delinquency overall. Black adolescents are more likely than whites to begin having sexual intercourse and do so at younger ages, while Hispanic adolescents delay sexual initiation relative to white adolescents. White adolescents have the greatest difference by transition experience in the proportion ever having sexual intercourse. White and black adolescents both more often have nonmarital births when they have experienced union instability, but the group difference is greater for whites. Mexican-American adolescents are more likely than either other racial/ethnic

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group to experience a nonmarital birth, regardless of prior family structure instability. The average age of sexual initiation and nonmarital childbearing generally do not vary by race/ethnicity or family structure instability.

Multivariate Results

Delinquency. Table 2 reports coefficients representing the main effects of family structure transitions and race and ethnicity and the interaction terms between family structure transitions and race/ethnicity. The baseline model indicates a positive main effect of family structure transitions in predicting adolescent self-reported delinquent behavior. For every additional family structure transition a white adolescent (the reference category for race/ethnicity) experiences, his or her predicted delinquency score increases by a factor of 1.085 (exp(.082)=1.085; p<.001). The main effects of race and ethnicity for black and Mexican-American adolescents are statistically insignificant. The interaction terms between race/ethnicity and family structure transitions are also statistically insignificant, indicating that there is no difference by race or ethnicity in the association of family structure instability with adolescents' self-reported delinquent behavior. These results fail to replicate the racial differences found by Fomby & Cherlin (2007).

Accounting for family structure at birth and at wave I in model 2 reduces the magnitude of the main effect of family structure transitions by 25 percent and reduces the associated significance level from p<.001 to p<.01. Residing with a single mother at wave I has a positive, significant association with self-reported delinquent behavior. Model 3 indicates that the socioeconomic stress hypothesis does little to explain the association between the main effect of family structure instability and delinquent behavior. The main effect of family instability remains statistically equivalent to its effect in model 2.

Model 4 shows that indicators of social protection have relatively more explanatory power and better model fit than do indicators of socioeconomic stress. The main effect of family structure transitions is reduced by about 90 percent compared to model 2; statistical

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significance is also lost. The main effect for Mexican-American ethnicity is positive and statistically significant at the p<.001 level, indicating that Mexican-American adolescents would have higher predicted delinquency scores in the absence of ethnicity-specific social protection. Better relationship quality with one's mother, better relationship quality with adults, and long-term coresidence with extended kin are negatively associated with lower predicted delinquency scores. Negative school attachment, adolescents' report of poor neighborhood embeddedness, and involvement in a romantic relationship predict higher delinquency scores. In stepwise regressions (not shown), relationship quality with adults and negative school attachment have the strongest effect on reducing the magnitude of the main effect of family structure instability. These relationships hold in the full model presented in the last column of table 2.

Age at first nonmarital intercourse. Table 3 presents selected coefficients from the proportional hazard model estimating age at first nonmarital intercourse. The covariates in each model are identical to those used to predict delinquent behavior scores. In the proportional hazard models framework, the exponentiated value of the coefficient is the hazard ratio. The hazard ratio represents the relative risk of experiencing an event when the value of a selected variable is $x + 1$ compared to when the value of that variable is x.

A one-unit increase in the number of transitions experienced is associated with an elevated risk of first intercourse for white adolescents (exp(.083)=1.086, p<.001). The main effect of race for black adolescents is positive and significant (exp(.349)=1.417, p<.001). However, the interaction term for black adolescents who have experienced at least one family structure change is *negative* (i.e., the hazard ratio of .925 is less than one) and significant at p<.025 in a one-tailed test, indicating that there is a weaker association of family structure instability with nonmarital sexual initiation for black adolescents than there is for white adolescents. In fact, for black adolescents, the main effect of family structure change and the interaction term nearly perfectly offset each other. These results replicate findings in Wu and Thomson (2001). For Mexican-American adolescents, the interaction term between ethnicity and family structure

change is small and statistically insignificant, meaning that white and Mexican-American adolescents are similar in the association of family structure transitions with the risk of nonmarital sexual initiation.

Model 2 accounts for family structure at birth and at wave I. The main effect of family structure instability is reduced by about 40 percent (exp(.051)=1.052, p<.05) and the interaction term between black race and family structure instability is reduced by approximately 10 percent (exp(-.068)=.934). Given that our hypothesis of group difference is a one-tailed test – that is, we expect that family structure instability is *less* consequential for black adolescents compared to whites – we emphasize that the change in the significance level associated with the interaction term remains significant at p<.05.

Model 3 adds indicators of socioeconomic stress to model 2. Accounting for family-level and neighborhood-level socioeconomic characteristics reduces the magnitude of the direct effect of race for black adolescents (exp(.161)=1.175, p<.10) and reduces the magnitude of the interaction term between black race and family structure instability by another five percent, giving some support to the hypothesis that race differences in the effect of family structure instability are attributable to group differences in the socioeconomic status correlates of instability. However, the interaction term remains statistically significant at the p<.05 level in a one-tailed test. Stepwise regressions (not shown) indicate that family-level socioeconomic characteristics reduce the main effect of family structure instability, and neighborhood-level socioeconomic characteristics reduce the main effects of race and ethnicity. The covariates added to model 3 significantly improve model fit compared to model 2.

Model 4 adds covariates measuring social protection to model 2. Social protection factors reduce the magnitude of the main effect of family structure instability (exp(.026)=1.026, p<.10). For white adolescents, the elevated risk of early sexual initiation associated with family structure transitions is explained by the co-occurrence of instability and diminished social protection. Accounting for social protection slightly reduces the risk of nonmarital sexual initiation for black

adolescents compared to model 2. Social protection factors also have a marginal attenuating effect on the interaction term between black race and family structure transitions compared to model 2 (exp(-.066)=.936, p<.05 in a one-tailed test). This indicates that race differences in the association of instability with sexual initiation are not fully attributable to group differences in social protection among those adolescents who have experienced family structure transitions. Stepwise regressions (not presented) show that relationship quality with adults, frequent church attendance, negative school attachment, and romantic involvement reduce the association between family structure instability and sexual initiation. This pattern of relationships holds in the full model, where the main effect of family structure instability is statistically insignificant and the negative race/instability interaction remains significant at the p<.05 level (one-tailed test).

Age at first nonmarital birth. Table 4 presents selected coefficients from the proportional hazard model estimating age at first nonmarital birth. These models echo the preceding results for age at first intercourse. In the baseline model, the risk of experiencing a nonmarital birth by wave III increases by 26 percent with each additional family structure transition (exp (.228)=1.26, p<.001). The main effects of race and ethnicity are positive and significant for black and Mexican-American adolescents. The negative interactions between race/ethnicity and family structure instability are similar in magnitude for both non-white groups, but only the interaction for black adolescents is statistically significant at p<.01 (exp(-.177)=.84). Again, these results are consistent with prior work that has demonstrated race differences in the association of family structure instability with nonmarital births (Wu, 1996; Wu & Martinson, 1993).

In model 2, accounting for family structure at birth and at wave I reduces the magnitude of the main effect for family structure transitions and black race, but both remain significant at p<.001. The magnitude of the negative interaction term for black race and instability is reduced slightly, and the significance level decreases from p<.01 to p<.025 (one-tailed test). Residing with a single or cohabiting mother at wave I as compared to residing with a married mother

increases the predicted risk of a nomarital birth.

Model 3 adds indicators of socioeconomic stress to model 2. Accounting for socioeconomic stress reduces the main effect of family structure instability by about 17 percent and the main effects of race and ethnicity by a similar amount. Socioeconomic factors also reduce the magnitude of the interaction term between black race and family structure by approximately 16 percent and reduce statistical significance to p<.05 (in a one-tailed test). The chi-square statistic for overall model fit indicates a significant improvement over model 2. In stepwise regressions, factors related to family-level socioeconomic stress, including the wave I poverty level and mother's completed education at wave I have a greater attenuating effect on the main race and ethnicity effects and on the interaction terms than do factors related to neighborhood-level socioeconomic conditions.

Model 4 adds indicators of social protection to model 2. Including those factors reduces the magnitude of the positive main effect of family structure transitions by about 23 percent (p<.01) and reduces the negative interaction term between black race and family instability by about nine percent (p<.025 in a one-tailed test). Social protection factors do not attenuate the main effects of race and ethnicity relative to model 2. Overall, social protection factors better explain the main effect of family structure instability than do indicators of socioeconomic stress (model 3); but socioeconomic stress indicators better explain the negative interaction between black race and family structure instability compared to social protection factors. Quality of relationship with adults and frequency of church attendance have the strongest attenuating effect on the main effect of family structure instability, and positive school attachment attenuates the race/instability interaction term. With social protection factors accounted for, the magnitude of the positive effect of Mexican-American ethnicity and the negative interaction term between Mexican-American ethnicity and family structure transitions both increase and are larger than the analogous effects for black adolescents. However, the negative interaction term for Mexican-Americans does not achieve statistical significance, suggesting a sample size

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limitation.

In the full model (model 5), accounting for both socioeconomic stress and social protection reduces the magnitude of the main effects of family structure instability and race and ethnicity and the associated interaction terms more than in either partial model. In the full model, the main effect of family structure transitions remains statistically significant at p<.05, while other family structure indicators are more sharply attenuated. The interaction term between black race and family structure transitions remains significant at p<..05 in a one-tailed test.

Discussion

We have used longitudinal data from the Add Health study to provide the first extensive test of two hypotheses that have been posited to explain race/ethnic differences in the effects of family structure for adolescents. We asked whether racial and ethnic variation in socioeconomic stress or socially protective factors explain reported differences in the association between family structure transitions and three outcomes for white, black, and Mexican-American adolescents: self-reported delinquency, age at first nonmarital sexual intercourse, and age at first nonmarital birth. Indicators pertaining to socioeconomic stress and social protection were drawn from the context of the adolescent's household, neighborhood, and social institutions at wave I.

Previous work has established that for black children and adolescents, the association of multiple family structure transitions with the outcomes considered is weaker than that for whites. Previous work has not considered the association for Mexican-American adolescents. Our study replicates previously reported racial differences in the association of family structure instability with the risk of nonmarital sexual initiation and a nonmarital birth that were initially reported for black and white adolescents from the 1979 National Longitudinal Survey of Youth and the National Survey of Families and Households. Our study failed to replicate group differences in the association of family structure instability with delinquent behavior that were reported for a group of children and younger adolescents in the Children of the NLSY (CNLSY). With regard to

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delinquent behavior, family structure instability is directly associated with higher predicted self-reported delinquency scores for white, black, and Mexican-American adolescents in the Add Health study. The absence of race differences in the association of family structure instability here may be attributable to age differences, as the adolescents in Add Health are older than the children in the CNLSY study. Recent research suggests that the effects of instability vary by age, and future work will consider whether race differences in those effects also vary by age and life course stage. Alternatively, the divergent results may be the consequence of different study designs, particularly the inclusion of adolescents born to younger mothers and the exclusion of high school dropouts in the Add Health study.

Concerning our test of the socioeconomic stress and social protection hypotheses, we find that among white adolescents, social protection factors attenuate the effect of family structure transitions on each of the three outcomes more strongly than do indicators of socioeconomic stress. The same is true for black and Mexican-American adolescents with regard to delinquency, but not the other outcomes. In considering the relative risk of sexual initiation and nonmarital childbearing, socioeconomic stress factors have a relatively greater, but still small, attenuating effect on the negative interaction terms between race/ethnicity and family structure instability. Our interpretation is that white adolescents who experience family structure instability have fewer social protection resources compared to white adolescents in stable family structures. Among black and Mexican-American adolescents, levels of social protection are similar regardless of family structure transition history; however, those who have experienced instability reside in economically disadvantaged circumstances, and those circumstances have more impact than family structure change on adolescents' behavioral development.

We speculate that the more consistent effect of lower social protection for white adolescents may be attributable to relatively greater residential mobility following family structure change; or it may be attributable to selection effects such that among white parents, but not among parents in other race/ethnic groups, family structure instability may be caused in part by pre-existing

weaker social ties. Black and Mexican-American adolescents, in contrast, may be more likely to continue to coreside with kin or to make relatively short moves following a union transition and may thereby maintain social connections. Socioeconomic stress may be more salient for minority groups because mothers' union transitions may more often occur in the context of cohabitation, which is typically associated with fewer household income gains compared to marriage; or women who begin their union trajectories from a relatively disadvantaged position may be more likely to experience subsequent transitions and thus have more difficulty accumulating economic advantage.

We are able to replicate statistically significant group differences between blacks and whites in the association of family structure instability with two out of three outcomes, but our results pertaining to Mexican-American adolescents are inconclusive. With regard to delinquency and sexual initiation, the relatively small interaction terms between ethnicity and family structure instability suggest that white and Mexican-American adolescents are similar in how they respond to family structure instability. With regard to nonmarital births, Mexican-American adolescents appear more similar to black adolescents, but the interaction terms for Mexican-Americans do not achieve statistical significance. We conclude that there is some suggestion of meaningful differences between white and Mexican-American adolescents in the relationship between family structure change and nonmarital births, but we cannot assert that those differences exist at the population level because of the imprecision in our estimates resulting from small group size for Mexican-Americans.

It is interesting and important to note that the power of either social protection or socioeconomic stress to explain race/ethnic group differences in the effect of family structure instability is relatively modest, and the impact of these factors varies across outcomes. In one sense, there is a plausible chain of events that links the outcomes considered: family structure instability contributes to a greater likelihood of risk-taking behavior, and risk-taking behavior in turn leads to early sexual initiation, with a heightened likelihood of experiencing a nonmarital

birth. In fact, each of these outcomes may be connected to family structure instability, and to racial differences in the meaning of family structure change, in a distinctive way. For example, as the descriptive data indicate, Mexican-American adolescents are less likely than white adolescents to experience first sex by the end of wave III, but they are also much more likely than white adolescents to experience a nonmarital birth, regardless of family structure history. The factors that go into explaining ethnic differences in the association of family structure change with sexual initiation and nonmarital births may have less to do with social protection and financial strain than with social norms and the family context of nonmarital childbearing, considerations we will address in future work.

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Table 1. Descriptive statistics (unweighted), National Longitudinal Study of Adolescent Health by race and family structure transition status

All attributes except experience of sexual initiation and nonmarital birth measured at wave I

| | White | | | | | Black | | | | | | Mexican-American | | | | | |
| | No changes | | >=1 change | | | No changes | | | >=1 change | | | No changes | | | >=1 change | | |
	Mean	SD	Mean	SD		Mean	SD		Mean	SD		Mean	SD		Mean	SD	
Dependent Variables																	
Wave I delinquency score	3.71	4.64	4.38	5.24	*	3.64	4.14		3.82	4.86		4.45	4.90	*	4.67	4.94	*
Proportion ever had first intercourse	0.82		0.86		*	0.87		*	0.88		*	0.78			0.80		
Age at first intercourse	16.84	2.12	16.23	2.05	*	16.36	2.12	*	15.99	2.14	*	17.00	2.30		16.60	2.13	
Proportion ever had nonmarital birth	0.13		0.20		*	0.21		*	0.26		*	0.28		*	0.28		*
Age at first nonmarital birth	20.30	1.91	20.20	1.84		20.10	1.96		20.10	1.87		20.50	1.98		19.50	1.94	*
Independent Variables																	
Number of mother's union transitions	n/a		1.81	1.11		n/a			1.71	1.07		n/a			1.64	1.07	
Mother is US-born	0.96		0.97			0.94		*	0.98			0.36		*	0.45		*
Adolescent is female	0.53		0.54			0.56			0.57		*	0.49			0.48		
Adolescent's age at wave I	16.17	1.70	16.19	1.70		16.11	1.79		16.13	1.67		16.79	1.65	*	16.45	1.77	
Born to single mother (vs. married)	0.01		0.35		*	0.21		*	0.53		*	0.01			0.53		*
Born to cohabiting mother (vs. married)	0.01		0.03		*	0.02		*	0.09		*	0.01			0.04		*
Mother is single at wave I (vs. married)	0.01		0.36		*	0.21		*	0.52		*	0.01			0.31		*
Mother is cohabiting at wave I (vs. married)	0.01		0.11		*	0.02		*	0.14		*	0.01			0.08		*
Socioeconomic stress indicators																	
Mother's age at adolescent's birth	26.06	4.93	24.24	5.19	*	26.49	5.57	*	23.93		*	24.61	5.38	*	23.97	5.67	*
Mother has less than HS diploma or GED	0.07		0.09		*	0.12		*	0.13		*	0.63		*	0.55		*
Mother has HS diploma or GED	0.33		0.32			0.28			0.31			0.15		*	0.22		*
Mother has attended college	0.60		0.59			0.60			0.56		*	0.22		*	0.23		*
Wave I hh income as proportion of FPL	3.76	3.76	3.00	3.39	*	2.87	2.45	*	2.11	1.98	*	2.01	1.57	*	1.71	1.42	*
Mother is unemployed	0.03		0.05		*	0.07		*	0.09		*	0.09		*	0.13		*

Adolescent is in good/excellent health	0.95		0.93		*	0.94			0.90		*	0.91		*	0.89		*
Mother is in good/excellent health	0.91		0.88		*	0.84		*	0.84		*	0.75		*	0.82		*
Proportion of tract w/black household head (Z-score)	-0.44	0.40	-0.40	0.46		1.32	1.19	*	1.30	1.20	*	-0.25	0.57	*	-0.32	0.46	*
Proportion of tract w/Hispanic hh head (Z-score)	-0.39	0.36	-0.36	0.43		-0.32	0.53	*	-0.30	0.52	*	1.28	1.13	*	0.96	1.06	*
Proportion of tract w/female hh head (Z-score)	-0.39	0.58	-0.27	0.68	*	0.70	1.23	*	0.85	1.31	*	-0.12	0.65	*	-0.11	0.58	*
Proportion of tract w/owner-occupied housing (Z-score)	0.41	0.74	0.29	0.78	*	-0.03	1.01	*	-0.31	1.10	*	-0.13	1.03	*	-0.23	0.93	*
Mother's perception of neighborhood problems	1.64	0.41	1.70	0.45	*	1.61	0.43		1.70	0.48	*	1.75	0.51	*	1.69	0.46	*
Neighborhood SES index (Z-score)	0.07	0.69	-0.01	0.63	*	0.01	0.57	*	-0.02	0.54	*	-0.13	0.41	*	-0.07	0.48	*
Social protection indicators																	
Adolescent has lived with extended kin up to 1/4 of life	0.02		0.03		*	0.04		*	0.05		*	0.04		*	0.07		*
Adolescent has lived w/extended kin> 1/4 of life	0.02		0.03		*	0.07		*	0.09		*	0.06		*	0.07		*
Quality of relationship with mother (higher score=better)	4.24	0.66	4.18	0.69	*	4.30	0.66	*	4.30	0.71	*	4.22	0.69		4.10	0.75	
Quality of relationship with other adults (higher=better)	4.05	0.58	3.95	0.60	*	4.09	0.60		4.08	0.62		4.09	0.59		3.94	0.68	
Adolescent in a romantic relationship	0.31		0.37		*	0.37		*	0.37		*	0.32			0.24		*
Adolescent's perception of neighborhood connection	0.82	0.24	0.79	0.26	*	0.84	0.23		0.79	0.26	*	0.76	0.29	*	0.72	0.28	*
Mother's perception of neighborhood connection	0.70	0.80	0.77	0.79	*	1.14	0.83	*	1.13	0.83	*	0.72	0.79		0.81	0.80	*
Neighborhood near kin or where mother born	0.49		0.51			0.45		*	0.49			0.50			0.38		
Religion is very/fairly important to adolescent	0.77		0.70		*	0.90		*	0.86		*	0.89		*	0.89		*
Frequency of church attendance	0.42	0.49	0.29	0.46	*	0.58	0.49	*	0.48	0.50	*	0.44	0.50		0.39	0.49	
Adolescent has positive school attachment	4.71	0.59	4.63	0.61	*	4.50	0.62	*	4.49	0.61	*	4.69	0.52		4.58	0.60	*
Adolescent has negative school attachment	1.03	0.68	1.12	0.74	*	0.95	0.71	*	0.99	0.74		0.85	0.65	*	1.03	0.76	
N (Total=7,686)	3,606		1,950			679			923			327			201		

*Comparison to white adolescents with no changes significant at p<.05

Table 2. Results from negative binomial regressions predicting self-reported delinquent behavior in the last year
National Longitudinal Study of Adolescent Health, Wave I (standard errors beneath coefficients in parentheses)

	Model 1 Baseline	Model 2 Controls	Model 3 SES	Model 4 Protect	Model 5 Full
Number of transitions	0.082 ***	0.06 **	0.065 **	0.007	0.008
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Mother is black (vs. non-Hisp white)	-0.018	-0.059	-0.077	0.048	0.011
	(0.06)	(0.06)	(0.08)	(0.06)	(0.07)
Mother is Mexican-American (vs. non-Hisp white)	0.165	0.168	0.202 †	0.378 ***	0.364 *
	(0.10)	(0.10)	(0.12)	(0.10)	(0.12)
Black*transitions	-0.022	-0.023	-0.031	0.023	0.016
	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)
Mexcian* transitions	0.04	0.025	0.01	-0.001	-0.008
	(0.08)	(0.07)	(0.07)	(0.08)	(0.08)
Mother is US born	0.006	0.006	0.029	0.021	0.019
	(0.10)	(0.10)	(0.10)	(0.08)	(0.08)
Adolescent is female	-0.348 ***	-0.347 ***	-0.362 ***	-0.309 ***	-0.308 ***
	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)
Adolescent's age at wave I	0.023 *	0.024 *	0.024 *	-0.02 *	-0.019 †
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Born to single mother (vs. married)		0.017	0.014	0.04	0.051
		(0.05)	(0.05)	(0.05)	(0.05)
Born to cohabiting mother (vs. married)		0.17	0.158	0.127	0.135
		(0.11)	(0.12)	(0.11)	(0.10)
Mother is single at wave I (vs. married0		0.093 †	0.038	0.028	0.016
		(0.05)	(0.05)	(0.05)	(0.05)
Mother is cohabiting at wave I (vs. married)		0.146 †	0.097	0.036	0.047
		(0.08)	(0.08)	(0.07)	(0.07)
Mother's age at adolescent's birth			0.002		0
			(0.00)		(0.00)
Mother has less that HS diploma (vs. HS dip/GED)			-0.025		-0.1
			(0.07)		(0.07)
Mother has some college (vs. HS dip/GED)			0.015		-0.011
			(0.05)		(0.04)
Wave I income as proportion of poverty level			-0.004		0.002
			(0.01)		(0.01)
Mother is unemployed			0.012		-0.004
			(0.09)		(0.08)
Adolescent in good or excellent health (vs. fair/poor)			-0.258 ***		0.064
			(0.07)		(0.07)
Mother in good or excellent health (vs. fair/poor)			-0.061		-0.001
			(0.06)		(0.05)
Prop. of tract w/black household head (Z-score)			0.029		0.032
			(0.03)		(0.03)
Prop. of tract w/Hispanic hh head (Z-score)			-0.036		0.027
			(0.04)		(0.04)
Prop. of tract w/female hh head (Z-score)			-0.059 *		-0.024
			(0.03)		(0.03)
Prop. of tract w/owner-occupied housing (Z-score)			-0.084 *		-0.05 †
			(0.03)		(0.03)
Mother's perception of neighborhood problems			0.12 **		0.019
			(0.05)		(0.05)

Racial/Ethnic Differences in Family Instability

	Model 1		Model 2		Model 3		Model 4		Model 5	
Neighborhood SES index (Z-score)							0.083	*	0.057	
							(0.04)		(0.04)	
Adolescent has lived w/extended kin up to 1/4 of life							0.071		0.075	
							(0.10)		(0.10)	
Adolescent has lived w/extended kin> 1/4 of life							-0.216	**	-0.227	*
							(0.09)		(0.09)	
Quality of relationship w/mother							-0.08	**	-0.075	**
							(0.03)		(0.03)	
Quality of relationship w/other adults							-0.403	***	-0.412	***
							(0.04)		(0.04)	
Adolescent's perception of neighborhood connection							0.232	**	0.246	***
							(0.07)		(0.07)	
Mother's perception of neighborhood connection							-0.017		-0.008	
							(0.02)		(0.03)	
Neighborhood is near kin or where mother born							-0.031		-0.018	
							(0.03)		(0.03)	
Religion is very/fairly important to adolescent							-0.073		-0.068	
							(0.05)		(0.05)	
Frequency of church attendance							-0.051		-0.048	
							(0.04)		(0.04)	
Adolescent has positive school attachment							-0.017		-0.019	
							(0.03)		(0.03)	
Adolescent has negative school attachment							0.51	***	0.511	***
							(0.03)		(0.03)	
Adolescent in a romantic relationship							0.229	***	0.229	***
							(0.03)		(0.03)	
Intercept	1.069	***	1.049	***	1.113	***	2.953	***	2.865	***
	(0.21)		(0.21)		(0.25)		(0.25)		(0.30)	
Inalpha										
Constant	0.129	**	0.126	***	0.111	**	-0.259	***	-0.266	***
	(0.03)		(0.03)		(0.04)		(0.04)		(0.04)	
F	14.658		10.656		6.081		53.62		38.483	
N	7303		7303		7303		7303		7303	

† p<0.10, * p<0.05, ** p<.01, *** p<.001 (two-tailed)

Table 3. Results from Cox proportional hazard models estimating risk of first nonmarital sexual intercourse
National Longitudinal Study of Adolescent Health, waves I to III (standard errors beneath coefficients)

	Model 1 Baseline	Model 2 Controls	Model 3 SES	Model 4 Protect	Model 5 Full
Number of transitions	0.083 ***	0.051 *	0.04	0.026	0.012
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Mother is black (vs. non-Hisp white)	0.349 ***	0.282 ***	0.161 †	0.267 ***	0.188 *
	(0.07)	(0.07)	(0.09)	(0.07)	(0.09)
Mother is Mexican-American (vs. non-Hisp white)	-0.126	-0.125	-0.002	-0.094	0.011
	(0.14)	(0.14)	(0.16)	(0.14)	(0.16)
Black*transitions	-0.078 *	-0.068 †	-0.065 †	-0.066	-0.065
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Mexcian*transitions	0.02	0.017	0.009	0.021	0.012
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)
Mother is US born	0.004	-0.005	-0.041	-0.024	-0.061
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Adolescent is female	-0.029	-0.026	-0.025	0.005	0.007
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Adolescent's age at wave I	-0.005	-0.003	-0.007	-0.044 **	-0.048 **
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Born to single mother (vs. married)		0.032	0.003	0.053	0.025
		(0.06)	(0.06)	(0.06)	(0.06)
Born to cohabiting mother (vs. married)		0.161	0.17	0.15	0.152
		(0.12)	(0.12)	(0.12)	(0.12)
Mother is single at wave I (vs. married)		0.093	0.096 †	0.069	0.081
		(0.06)	(0.06)	(0.06)	(0.06)
Mother is cohabiting at wave I (vs. married)		0.327 **	0.3 **	0.262 **	0.247 **
		(0.10)	(0.10)	(0.10)	(0.10)
Mother's age at adolescent's birth			-0.015 ***		-0.015 ***
			(0.00)		(0.00)
Mother has less that HS diploma (vs. HS dip/GED)			-0.046		-0.058
			(0.07)		(0.07)
Mother has some college (vs. HS dip/GED)			-0.114 **		-0.089 *
			(0.04)		(0.04)
Wave I income as proportion of poverty level			0.002		0
			(0.01)		(0.01)
Mother is unemployed			0.134		0.087
			(0.09)		(0.09)
Adolescent in good or excellent health (vs. fair/poor)			0.004		0.068
			(0.10)		(0.09)
Mother in good or excellent health (vs. fair/poor)			0.027		0.048
			(0.07)		(0.07)
Prop. of tract w/black household head (Z-score)			0.063		0.029
			(0.04)		(0.04)
Prop. of tract w/Hispanic hh head (Z-score)			-0.1 *		-0.081 †
			(0.05)		(0.05)
Prop. of tract w/female hh head (Z-score)			0.036		0.042
			(0.03)		(0.03)
Prop. of tract w/owner-occupied housing (Z-score)			0.06 *		0.051 †
			(0.03)		(0.03)

	Racial/Ethnic Differences in Family Instability				
Mother's perception of neighborhood problems				0.052	0.096
				(0.05)	(0.06)
Neighborhood SES index (Z-score)				0.026	0.027
				(0.03)	(0.03)
Adolescent has lived w/extended kin up to 1/4 of life				0.253 **	0.259 **
				-0.09	-0.092
Adolescent has lived w/extended kin> 1/4 of life				-0.006	-0.01
				(0.10)	(0.10)
Quality of relationship with mother				0.038	0.033
				(0.04)	(0.04)
Quality of relationship with other adults				-0.223 ***	-0.228 ***
				(0.04)	(0.04)
Adolescent's perception of neighborhood connection				0.32 ***	0.331 ***
				(0.09)	(0.09)
Mother's perception of neighborhood connection				0.006	0.029
				(0.03)	(0.03)
Neighborhood is near kin or where mother born				0.041	0.028
				(0.04)	(0.04)
Religion is very/fairly important to adolescent				-0.038	-0.043
				(0.05)	(0.05)
Frequency of church attendance				-0.196 ***	-0.17 ***
				(0.04)	(0.04)
Adolescent has positive school attachment				-0.002	0.002
				(0.04)	(0.04)
Adolescent has negative school attachment				0.134 ***	0.129 ***
				(0.03)	(0.03)
Adolescent in a romantic relationship				0.392 ***	0.388 ***
				(0.05)	(0.05)
Chi-square	57.989	78.002	140.614	423.81	478.207
Observations	18,367	18,367	18,367	18,367	18,367
N	5,392	5,392	5,392	5,392	5,392

† p<0.10, * p<0.05, ** p<.01, *** p<.001

Table 4. Results from Cox proportional hazard models estimating risk of first nonmarital birth
National Longitudinal Study of Adolescent Health, waves I to III (standard errors beneath coefficients)

	Model 1 Baseline	Model 2 Controls	Model 3 SES	Model 4 Protect	Model 5 Full
Number of transitions	0.228 ***	0.172 ***	0.143 **	0.132 **	0.107 *
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Mother is black (vs. non-Hisp white)	0.974 ***	0.837 ***	0.672 ***	0.822 ***	0.721 ***
	(0.13)	(0.15)	(0.18)	(0.15)	(0.18)
Mother is Mexican-American (vs. non-Hisp white)	1.272 ***	1.288 ***	1.126 ***	1.369 ***	1.217 ***
	(0.21)	(0.22)	(0.27)	(0.22)	(0.28)
Black*transitions	-0.177 **	-0.172 *	-0.144 †	-0.156 *	-0.143 †
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Mexcian*transitions	-0.144	-0.165	-0.136	-0.196	-0.173
	(0.14)	(0.14)	(0.13)	(0.16)	(0.16)
Mother is US born	0.432 *	0.414 †	0.409 †	0.418	0.409 †
	(0.21)	(0.21)	(0.22)	(0.22)	(0.23)
Adolescent is female	0.769 ***	0.775 ***	0.788 ***	0.792 ***	0.794 ***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Adolescent's age at wave I	-0.123 ***	-0.121 ***	-0.128 ***	-0.168 ***	-0.178 ***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Born to single mother (vs. married)		0.045	-0.178	0.05	-0.149
		(0.12)	(0.11)	(0.12)	(0.11)
Born to cohabiting mother (vs. married)		0.1	-0.153	0.095	-0.173
		(0.23)	(0.24)	(0.23)	(0.23)
Mother is single at wave I (vs. married)		0.331 **	0.196 †	0.279 *	0.179
		(0.11)	(0.11)	(0.11)	(0.12)
Mother is cohabiting at wave I (vs. married)		0.482 **	0.199	0.367 *	0.14
		(0.17)	(0.18)	(0.17)	(0.18)
Mother's age at adolescent's birth			-0.037 ***		-0.039
			(0.01)		(0.01)
Mother has less that HS diploma (vs. HS dip/GED)			0.171		0.138
			(0.13)		(0.13)
Mother has some college (vs. HS dip/GED)			-0.43 ***		-0.425 ***
			(0.10)		(0.10)
Wave I income as proportion of poverty level			-0.06 †		-0.066 *
			(0.03)		(0.03)
Mother is unemployed			0.206		0.19
			(0.16)		(0.16)
Adolescent in good or excellent health (vs. fair/poor)			-0.075		0.052
			(0.13)		(0.13)
Mother in good or excellent health (vs. fair/poor)			-0.237 *		-0.236 *
			(0.11)		(0.11)
Prop. of tract w/black household head (Z-score)			-0.107		-0.122
			(0.08)		(0.08)
Prop. of tract w/Hispanic hh head (Z-score)			-0.305 **		-0.283 **
			(0.09)		(0.09)
Prop. of tract w/female hh head (Z-score)			0.163 **		0.183 **
			(0.06)		(0.06)
Prop. of tract w/owner-occupied housing (Z-score)			-0.076		-0.064
			(0.07)		(0.07)

				Racial/Ethnic Differences in Family Instability	
Mother's perception of neighborhood problems				-0.027	-0.066
				(0.11)	(0.14)
Neighborhood SES index (Z-score)				-0.268 *	-0.253 *
				(0.11)	(0.11)
Adolescent has lived w/extended kin up to 1/4 of life				0.395 †	0.381 †
				(0.24)	(0.22)
Adolescent has lived w/extended kin> 1/4 of life				-0.072	-0.128
				(0.24)	(0.24)
Quality of relationship with mother				0.009	-0.012
				(0.07)	(0.06)
Quality of relationship with other adults				-0.288 **	-0.277 **
				(0.09)	(0.09)
Adolescent's perception of neighborhood connection				0.266	0.315
				(0.20)	(0.20)
Mother's perception of neighborhood connection				0.096 †	0
				(0.06)	(0.07)
Neighborhood is near kin or where mother born				-0.002	-0.076
				(0.09)	(0.09)
Religion is very/fairly important to adolescent				0.081	0.095
				(0.12)	(0.12)
Frequency of church attendance				-0.33 **	-0.262 *
				(0.11)	(0.11)
Adolescent has positive school attachment				-0.123 †	-0.101
				(0.07)	(0.07)
Adolescent has negative school attachment				0.11 †	0.112 *
				(0.06)	(0.06)
Adolescent in a romantic relationship				0.353 ***	0.384 ***
				(0.09)	(0.09)
Chi-square	211.76	233.69	423.01	378.25	550.85
Observations	43,405	43,405	43,405	43,405	43,405
N	7,685	7,685	7,685	7,685	7,685

† p<0.10, * p<0.05, ** p<.01, *** p<.001 (two-tailed)