THE LIFE COURSE OF FAMILY STRUCTURE AND ADOLESCENT SCHOOL ACHIEVEMENT: RACIAL AND ETHNIC DIFFERENCES

by

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ABSTRACT

I examine racial and ethnic differences in the effects of family structure on adolescent school grade point average. I compare longitudinal models (duration of parental exposure and family change) to a baseline status model. Using data from the National Longitudinal Study of Adolescent Health, I estimate models separately for non-Hispanic White, African American, Hispanic, and Asian adolescents. Exposure measures predict GPA for White adolescents, while for African Americans having a recent change influences school achievement, independent of status effects. Little or no family structure effects are shown for Hispanics or Asians. Cultural adaptations and family processes may explain these patterns.

Some of the most consistent and enduring patterns among American families are racial and ethnic differences in children's family structure. In 1996, for example, only 33% of African American children lived with two biological or adoptive parents, compared to 71% of non-Hispanic Whites, 63% of Hispanics, 80% of Asians/ Pacific Islanders, and 54% of American Indians and Alaska Natives (U.S. Census Bureau 2001). It is also well-known that living without both biological parents is associated with reduced school achievement, measured by lower grades, graduation rates, and test scores (Astone and McLanahan 1991; Downey 1994, 1995; Haurin 1992; Mulkey et al. 1992).

Given that family structure patterns are not the same for children based on their race or ethnicity, it is important to consider that the impact of the family structure trajectory, from birth through adolescence, is not equivalent for each racial and ethnic group as well. Yet, of the few longitudinal studies that have considered racial differences in family structure effects, the majority have focused largely on comparisons between White and African American samples (McLanahan and Sandefur 1994; Wu and Martinson 1993; Wu and Thomson 2001). This literature generally shows that the consequences of family structure are reduced, or are at least structured differently, for African Americans. The few longitudinal, representative studies that have considered family structure effects for Hispanics provide mixed results (Haurin 1992 and Wu and Martinson 1993), and none have examined the impact of family structure separately for Asians. Finally, while several longitudinal studies have examined educational attainment during adulthood (e.g., Krein and Beller 1988; Wojtkiewicz 1993b), none have focused on school achievement during adolescence.

This paper adds to the literature by examining the effects of family structure status,

exposure, and change on adolescent school grades, separately by race and ethnicity. It is particularly important to consider educational outcomes during adolescence when discussing racial and ethnic differentials, as education is a key factor in reproducing or ameliorating racial and ethnic inequality in adult socioeconomic status (Garcia Coll et al. 1996; Haveman and Wolfe 1994). Since minority children have different family *experiences* from White children, it is important to determine if family structure has different *consequences* for these groups as well.

Using data from The National Longitudinal Study of Adolescent Health (Add Health), a data set that includes representative numbers of adolescents from each of the four largest racial and ethnic groups (non-Hispanic Whites, African Americans, Hispanics, and Asians), I consider effects of the family structure trajectory throughout childhood by adding longitudinal measures of family structure exposure and change to traditional status models. I begin by describing the three family structure models, discussing prior research and developing hypotheses about how measures of each model may impact minority children. I then present race-specific analyses, to determine which features of the family structure trajectory are important predictors of school achievement for each group. On the whole, I find that there are considerable racial and ethnic differences in the influence of family structure on adolescent school achievement; for example, non-Hispanic Whites are the only group to experience long-term disadvantages from their family structure experiences across the life course.

Family Structure Across the Life Course

Research consistently shows that children living in single parent families have lower test scores, school grades, attendance, and educational aspirations (Astone and McLanahan 1991;

Mulkey et al. 1992; Ram and Hou 2003). Family structure also has implications for later educational attainment: young adults from single parent families are more likely to drop out of school or be idle, and attain fewer total years of education (Astone and McLanahan 1994; McLanahan and Sandefur 1994; Powell and Parcel 1997; Wojtkiewicz and Donato 1995).

Children of single parents often experience deficits in family income and parental time, supervision, and encouragement, resources that influence their ability to succeed in school (Astone and McLanahan 1991; McLanahan and Sandefur 1994). The ambiguous family roles and reduced socioeconomic resources associated with stepfamilies (Cherlin 1978; Hofferth and Anderson 2003) may explain why children of stepparents are not much better off than children of single parents (Biblarz and Raftery 1999; Mulkey et al. 1992). Children living without any biological parents are likely to be doubly disadvantaged, although evidence is mixed (Solomon and Marx 1995). Finally, several studies find that children living without biological mothers fare worse educationally than those living without biological fathers (Biblarz and Raftery 1999; Case, Lin, and McLanahan 2001; Downey 1994; 1995); on the other hand, Wojtkiewicz (1993a) found that stepparent's gender had no effect on high school graduation rates.

The Family Structure Trajectory

Most family structure studies use what I call a status model, which focuses on the parents currently residing in the home with children. This model views parents as sources of economic, social, and emotional resources for children. As such, all children in nonintact families are generally expected to be disadvantaged compared to those living with both parents, but the number and type of available parents are also important aspects of family structure.

One problem with status models is that they use one-time measures of parental

availability, neglecting the child's history of residence with parents throughout childhood. These snapshot indicators mask variation across time in the duration lived in family types and transitions between them, which can also affect educational outcomes. For example, an adolescent who has lived her entire life with a single mother has a very different trajectory from one who has experienced a parental divorce, her mother's remarriage, and a second divorce. Models that only measure family background during adolescence would assume similar outcomes for both. In fact, descriptive studies by Martinson and Wu (1992) and Wojtkiewicz (1992) suggest that research using snapshot measures during adolescence are not accurate representations of the family structure experiences for a significant minority of respondents.

Life course theory (Elder 1998) is well-suited to the study of family structure throughout childhood and adolescence, because it considers the totality of developmental experience across the lifetime. Key to this framework are the concepts of transitions and trajectories. Family structure can be viewed as a trajectory across the life course from birth to adulthood, with each residential or parental relationship change constituting a transition in family structure status. Examining family structure from this perspective requires longitudinal models that introduce time and change to traditional status measures.

I propose two theoretical models that address these gaps in family structure research. The exposure model posits that the duration of time spent with parents is also important. The educational resources that parents provide are likely to cumulate over time. For example, a child who lived with her biological father for 10 years will have benefitted from his time, attention, and economic resources more than an adolescent who only lived with her father for 5 years. Research shows that the time spent living with two parents reduces the risk of high school

dropout (Haurin 1992), while the years lived in a nonintact family is related to lower educational attainment and reduced likelihood of completing high school (Krein and Beller 1988; Li and Wojtkiewicz 1992; Wojtkiewicz 1993b). This negative effect is also found for time lived with stepparents, likely because they tend to be less involved and provide fewer economic resources than biological parents (Case, Lin, and McLanahan 2001; Thomson et al. 1992). Most exposure studies do not consider parental gender; however, research from status models suggests that mother absence may have more negative consequences for adolescent school achievement than father absence (Downey 1994; 1995).

Alternatively, the change model argues that the instability represented by family structure change is most important in predicting adolescent outcomes. A family disruption or the addition of a stepparent introduces a new stressor to the home that can impact children's academic performance (Hetherington et al. 1978; Wallerstein and Kelly 1980). Multiple changes in parental roles may make some adolescents particularly vulnerable. Wu and colleagues (Wu 1996; Wu and Martinson 1993; Wu and Thomson 2001) consistently find that the number of family structure changes are related to earlier sexual initiation and premarital birth risk. Wojtkiewicz (1993a), on the other hand, suggests that simply the experience of a family structure transition, regardless of number or timing, is most important in examining the likelihood of graduating from high school. Finally, Haveman et al. (1991) find that family change is not predictive of high school completion, once other family background measures are controlled.

Life course theory allows me to compare longitudinal exposure and change measures to more traditional status measures, to determine which family structure model is the primary mechanism for transmitting the effects of parental availability to children. A strong influence of

parental exposure suggests that the consequences of parental absence accumulate throughout childhood, despite parental availability during adolescence, while strong change effects imply that a history of instability may harm children later in life, even if they live in a stable family during adolescence. On the other hand, evidence of the primacy of status measures suggest that nonintact family structure has an immediate effect on children's schooling, and that family structure experience is well represented in most studies by detailed, snapshot measures of parental availability. The few studies that have combined status, exposure and change models suggest that longitudinal measures have direct effects on outcomes, independent of status measures (Wojtkiewicz 1993a; Wu and Martinson 1993; Wu and Thomson 2001).

Family Structure by Race and Ethnicity

Most studies that model the family structure trajectory have focused exclusively on Whites, or have simply included race as a control (Aquilino 1996; Capaldi et al. 1996; Haveman et al. 1991). However, demographic trends for minority groups, particularly nonmarital birth and divorce rates, suggest that their children will have different exposure and change experiences than non-Hispanic White children (Bumpass and Sweet 1989; Cherlin 1992; U.S. Census Bureau 1997; Ventura et al. 2000). Unfortunately, data restrictions require most studies that do explicitly consider race and ethnicity to limit samples to whites and blacks only (Krein and Beller 1988; Li and Wojtkiewicz 1992, 1994; Wu and Thomson 2001), although Haurin (1992) and Wu and Martinson (1993) also examined Hispanics. No longitudinal studies have considered Asian family structure, and none focus on achievement during adolescence.

Beyond demographic differentials, theoretical considerations suggest that the consequences of family structure for Whites should not be the same as those for other racial or

ethnic groups. Garcia Coll et al. (1996) present an integrative model describing how larger social forces, such as socioeconomic inequality, can restrict the resources minority families provide for their children; in turn, cultural adaptations such as familism and reliance on extended kin influence the processes through which these families socialize and care for their children. These mechanisms come together to influence the well-being of adolescents. Thus, not only are structural inequalities and family processes unique for each racial and ethnic group, but they can also help to determine how minority children will adapt to features of the family structure trajectory, such as exposure to parental figures and family instability.

African Americans

African American children are almost three times as likely to live with single mothers as White children, and are almost four times as likely to live with no parents at all (Fields 2001). Research suggests that the effects of family structure are different for African Americans. Exposure models show that African Americans receive fewer benefits from the extended presence of both parents throughout childhood, and that the deficits incurred for each year lived in a stepfamily or other nonintact family are not as high as for Whites (Haurin 1992; Li and Wojtkiewicz 1994; Wojtkiewicz 1993b). In addition, the negative effect of a family structure change on nonmarital birth risk is smaller and shorter in duration for African American than for White or Hispanic women (Wu and Martinson 1993). Wu and Thomson (2001), on the other hand, find that family instability is a better predictor of sexual initiation for White women, while status is most important for African Americans.

The normative nature of single parent families among African Americans may help to explain these patterns. Single mother families are the modal family structure type for this group,

while they are still a growing minority among Whites (Fields 2001). Wu and Martinson (1993) note that reduced effects of family structure change "may reflect adaptations by black children to a more complex family environment produced by the greater numbers and types of adults present between birth and adolescence" (p. 229). Given these adaptations, the extended presence of a single mother may not represent a long-term deficit for African American children, the way it might for Whites. The cultural tradition of familism, which contributes to a high degree of social contact and intergenerational support among African American kin (Parke and Buriel 1998), may buffer some of the more negative consequences of single mother families for their children.

Hispanics

Hispanics tend to occupy a middle-ground between African Americans and non-Hispanic Whites, in terms of the likelihood of living in two-parent or single mother families (Fields 2001; U.S. Census Bureau 2001). In addition, Hispanic women fall between White and African American women in the duration of their exposure to single-mother families and number of family structure changes (Wu and Martinson 1993). Research on the impact of family structure among Hispanics is not extensive, but results suggest that it is important to consider them as a separate group. Wu and Martinson (1993) found evidence of a relationship between family structure changes and nonmarital birth risk; in addition, the risk associated with living with a single mother during adolescence was much higher for Hispanics than for African Americans or non-Hispanic Whites. The only significant evidence from Haurin (1992) was a status effect, showing that having lived with a stepparent was positively related to drug use and illegal activity in young adulthood. Neither study found significant evidence from exposure models.

Hispanic families exhibit specific demographic and cultural patterns that may help

explain some of these results. The high percentage of recent immigrants among Hispanics (Ramirez and de la Cruz 2002) suggest that changes in family structure, and extended periods of time lived without a biological parent, may be more indicative of migration patterns than family dissolution. If so, this may explain the absence of exposure effects in previous research, but does not account for the importance of family instability. Immigrant families also bring with them the cultural traditions of their home countries. Cultural values such as reliance on and identification with the family and cultural group are particularly common (Becerra 1998; Parke and Buriel 1998; Sanchez-Ayendez 1998). In fact, Hispanic residential fathers are more involved with their children than are White fathers (Baruch and Barnett 1981; Toth and Xu 1999). As such, father presence may be even more important for Hispanic adolescents than for Whites, and those with single mothers may face significant deficits.

Asians

Because Asians make up only 4% of the U.S. population, the little information that is available on their family patterns comes from Census figures. About 80% of children identified as Asian and Pacific Islander live with both biological or adoptive parents (U.S. Census Bureau 2001). Only 14% of Asian children live with a single parent, less than any other racial or ethnic group (Fields 2001). There has been no representative research examining the longitudinal patterns or consequences of family structure on Asian children. However, it is likely that family structure change is quite rare, given the stable nature of their families.

Despite the lack of research on this group, I expect that cultural characteristics of Asian families may provide some insight into the expected relationship between family structure and school achievement. Since a majority of Asians in the U.S. are foreign-born (Schmidley and

Gibson 1999), many Asian immigrants continue family traditions from their home countries. Given the patrilineal nature of many Asian families, particularly among the Chinese (Wong 1998), father absence may be especially damaging for Asian children if ties to the father's family are lost. In addition, the Chinese cultural notion of *chiao shun*, or "training," places a great deal of importance on the mother as the teacher of what is acceptable or expected behavior (Chao 1994). As such, the small number of Asian children living without a mother may face significant deficits. Finally, many Asian cultures emphasize subordinating the individual to the needs of the family (Parke and Buriel 1998); this tradition may help to explain the high levels of stability among Asian families (Fields 2001; U.S. Census Bureau 1997).

—Table 1 about here—

Race-Specific Hypotheses

The literature on family patterns and processes among minority groups suggest several hypotheses about how the family structure models should relate to school achievement, for each racial and ethnic group. I briefly summarize my hypotheses here, but Table 1 presents them in detail. Exposure models focus on distinguishing the effects of parental gender from the effects of parental type. Time lived with both biological parents should be positive, and time lived with a stepfather should be negative, but only for non-Hispanic Whites. Since parental absence research is limited for minorities, I make no predictions for African Americans; I predict a moderate negative effect for time without the biological father for Hispanics, given evidence about father involvement, and strong negative effects of time lived without the biological mother for non-Hispanic Whites. Given the limited research, I make no exposure hypotheses for Asians.

The change models focus on distinguishing the effect of having any family structure

change from the effects of multiple changes; an indicator of recent changes explores the timing of family disruption. I expect that having any family structure change will be important for non-Hispanic Whites and Hispanics. Based on evidence of racial differences in the effects of family changes (Wu and Martinson 1993), I expect that recent changes will be strongly negative for African Americans. I again make no hypotheses for Asians.

Finally, status models serve as a comparison in these analyses, and my hypotheses focus on the effects of residing with combinations of parental figures. Generally, for each group I expect all adolescents living without both biological parents to be disadvantaged; however, some hypotheses are specific to certain groups. For example, I expect living with a single father, or with a biological father and stepmother, to be particularly detrimental for non-Hispanic Whites. On the other hand, given their higher likelihood of living without any biological parents, I expect living with nonbiological parents to have a negative effect for African American adolescents only. My only hypotheses for Asian adolescents predict lower grades for those living with stepfathers, and to a lesser extent, those with single mothers.

Data and Methods

Data set

Data come from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative study of adolescents in grades 7 through 12 in the United States in 1995. Add Health was designed to help explain the causes of adolescent health and health behavior, with special emphasis on the effects of multiple contexts of adolescent life. The study used a multistage, stratified, school-based, cluster sampling design.[1] The school-based sample has a pair

of schools (high school and junior high/middle school) in each of 80 communities. An in-school questionnaire was administered to every student present in each selected school on a particular day during the period of September 1994 to April 1995.

In a second level of sampling adolescents and parents were selected for in-home interviews. A number of special over-samples were also selected for in-home interviews using screeners from the in-school questionnaires, including oversamples targeting specific racial or ethnic groups (Black adolescents with a highly educated parent, Cuban, Puerto Rican, and Chinese adolescents). The in-home interviews were conducted between April and December 1995, yielding the Wave I data. A parent, generally the mother, was also interviewed at Wave I. One year later, all adolescents in grades 7 through 11 in Wave I (plus 12th graders who were part of the genetic sample) were followed up for the Wave II in-home interview in 1996. Bearman et al. (1997) provide a more detailed description of the Add Health study. Because of the special racial and ethnic oversamples and large sample size, this data set is in a better position than most to investigate racial and ethnic differences in complex family structure effects. The sample for this paper consists of 10,114 adolescent respondents with valid information from both in-home interviews, parental interview, and nonmissing data on GPA and sample weights.

Measures

Family Structure

The longitudinal family structure measures are based on three sources of data taken from the Wave I interview: 1) adolescents' reports of type and duration lived with any residential parent(s); 2) reports of residence with any nonresidential biological parent(s); and 3) parents' reports of their relationship histories (focusing on their three most recent "marriages or marriage-

like relationships"). Yearly family structure indicators were created for each year of the adolescent's life from birth (age 0) until the Wave I interview.[2] These yearly indicators were combined into longitudinal measures based on the three family structure models discussed above:

1. *Exposure.* These measures represent the number of years lived in each family structure arrangement, divided by adolescent's age at Wave I. Proportional indicators are not biased by the longer exposure time available to older adolescents. Based on the race-specific hypotheses, I examine four exposure models: proportion of life lived (1) with a single mother or with a single father; (2) with two biological/adoptive parents; (3) without the biological father or without the biological mother; and (4) with a stepfather or with a stepmother.

2. *Change.* Family structure changes represent differences in family structure categories from one age to the next, as indicated by the entrances and exits of parental figures over the adolescent's life. Race-specific hypotheses suggested three models with the following change measures: (1) whether the adolescent had ever experienced a family structure change; (2) a continuous measure of the number of family structure changes the adolescent had experienced by Wave I; and (3) whether the adolescent had experienced a recent change (in the previous year).

3. *Status.* The status model serves as the baseline for comparative analyses. Since it is concerned with parental residence during adolescence, I created a six-category variable indicating family structure status at Wave I: two biological or adoptive parents, biological mother-stepfather, biological father-stepmother, single mother, single father, and nonbiological parents (generally foster parents or nonparental relatives).

Race and Ethnicity

The Add Health data set includes multiple indicators of the race and ethnicity of the

adolescent respondent, taken from the Wave I interview. Respondents were asked if they were of Hispanic or Latino origin. They also were asked what was their race, and were allowed to choose multiple responses from the following categories: White, Black or African American, American Indian or Native American, Asian or Pacific Islander, or Other. Respondents then were asked to choose a single racial descriptor that best described their background. Finally, the interviewer was asked to identify the race of the respondent from his or her own observation.

These sources of information were combined into a single race/ethnicity indicator. If respondents chose more than one race in the multiple race question, priority went to the single race question. If the adolescent's race could not be determined from the in-home interview, I used the resident parent's indication of the adolescent's race. The interviewer-assigned race is used only when the adolescent's race could not be determined from the adolescent or the parent interview. The final race/ethnicity measure is a four-category variable: non-Hispanic White, non-Hispanic African American, non-Hispanic Asian, and Hispanic. All respondents who identified as Hispanic or Latino were combined into a single ethnic category, regardless of their racial identification. This allows for a distinction between the concepts of race and ethnicity by allowing respondents with differing racial identifications to make a common ethnic designation as Hispanic.[3]

Outcome and Control Measures

The educational outcome of interest is grade point average (GPA), measured at the Wave II interview. Add Health asks adolescents for their grades in their most recent grading period in up to four courses: English/language arts, mathematics, history/social studies, and science. High grades are indicative of intellectual development and an orientation toward academic

achievement. These grades are averaged on a scale from 1 to 4, where 1=D or lower, 2=C, 3=B, and 4=A. Respondents averaged a GPA of 2.84, equivalent to a C+ grade.

Table 2 describes several adolescent, parental, and household characteristics, measured at Wave I, that are included in the models as controls: adolescent's immigrant status, age, gender, and verbal ability; parent's education, age at adolescent's birth, and religious attendance; and household indicators of the number of young siblings, sisters, and brothers, and presence of male and female relatives. These are common measures in research associating family structure with school achievement.[4]

—Table 2 about here—

Analytic Strategy

I analyze the data with ordinary least squares (OLS) regression, using maximum likelihood (ML) estimation methods (Agresti and Finlay 1986). Due to the complex sampling design of Add Health, models are estimated using the Huber-White estimator of variance in STATA (Chantala and Tabor 1999). This technique adjusts for intracluster correlation, producing more accurate standard errors and reducing the chance of false-positive significance tests. Models are weighted to adjust for ethnic oversamples.

Since I seek to determine whether the patterns and consequences of family structure vary by race and ethnicity, analyses are conducted separately for each group.[5] First I discuss group differences in descriptive statistics of the family structure measures. In the multivariate analyses, I present zero-order coefficients for the effects of each individual family structure variable on school GPA. These coefficients represent the effects of family structure, net of all adolescent, parent, and family-level control measures. Finally, I present seven full models, in which each

exposure and change measure is combined with measures of Wave I status, in order to compare these longitudinal measures to the more traditional status indicators. Differences across tables in the influential family structure measures indicate where the patterns and consequences of family structure vary by racial and ethnic group.

Results

—Table 3 about here—

Table 2 shows means and frequencies of the dependent variable and control measures included in the analyses. While I do not discuss these measures in detail, it is apparent that there are significant group differences in school achievement, with Asian adolescents having the highest average GPA. Table 3 shows the distribution of all family structure measures, explored by race and ethnicity. Interesting patterns emerge when I examine the exposure measures. Black adolescents lived less than half of their years with both biological parents, compared to about 70-80% of the lives of Whites, Hispanics and Asians. This is largely due to higher rates of nonmarital childbearing among African American women (Ventura et al. 2000). As a result, African Americans have lived much longer without biological fathers, while mother absence is rare for all adolescents regardless of race or ethnicity. In terms of change measures, Asians are least likely to have experienced any family structure change and had the fewest changes, while the opposite is true for African Americans. However, few adolescents in any racial or ethnic group had experienced a recent family structure change (in the previous year). While the yearly incidence of family disruptions is not particularly high, at least around the time of the Wave I interview, it is clear that there is substantial racial and ethnic variation in family structure

trajectories across childhood.

As expected, status measures show that groups vary significantly in the parents with whom they reside at Wave I. African American adolescents are much less likely to live with two biological or adoptive parents than are Hispanics, non-Hispanic Whites, or Asians. Asian adolescents have the highest rates of residence in two-parent families and lower numbers with most of the other family structure types. In contrast, almost half of African American adolescents live with single mothers, much higher than adolescents from other racial/ethnic groups. While non-Hispanic Whites and Asians have similar rates of residence with single mothers, Asian adolescents are much less likely to live with a biological mother and stepfather, suggesting that Asian mothers are less likely to remarry after divorce. In addition, African Americans are more than three times as likely to live with no biological parents as other groups. Finally, very few adolescents live in the less common family structure types, such as with a biological father and stepmother (1-3 percent of each group) or with a single father (1-2 percent).

Race-specific Analyses

Non-Hispanic Whites

—Table 4 about here—

Table 4 shows the results of multivariate analyses examining the impact of the family structure trajectory on adolescent academic achievement, for non-Hispanic Whites only. The first column shows zero-order estimates of each family structure measure, controlling for adolescent, parent, and family characteristics. Clearly, family structure is an important predictor of adolescent grades, as ten of the 15 measures have significant effects. Exposure models show that the time spent with a single mother or single father, or without the biological father or biological

mother, is negatively related to school grades. On the other hand, adolescents who spent more time living with both biological parents tended to have higher grades, on average. Indicators of ever having a family structure change and the number of changes were negatively related to school achievement for White adolescents. Finally, status measures show that White adolescents living with biological mothers and stepfathers, with single mothers, and with single fathers had lower school grades. As hypothesized, adolescents living with single fathers were particularly disadvantaged, although the hypothesis of a strong effect for stepfather families is not supported.

Comparisons of the family structure models are shown in Models 1 through 7. Exposure measures remain as significant predictors of school achievement. Duration in a two-parent family contributes to educational success, and explains most of the disadvantage faced by adolescents living in nonintact families (Model 2); only those living with single fathers still have lower grades. This disadvantage is not due to limited exposure to a two-parent family, as adolescents with single fathers have the highest duration lived in two-parent families (not shown). It may be related to the factors leading to an adolescent going to live with his or her biological father in the first place, such as behavior problems or mother's inability to provide care.

Model 3 shows that, as hypothesized, biological mother absence is more important than father absence in explaining educational achievement among non-Hispanic Whites. Adolescents who lived their entire lives without their biological mothers average about one quarter of a grade less than those who never experienced mother absence, while the proportion of life lived without the biological father has no impact. This measure of mother absence also explains most of the Wave I status effects. Father absence, on the other hand, may be more likely to incur current rather than long-term deficits, as evidenced by the persistent negative effect of living with a

single mother at Wave I. Finally, change measures no longer have significant effects after controlling for family structure status. The detailed status measure used here may serve as a proxy to represent family change among most non-Hispanic White adolescents.

African Americans

—Table 5 about here—

Table 5 examines the influence of family structure on school GPA for African Americans. Unlike the results for non-Hispanic Whites, current father absence confers greater disadvantages than does current mother absence. As expected, zero-order estimates show that measures of family instability are more influential than exposure measures. All three change measures (ever having a change, number of changes, and having a recent change) have negative impacts on school achievement, while duration lived with a single father was the only significant exposure measure affecting school grades. Status models show that adolescents living with stepfathers, and those with nonbiological parents or relatives, have significantly lower grades than those living with both biological parents. The lack of a significant effect for children of single mothers lends credence to the argument that the appropriate reference for what is a "normal" family may be specific to one's racial group, not necessarily the rest of society.

Comparative models for African Americans show different results, however. Only the indicator of recent family structure change has a significant impact on school grades, after adjusting for Wave I family status. Adolescents with a family structure change in the previous year had an average GPA that was .17 lower than those who had not had a recent change. Recent changes thus represent a small but temporary disruption in the educational trajectory. Over time, African American adolescents seem to recover from the trauma of a parental entrance or exit (as

evidenced by the lack of direct effects for the longer-term measures of family instability), and are no longer any worse off than children who never experienced a family structure change at all.

However, having a recent change does not explain much of the effects of current family structure status on adolescent GPA. The disadvantages faced by African American children in nonintact families are stable and are due largely to parental absence during adolescence. The fact that African Americans living with stepfathers are still disadvantaged suggests that they generally are not adequate substitutes for biological fathers; confusion over his parental role may eclipse any benefits from a stepfather's economic contributions. The negative effect for nonbiological parents or relatives reflects the reality for a significant minority of African American children. These children may be selective of those with particularly traumatic family experiences, or personality and behavior problems. Alternatively, the same lack of social norms that make stepfamilies "incomplete institutions" (Cherlin 1978) may be particularly true for nonbiological parents, or they may have competing family responsibilities to their biological children.

Hispanics

—Table 6 about here—

Table 6 explores the impact of family structure on grade achievement for Hispanic adolescents. None of the measures of family structure status, exposure or change had any significant effect on school grades during adolescence.[6] This is surprising, considering that less than 60% of this sample live with both biological or adoptive parents. Although prior research on nonmarital fertility emphasized the importance of parental transitions (Wu and Martinson 1993), these results are consistent with Haurin (1992), who found no effect of family structure on the likelihood of completing high school. Among Hispanics, family instability simply may not be as

important for educational outcomes as for risky youth behaviors such as a nonmarital birth.

The importance of familism among Hispanics may allow children from non-two-parent families to use other kin as parental substitutes in a way that protects them from the educational consequences faced by other adolescents. It is also possible that Hispanic families are simply more resilient when faced with structural disadvantage. Previous research suggests that social support among Hispanic families helps them to protect relatives' physical well-being (Markides and Coreil 1986); it may be that they are able to protect adolescents from the educational disadvantages of family structure as well.

Asians

—Table 7 about here—

Table 7 presents the multivariate analyses for Asians. Zero-order estimates of status and exposure show that Asian adolescents tend to be disadvantaged by living with stepfathers, and comparative models confirm these conclusions. Although this is only a small minority of all Asian families, their children seem to lose about half a grade, on average, compared to Asians living with both parents. Table 3 shows that there are less than half as many Asian adolescents living with stepfathers as are White adolescents (6% vs. 14%), even though the proportions living with single mothers are comparable (14% vs. 15%). This suggests that it is much less common for Asian single mothers to remarry, and that Asian adolescents with stepfathers may be a selective group. Their nonnormative status may imply a lack of cultural norms to support these families; for Asians, stepfamilies may be a particularly "incomplete institution" (Cherlin 1978). In addition, the stepfather may disrupt ties to the biological father's extended family, who are particularly important kin among Asian cultures (Wong 1998).

Conclusion

This paper sought to determine if the patterns of family structure vary by race and ethnicity, and whether specific aspects of the family structure trajectory have different consequences for adolescent education across racial and ethnic groups. Results confirm that family structure is more of a process than a stable characteristic, with complex and sometimes long-term consequences for school achievement. In particular, non-Hispanic White adolescents were most disadvantaged by the extended absence of the biological mother, while time lived with both biological parents benefitted them. In contrast, the only important longitudinal measure for African Americans is a more recent one indicating a family structure change in the past year. Adolescents in this group living without biological fathers continued to face educational deficits, after adjusting for the family structure trajectory.

As important as the features of family structure that did significantly affect adolescent GPA are those that had no influence at all. Despite evidence of the impact of family instability on the sex and fertility behavior of Whites (Wu and Martinson 1993; Wu and Thomson 2001), change measures failed to directly influence school achievement. On the other hand, exposure measures were not as important in explaining variation in grades among African American adolescents. The duration lived with, or without, certain parental figures had no significant direct impact on GPA, once controlling for Wave I status. African Americans living with single mothers also were not significantly different from those in intact families. Both Hispanic and Asian adolescents showed no longitudinal family structure effects (neither exposure nor change) in the full models.

These results show that the experience and consequences of family structure can vary

depending on the social and cultural context in which adolescents live. For non-Hispanic Whites, time with biological parents is an integral part of their development. Deviation from what is considered the "normative" family type (two biological or adoptive parents) confers significant educational disadvantages. Since the increase in single parent families is a more recent demographic phenomenon among non-Hispanic Whites, children who do not live in the more traditional nuclear family with both parents face an educational deficit.

Considering the impact of parental *absence*, on the other hand, focuses on a different question: what is it about "nontraditional" families that is so detrimental for these children? Instead of thinking of all alternative families in the same way, indicators of the time lived without the biological mother and biological father show that, in fact, mother absence is more detrimental than father absence for the educational success of White children. Recent studies that emphasize the importance of mother absence (Case, Lin, and McLanahan 2001; Downey 1994, 1995) are in fact picking up an effect largely specific to White families. Mother absence is quite rare for this group (see Table 3), and there may not be sufficient social and cultural supports available for the few children in this family situation. The fact that they are less likely to live with female relatives (see Table 2) who might act as mother substitutes leaves White adolescents vulnerable to the negative consequences of mother loss.

Patterns of family structure effects for African Americans suggest that this group has a capacity to recover from family change over time. This is consistent with Wu and Martinson (1993), who show that, after an initial increase in nonmarital birth risk after family disruption, the risk for African American women recovers to baseline sooner than it does for White or Hispanic women. Differences in what is considered the "normative" family structure may explain

this. Given that over half of African American children live with a single mother, for this group what is normative is to live without a biological father. Having same-race peers who also are likely to have grown up in father-absent homes can help African American children cope.

Sharing common family structure patterns with members of one's racial community allows for the emergence and primacy of social supports, such as "women-centered" kinship networks (Cherlin 2002), coresidence with extended family (McLloyd et al. 2000), and strong ties to the church (McAdoo 1998; Taylor and Chatters 1991), which can help to ameliorate the negative effects of single parent families. Emphasis on these social ties among African Americans may make their children uniquely well-suited to weather the family instability and parental absence that serve to reduce adolescent well-being for other racial/ethnic groups.

All the same, African American children are certainly affected by the fact that most do not live with their biological fathers. This is evident from the finding that the only adolescents who faced educational deficits at Wave I were those living with stepfathers or with nonbiological parents or relatives. Deficits in parental resources, and the willingness to invest them in nonbiological children, may explain outcomes for these adolescents. Research clearly shows that stepparents have fewer socioeconomic resources and commit fewer interpersonal resources to stepchildren (Cherlin 1978; Downey 1995; Hofferth and Anderson 2003); future research should explore this issue among children living in nonparental homes as well.

The lack of longitudinal family structure effects for Hispanics is unexpected, though not completely surprising. Haurin (1992) found that no family structure measures significantly predicted high school completion among Hispanics, and only experience living in stepfamilies predicted other risky behaviors during young adulthood. On the other hand, Asian families are so

stable that very few adolescents have experienced much family change or parental absence. As such, only the small number living with a stepfather face deficits in school achievement. This group may be selective of families with a significant lack of social norms and supports to help stepfathers establish paternal relationships with their stepchildren.

The cultural tradition of familism that is so common among Hispanic and Asian families may help to ameliorate the negative consequences of alternative family structure for their children. Previous research does suggest that social support from family and friends contributes positively to the functioning of Hispanic and Asian families (Harrison et al. 1990). In addition, research on ethnic enclaves shows that having co-ethnic neighbors and community members helps many families move up the socioeconomic ladder to middle class status (Portes and Sensenbrenner 1993). Assistance to single parents from nonresident kin and community members (whether helping with housework, caring for children, or providing other goods and services) may make all the difference for their children.

Ultimately, this paper suggest a re-consideration of the question that has long concerned researchers interested in racial and ethnic differentials in family patterns: How much of group differences are due to structural constraints, and how much are due to cultural differences? In truth, the answer may be more complicated than the question allows. Minority groups develop cultural adaptations, such as support from extended kin and reliance on women-centered kin networks, to deal with structural challenges. These adaptations may contribute to lasting benefits for children, as evidenced by the resilience of African American children and the absence of long-term consequences of family structure for Hispanics and Asians.

The fact that family structure seems to have more comprehensive and enduring

consequences for White children suggests that White families have not yet adapted to the sudden demographic changes (delayed marriage, increased divorce and nonmarital childbearing) which have characterized American families over the latter half of the 20th century. The normative family structure for this group, around which family relationships and kin ties are organized, is still the two-parent nuclear family. In general, this is the most beneficial family form in which to raise children. However, when a dramatic family change occurs (such as a parental divorce or nonmarital birth), White families may not have a cultural script for how to adjust. As a result, White children have an especially difficult time adapting to a nontraditional family, and extended parental absence creates disadvantages which cumulate and persist over time.

Clearly family structure has negative consequences for minority children, particularly African American children. However, these consequences are attenuated by available resources specific to kin and cultural group. In contrast, disadvantages for White children are more a result of the rapidity of family change, and a lag in adaptive reactions for this group. In all, this study suggests that family responses to structural forces are embedded in cultural practices and traditions. Racial and ethnic differences in the forces acting upon these families, and in the cultural traditions on which these families base their responses, help to condition family processes and ultimately, child well-being.

REFERENCES

Agresti, Alan and Barbara Finlay. 1986. *Statistical Methods for the Social Sciences*. San Francisco: Dellen Publishing Co.

Aquilino, William S. 1996. "The Life Course of Children Born to Unmarried Mothers: Childhood Living Arrangements and Young Adult Outcomes." *Journal of Marriage and the Family*, 58: 293-310.

Astone, Nan M. and Sara S. McLanahan. 1991. "Family Structure, Parental Practices, and High School Completion." *American Sociological Review*, 56: 309-320.

Astone, Nan M. and Sara S. McLanahan. 1994. "Family Structure, Residential Mobility, and School Dropout: A Research Note." *Demography*, 31: 575-584.

Baruch, Grace K. and Rosalind C. Barnett. 1981. "Fathers' Participation in the Care of Their Preschool Children." *Sex Roles*, 7: 1043-1055.

Bearman, Peter S., Jo Jones, and J. Richard Udry. 1997. *The National Longitudinal Study of Adolescent Health: Research Design* [WWW document]. URL: http://www.cpc.unc.edu/projects/addhealth/design.html.

Becerra, Rosina M. 1998. "The Mexican-American Family." In Charles H. Mindel, Robert W. Habenstein, and Roosevelt Wright, Jr. (eds.), *Ethnic Families in America: Patterns and Variations*, 4th edition. New York: Elsevier.

Biblarz, Timothy J. and Adrian E. Raftery. 1999. "Family Structure, Educational Attainment, and Socioeconomic Success: Rethinking the 'Pathology of Matriarchy.'" *American Journal of Sociology*, 105: 321-365.

Bumpass, Larry L. and James A. Sweet. 1989. "Children's Experience in Single-Parent Families: Implications of Cohabitation and Marital Transitions." *Family Planning Perspectives*, 21: 256-260.

Capaldi, Deborah M., Lynn Crosby, and Mike Stoolmiller. 1996. "Predicting the Timing of First Sexual Intercourse for At-Risk Adolescent Males." *Child Development*, 67: 344-359.

Case, Anne, I-Fen Lin, and Sara S. McLanahan. 2001. "Educational Attainment of Siblings in Stepfamilies." *Evolution and Human Behavior*, 22: 269-289.

Chantala, D. Kim and Joyce Tabor. 1999. *Strategies to Perform a Design-Based Analysis Using the Add Health Data* [WWW document]. URL: http://www.cpc.unc.edu/projects/addhealth/strategies.html.

Chao, Ruth K. 1994. "Beyond Parental Control and Authoritarian Parenting Style: Understanding Chinese Parenting Through the Cultural Notion of Training." *Child Development*, 65: 1111-1119.

Cherlin, Andrew J. 1978. "Remarriage as an Incomplete Institution." *American Journal of Sociology*, 84: 634-650.

Cherlin, Andrew J. 1992. *Marriage, Divorce, Remarriage*. Cambridge, MA: Harvard University Press.

Cherlin, Andrew J. 2002. *Public and Private Families: An Introduction*. 3rd edition. Boston: McGraw-Hill College Press.

Downey, Douglas B. 1994. "The School Performance of Children from Single-Mother and Single-Father Families: Economic or Interpersonal Deprivation?" *Journal of Family Issues*, 15: 129-147.

Downey, Douglas B. 1995. "Understanding Academic Achievement among Children in Stephouseholds: The Role of Parental Resources, Sex of Stepparent, and Sex of Child." *Social Forces*, 73: 875-894.

Elder, Glen H. Jr. 1998. "The Life Course as Developmental Theory." *Child Development*, 69: 1-12.

Fields, Jason. 2001. *Living Arrangements of Children: Fall 1996.* Current Population Reports, Series P70-74. Washington, D.C.: U.S. Census Bureau.

Garcia Coll, Cynthia, Gontran Lamberty, Renee Jenkins, Harriet Pipes McAdoo, Keith Crnic, Barbara H. Wasik, and Heidie Vazquez Garcia. 1996. "An Integrative Model for the Study of Developmental Competencies in Minority Children." *Child Development*, 67: 1891-1914.

Harrison, Algea O., Melvin N. Wilson, Charles J. Pine, Samuel Q. Chan, and Raymond Buriel. 1990. "Family Ecologies of Ethnic Minority Children." *Child Development*, 61: 347-362.

Haurin, R. Jean. 1992. "Patterns of Childhood Residence and the Relationship to Young Adult Outcomes." *Journal of Marriage and the Family* 54, 846-860.

Haveman, Robert H. and Barbara S. Wolfe. 1994. *Succeeding Generations: On the Effects of Investments in Children.* New York: Russell Sage Foundation.

Haveman, Robert H., Barbara Wolfe, and James Spaulding. 1991. "Childhood Events and Circumstances Influencing High School Completion." *Demography*, 28: 133-157.

Hetherington, E. Mavis, Martha Cox, and Roger Cox. 1978. "The Aftermath of Divorce." In J. H. Stevens and M. Mathews (eds.), *Mother-Child Father-Child Relationships*. Washington, D.C.: National Association for the Education of Young People.

Heyns, Barbara. 1987. "Schooling and Cognitive Development: Is There a Season for Learning?" *Child Development*, 58: 1151-1160.

Hofferth, Sandra L. and Kermyt G. Anderson. 2003. "Are All Dads Equal? Biology Versus Marriage as a Basis for Paternal Investment." *Journal of Marriage and the Family*, 65: 213-233.

Krein, Sheila F. and Andrea H. Beller. 1988. "Educational Attainment of Children From Single-Parent Families: Differences by Exposure, Gender, and Race." *Demography*, 25: 221-234.

Li, Jiang H. and Roger A. Wojtkiewicz. 1992. "A New Look at the Effects of Family Structure on Status Attainment." *Social Science Quarterly*, 73: 581-595.

Li, Jiang H. and Roger A. Wojtkiewicz. 1994. "Childhood Family Structure and Entry into First Marriage." *The Sociological Quarterly*, 35: 247-268.

Martinson, Brian C. and Lawrence L. Wu. 1992. "Parent Histories: Patterns of Change in Early Life." *Journal of Family Issues*, 13: 351-377.

McAdoo, Harriet Pipes. 1998. "African-American Families." In Charles H. Mindel, Robert W. Habenstein, and Roosevelt Wright, Jr. (eds.), *Ethnic Families in America: Patterns and Variations*, 4th edition. New York: Elsevier.

McLanahan, Sara S. and Gary Sandefur. 1994. *Growing Up with a Single Parent: What Hurts, What Helps*. Cambridge, MA: Harvard University Press.

McLloyd, Vonnie C., Ana M. Cauce, David Takeuchi, and Leon Wilson. 2000. "Marital Processes and Parental Socialization in Families of Color: A Decade Review of Research." *Journal of Marriage and the Family*, 62: 1070-1093.

Mulkey, Lynn M., Robert L. Crain, and Alexander J. C. Harrington. 1992. "One-Parent Households and Achievement: Economic and Behavioral Explanations of a Small Effect." *Sociology of Education*, 65: 48-65.

Parke, Ross D. and Raymond Buriel. 1998. "Socialization in the Family: Ethnic and Ecological Perspectives." In William Damon (ed.), *Handbook of Child Psychology*, 5th edition. New York: Wiley.

Portes, Alejandro and Julia Sensenbrenner. 1993. "Embeddedness and Immigration: Notes on the

Social Determinants of Economic Action." *American Journal of Sociology*, 98: 1320-1350.

Powell, Mary Ann and Toby L. Parcel. 1997. "Effects of Family Structure on the Earnings Attainment Process: Differences by Gender." *Journal of Marriage and the Family*, 59: 419-433.

Ram, Bali and Feng Hou. 2003. "Changes in Family Structure and Child Outcomes: Roles of Economic and Familial Resources." *The Policy Studies Journal*, 31: 309-330.

Ramirez, Roberto R. and G. Patricia de la Cruz. 2002. *The Hispanic Population in the United States: March, 2002*. Current Population Reports, Series P20-545. Washington, D.C.: U.S. Census Bureau.

Sanchez-Ayendez, Melba. 1998. "The Puerto Rican Family." In C.H. Mindel, R.W. Habenstein, and R. Wright, Jr. (eds.), *Ethnic Families in America: Patterns and Variations*, 4th edition. New York: Elsevier.

Schmidley, A. Dianne and Campbell Gibson. 1999. *Profile of the Foreign-Born Population in the United States: 1997.* Current Population Reports, Special Studies, P23-195. Washington, D.C.: U.S. Census Bureau.

Solomon, Jennifer C. and Jonathan Marx. 1995. "'To Grandmother's House We Go': Health and School Adjustment of Children Raised Solely by Grandparents." *The Gerontologist*, 35: 386-394.

Taylor, Robert and Linda M. Chatters. 1991. "Religious Life." In James S. Jackson (ed.), *Life in Black America*. Newbury Park, CA: Sage.

Thomson, Elizabeth, Sara S. McLanahan, and Roberta B. Curtin. 1992. "Family Structure, Gender, and Parental Socialization." *Journal of Marriage and the Family*, 54: 368-378.

Toth, John F.. Jr. and Xiaohe Xu. 1999. "Ethnic and Cultural Diversity in Fathers' Involvement: A Racial/Ethnic Comparison of African American, Hispanic, and White Fathers." *Youth and Society*, 31: 76-99.

Udry, J. Richard and D. Kim Chantala. 2000. "Estimating Bias from Dropouts in School-Based Surveys." Working Paper, National Longitudinal Study of Adolescent Health, Carolina Population Center.

U.S. Census Bureau. 1997. *Selected Characteristics of the Population by Race: March 1997* [WWW document]. URL: http://www.bls.census.gov/cps/pub/1997/int_race.htm.

U.S. Census Bureau. 2001. *Detailed Living Arrangements of Children by Race and Hispanic*

Origin, 1996 [WWW document]. URL: http://www.census.gov/population/socdemo/child/p70-74/tab01.pdf.

Ventura, S.J., J. A. Martin, S.C. Curtin, T. J. Mathews, and M.M. Park. 2000. "Births: Final Data for 1998." *National Vital Statistics Reports*, 48(3). Hyattsville, MD: National Center for Health Statistics.

Wallerstein, Judith S. and Joan B. Kelly. 1980. *Surviving the Breakup: How Children and Parents Cope with Divorce*. New York: Basic Books.

Wojtkiewicz, Roger A. 1992. "Diversity in Experiences of Parental Structure During Childhood and Adolescence." *Demography*, 29: 59-68.

Wojtkiewicz, Roger A. 1993a. "Simplicity and Complexity in the Effects of Parental Structure on High School Graduation." *Demography*, 30: 701-717.

Wojtkiewicz, Roger A. 1993b. "Duration in Parental Structures and High School Graduation." *Sociological Perspectives*, 36: 393-414.

Wojtkiewicz, Roger A. and Katharine M. Donato. 1995. "Hispanic Educational Attainment: The Effects of Family Background and Nativity." *Social Forces*, 74: 559-574.

Wong, Morrison G. 1998. "The Chinese-American Family." In Charles H. Mindel, Robert W. Habenstein, and Roosevelt Wright, Jr. (eds.), *Ethnic Families in America: Patterns and Variations*, 4th edition. New York: Elsevier.

Wu, Lawrence L. 1996. "Effects of Family Instability, Income, and Income Instability on the Risk of a Premarital Birth." *American Sociological Review*, 61: 386-406.

Wu, Lawrence L. and Brian B. Martinson. 1993. "Family Structure and the Risk of a Premarital Birth." *American Sociological Review*, 58: 210-232.

Wu, Lawrence L. and Elizabeth Thomson. 2001. "Race Differences in Family Experience and Early Sexual Initiation: Dynamic Models of Family Structure and Family Change." *Journal of Marriage and the Family*, 63: 682-696.

Table 1. Race-Specific Hypotheses Regarding the Effects of Family Structure Status, Exposure, and Change Measures on Adolescent School Achievement.

Models	Non-Hispanic Whites	African Americans	Hispanics[a]	Asians
Exposure:				
Proportion of life with single mother Proportion of life with single father	— single mother — — single father	— single mother ? single father	— single mother ? single father	?
Proportion of life with 2 biological parents	+	0	0	?
Proportion of life without biological mother Proportion of life without biological father	— — bio mother — bio father	?	? bio mother —/~ bio father	?
Proportion of life with stepfather Proportion of life with stepmother	—	0	?	?
Change:				
Ever had family structure change	—	?	—	?
Number of family structure changes	— —	—	— —	?
Recent family structure change	?	— —	?	?
Status: (compared to 2 biological/ adoptive parents)				
Single mother	—	—/~	— —	—/~
Single father	— —	?	?	?
Biological mother- stepfather	—	—/~	—	—
Biological father- stepmother	— —	?	?	?
Nonbiological parents	?	—	?	?

[a]Hispanics can be of any race.

— = negative effect — — = strong negative effect —/~ = moderate/negative effect
0 = no effect + = positive effect ? = unknown/ no hypothesis suggested

Table 2. Variable Definitions, with Weighted Means and Frequencies of Dependent Variable and Control Measures, by Race and Ethnicity (N=10114).[a]

Variables[b]	Definitions	NH Whites		African Americans		Hispanics[c]		Asians	
GPA (1.0-4.0)	See text, p. 15.	2.9	(0.76)	2.6**	(0.68)	2.6**	(0.74)	3.1**	(0.70)
Control Measures:									
Adolescent age	Continuous, in years.	14.8	(1.52)	15.0**	(1.58)	14.9	(1.6)	14.9	(1.7)
Gender	1=female, 0=male.	0.50	(0.50)	0.52	(0.50)	0.52	(0.50)	0.46	(0.50)
Verbal ability	Abbreviated version of Peabody Picture Vocabulary Test. Age standardized: mean=100, SD=15.	100.9	(24.3)	89.0**	(23.0)	90.2**	(26.3)	95.4**	(25.9)
Missing on verbal ability	1=missing, 0=nonmissing.	0.04	(0.20)	0.04	(0.21)	0.06	(0.23)	0.04	(0.20)
High school graduate or less	Parental education: highest educational level among all parental figures in household (parental respondent for those in nonbiological parent homes).	0.37	(0.48)	0.54**	(0.50)	0.64**	(0.48)	0.28**	(0.45)
Some college		0.24	(0.43)	0.20**	(0.40)	0.18**	(0.38)	0.15**	(0.35)
College graduate		0.39	(0.49)	0.26**	(0.44)	0.18**	(0.38)	0.57**	(0.50)
Parent's age at adolescent's birth	Calculated by subtracting adolescent's age from parental respondent's age.	25.3	(5.6)	24.7**	(7.2)	24.6**	(5.9)	27.8**	(5.9)
Parent's religious attendance	Continuous frequency of attendance to religious services in past year: 1=never to 4=once a week or more.	2.6	(1.28)	3.1**	(1.11)	2.8**	(1.23)	3.0**	(1.27)
Missing attendance/ no religion	1=missing or respondent did not report any religion, 0=nonmissing.	0.07	(0.25)	0.03**	(0.18)	0.06	(0.24)	0.07	(0.25)
Young siblings	Number of siblings under 6 years old in household.	0.11	(0.36)	0.16**	(0.45)	0.21**	(0.48)	0.14	(0.42)
Sisters	Number of sisters living in household.	0.64	(0.77)	0.80**	(0.94)	0.93**	(1.02)	0.78**	(0.85)
Brothers	Number of brothers living in household.	0.71	(0.80)	0.79**	(0.92)	0.92**	(0.89)	0.89**	(0.96)
Male relatives	1=at least one male relative in household, 0=none.	0.03	(0.18)	0.11**	(0.31)	0.12**	(0.33)	0.09**	(0.28)
Female relatives	1=at least one female relative in household, 0=none.	0.05	(0.21)	0.16**	(0.37)	0.11**	(0.32)	0.19**	(0.39)
Total N (unweighted)		5919		2046		1604		545	

[a]Numbers in parentheses are standard deviations (for means) or standard errors (for frequencies).

[b]GPA measured at Wave II; all controls measured at Wave I.

[c]Hispanic adolescents can be of any race.

*p<=.05 **p<=.01 (means for minority groups are significantly different from means for non-Hispanic Whites)

Table 3. Weighted Means and Frequencies of Family Structure Measures, by Race and Ethnicity (N=10114).

Variables	NH Whites		African American		Hispanics[a]		Asians	
Family Structure Measures	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Longitudinal Exposure Measures: Proportion of life...								
...with single mother	0.13	0.26	0.39**	0.40	0.18**	0.31	0.10	0.24
...with single father	0.01	0.09	0.01	0.07	.02	0.11	0.02	0.09
...with 2 bio parents	0.75	0.38	0.46**	0.44	0.68**	0.41	0.82**	0.34
...without bio mother	0.04	0.18	0.07**	0.21	0.06	0.21	0.05	0.18
...without bio father	0.22	0.36	0.52**	0.44	0.29**	0.40	0.16**	0.32
...with stepfather	0.08	0.21	0.09	0.20	0.09	0.22	0.03**	0.12
...with stepmother	0.01	0.07	.00**	0.04	.01	0.07	0.01	0.07
Longitudinal Change Measures:								
Ever had family structure change	0.31	0.46	0.47**	0.50	0.34	0.47	0.26*	0.44
Number of family structure changes	0.52	0.93	0.82**	1.10	0.55	0.91	0.39*	0.77
Recent family structure change	0.05	0.21	0.06	0.24	0.06	0.24	0.04	0.19
Wave 1 Status:								
Two biological/ adoptive parents	0.65	0.48	0.33**	0.47	0.57**	0.49	0.74**	0.44
Biological mother- stepfather	0.14	0.35	0.12	0.33	0.15	0.36	0.06**	0.24
Biological father- stepmother	0.03	0.16	0.01**	0.11	.02	0.14	0.02	0.15
Single mother	0.15	0.36	0.46**	0.50	0.22**	0.42	0.14	0.34
Single father	0.02	0.13	0.01	0.12	.02	0.13	0.02	0.13
Nonbiological parents/ relatives	0.01	0.12	0.06**	0.25	.01	0.11	0.02	0.15
Total N (unweighted)	5919		2046		1604		545	

[a]Hispanic adolescents can be of any race.

*p<=.05 **p<=.01 (means for minority groups are significantly different from means for non-Hispanic Whites)

Table 4. Effects of Family Structure Exposure, Change, and Status on Adolescent Reports of School Grade Point Average, **Non-Hispanic Whites** (N=5919).

Variable	Zero-order		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
Exposure: Proportion of life...																
...with single mother	-.21**	(.04)	-.12	(.07)												
...with single father	-.47**	(.14)	-.27	(.19)												
...with 2 biological parents	.20**	(.04)			.16*	(.06)										
...without biological father	-.16**	(.04)					-.08	(.06)								
...without biological mother	-.27**	(.07)					-.27**	(.09)								
...with stepfather	-.10	(.06)							.15	(.08)						
...with stepmother	-.33	(.19)							-.25	(.24)						
Change:																
Ever family structure change	-.13**	(.03)									.04	(.06)				
Number of changes	-.06**	(.01)											-.01	(.02)		
Recent change (in past year)	-.04	(.05)													.06	(.06)
Status: *(reference= two biological or adoptive parents)*																
Biological mother-stepfather	-.13**	(.04)	-.11**	(.04)	-.02	(.05)	-.07	(.05)	-.21**	(.05)	-.17*	(.07)	-.12*	(.05)	-.14**	(.04)
Biological father-stepmother	-.15	(.08)	-.09	(.09)	-.04	(.09)	.01	(.10)	-.06	(.11)	-.19	(.11)	-.14	(.09)	-.16	(.09)
Single mother	-.14**	(.03)	-.08	(.05)	-.04	(.04)	-.09*	(.04)	-.15**	(.03)	-.17**	(.06)	-.13**	(.04)	-.15**	(.03)
Single father	-.30**	(.10)	-.18	(.13)	-.21*	(.10)	-.17	(.11)	-.29**	(.10)	-.33**	(.11)	-.29*	(.11)	-.31**	(.10)
Nonbio. parents or relatives	-.20	(.12)	-.16	(.12)	-.08	(.12)	.01	(.12)	-.20	(.12)	-.23	(.13)	-.19	(.12)	-.22	(.12)

*p<=.05 **p<=.01 (two-tailed tests)

Note: All coefficients (zero-order and Models 1-7) are net of controls for adolescent's age at Wave I, gender, AHPVT score (and missing on AHPVT), immigrant status, parental education, parent's age at adolescent's birth, parent's religious attendance (and missing/no religion), presence of young siblings, number and gender of siblings, and presence and gender of adult relatives.

Table 5. Effects of Family Structure Exposure, Change, and Status on Adolescent Reports of School Grade Point Average, **African Americans** (N=2046).

Variable	Zero-order		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
Exposure: Proportion of life...																
...with single mother	-.01	(.04)	.08	(.08)												
...with single father	-.34*	(.16)	-.26	(.23)												
...with 2 biological parents	.07	(.05)			-.10	(.08)										
...without biological father	-.06	(.05)					.11	(.08)								
...without biological mother	-.14	(.11)					-.04	(.13)								
...with stepfather	-.13	(.10)							.07	(.15)						
...with stepmother	.22	(.35)							.28	(.51)						
Change:																
Ever family structure change	-.13*	(.05)									-.08	(.06)				
Number of changes	-.05*	(.02)											-.02	(.03)		
Recent change (in past year)	-.22**	(.08)													-.17*	(.08)
Status: *(reference= two biological or adoptive parents)*																
Biological mother-stepfather	-.18*	(.08)	-.21*	(.08)	-.27*	(.10)	-.27**	(.10)	-.22*	(.10)	-.11	(.08)	-.15	(.08)	-.17*	(.08)
Biological father-stepmother	-.02	(.18)	.01	(.19)	-.11	(.20)	-.04	(.20)	-.10	(.26)	.05	(.19)	.03	(.19)	.01	(.18)
Single mother	-.09	(.05)	-.15	(.08)	-.17*	(.08)	-.18*	(.08)	-.10*	(.05)	-.04	(.04)	-.07	(.04)	-.08	(.05)
Single father	-.19	(.11)	-.13	(.14)	-.25*	(.12)	-.21	(.12)	-.19	(.11)	-.11	(.12)	-.14	(.12)	-.13	(.11)
Nonbio. parents or relatives	-.32**	(.12)	-.33*	(.13)	-.40**	(.14)	-.38**	(.14)	-.32**	(.12)	-.24	(.13)	-.28*	(.12)	-.29*	(.12)

*p<=.05 **p<=.01 (two-tailed tests)

Note: All coefficients (zero-order and Models 1-7) are net of controls for adolescent's age at Wave I, gender, AHPVT score (and missing on AHPVT), immigrant status, parental education, parent's age at adolescent's birth, parent's religious attendance (and missing/no religion), presence of young siblings, number and gender of siblings, and presence and gender of adult relatives.

Table 6. Effects of Family Structure Exposure, Change, and Status on Adolescent Reports of School Grade Point Average, **Hispanics**[a] (N=1604).

Variable	Zero-order		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
Exposure: Proportion of life...																
...with single mother	.03	(.08)	.13	(.14)												
...with single father	-.07	(.36)	.25	(.40)												
...with 2 biological parents	.01	(.06)			-.07	(.13)										
...without biological father	.00	(.07)					.05	(.13)								
...without biological mother	-.05	(.15)					-.06	(.18)								
...with stepfather	-.08	(.18)							-.13	(.29)						
...with stepmother	.02	(.25)							-.00	(.45)						
Change:																
Ever family structure change	-.03	(.06)									-.02	(.11)				
Number of changes	-.03	(.03)											-.03	(.05)		
Recent change (in past year)	.06	(.10)													.09	(.09)
Status: *(reference= two biological or adoptive parents)*																
Biological mother-stepfather	-.04	(.10)	-.07	(.11)	-.09	(.14)	-.07	(.14)	.03	(.15)	-.02	(.14)	.00	(.12)	-.05	(.10)
Biological father-stepmother	.07	(.15)	-.00	(.16)	.02	(.18)	.10	(.16)	.07	(.26)	.09	(.17)	.11	(.16)	.05	(.14)
Single mother	-.02	(.06)	-.10	(.11)	-.07	(.11)	-.05	(.11)	-.02	(.07)	-.01	(.10)	.01	(.07)	-.03	(.06)
Single father	-.33	(.24)	-.46	(.28)	-.38	(.24)	-.30	(.25)	-.33	(.26)	-.32	(.28)	-.29	(.26)	-.35	(.24)
Nonbio. parents or relatives	.16	(.25)	.13	(.25)	.09	(.26)	.16	(.28)	.17	(.25)	.17	(.27)	.20	(.26)	.14	(.26)

[a]Hispanic adolescents can be of any race.

*p<=.05 **p<=.01 (two-tailed tests)

Note: All coefficients (zero-order and Models 1-7) are net of controls for adolescent's age at Wave I, gender, AHPVT score (and missing on AHPVT), immigrant status, parental education, parent's age at adolescent's birth, parent's religious attendance (and missing/no religion), presence of young siblings, number and gender of siblings, and presence and gender of adult relatives.

Table 7. Effects of Family Structure Exposure, Change, and Status on Adolescent Reports of School Grade Point Average, **Asians** (N=545).

Variable	Zero-order		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
Exposure: Proportion of life...																
...with single mother	-.12	(.21)	-.27	(.33)												
...with single father	-.40	(.44)	-.90	(.45)												
...with 2 biological parents	.13	(.12)			.04	(.26)										
...without biological father	-.15	(.16)					-.01	(.23)								
...without biological mother	.19	(.21)					.25	(.27)								
...with stepfather	-.80**	(.30)							-.27	(.69)						
...with stepmother	.15	(.21)							.10	(.45)						
Change:																
Ever family structure change	-.11	(.10)									.25	(.18)				
Number of changes	-.03	(.06)											.10	(.09)		
Recent change (in past year)	-.02	(.28)													.12	(.32)
Status: *(reference= two biological or adoptive parents)*																
Biological mother-stepfather	-.45*	(.20)	-.38	(.23)	-.43	(.31)	-.46	(.28)	-.35	(.41)	-.70*	(.29)	-.60*	(.27)	-.48*	(.19)
Biological father-stepmother	.06	(.10)	.27	(.18)	.09	(.25)	-.09	(.19)	.02	(.22)	-.19	(.21)	-.13	(.23)	.04	(.11)
Single mother	-.00	(.13)	.16	(.19)	.02	(.18)	-.01	(.14)	.02	(.12)	-.24	(.16)	-.15	(.17)	-.02	(.14)
Single father	.09	(.40)	.45	(.31)	.10	(.41)	-.00	(.43)	.09	(.40)	-.16	(.43)	-.04	(.41)	.09	(.40)
Nonbio. parents or relatives	-.24	(.34)	-.00	(.31)	-.21	(.38)	-.35	(.37)	-.24	(.34)	-.46	(.34)	-.41	(.39)	-.26	(.34)

*p<=.05 **p<=.01 (two-tailed tests)

Note: All coefficients (zero-order and Models 1-7) are net of controls for adolescent's age at Wave I, gender, AHPVT score (and missing on AHPVT), immigrant status, parental education, parent's age at adolescent's birth, parent's religious attendance (and missing/no religion), presence of young siblings, number and gender of siblings, and presence and gender of adult relatives.

ENDNOTES

1.Udry and Chantala (2000) show that using a school-based sample does not significantly bias estimates of risk behaviors by missing school dropouts.

2.Some rules were used when constructing these variables. For example, adolescents living with two biological parents at Wave I are presumed never to have lived with any other parental figure; adolescents could not live with both biological parents after the parent's romantic relationship ended; a stepparent must be the partner of a biological parent with whom the adolescent lived (e.g., an adolescent could not live with a stepfather if she was not living with her biological mother); and nonbiological parents are defined as residential adults when there is no biological parent in the home (and thus are differentiated from stepparents). Stepparents are defined as the spouse or cohabiting partner of the residential biological parent.

3.After sample attrition due to other missing data, only 46 respondents were lost due to lack of information on their race or ethnicity, and 103 who identified as Non-Hispanic Native American were removed due to insufficient sample size.

4.One may question why I do not control for family income, since research has found that it is related to family structure and children's education (Heyns 1987; McLanahan and Sandefur 1994). This leads to the broader question of whether income is a cause or consequence of non-two-parent family structure. McLanahan and Sandefur (1994) demonstrate that income differences between two-parent and divorced families are largely due to income loss after family disruption; in addition, they find that income loss during adolescence accounts for about half of the differences between two-parent and divorced families in measures of educational outcomes during adolescence and young adulthood (see Chapter 5, pp. 78-94). Thus, their research suggests that economic deprivation is actually a consequence of living in a nonintact family structure, and can serve to mediate the effect of family structure on adolescent outcomes. In this paper, however, my main focus is on the larger consequences of the family structure trajectory. Including income in the models would control away much of the predictive power of family structure, and would significantly underestimate the totality of its effects on school achievement. As such, I choose not to control for income in these analyses.

5.The Chow test indicates significant variation in the effects of predictors across groups.

6.Bivariate analyses show that Hispanic adolescents living with a single father did have significantly lower grades. However, this effect is explained away when I control for adolescent gender. Most of the adolescents in this family type were boys, who tend to have lower grades than girls. In addition, I ran models for Hispanics in which I controlled for the specific ethnic group (Mexican, Cuban, Central or South American, or Puerto Rican). None of the measures of these ethnic groups had a significant effect on the outcome, nor did they change the results of the family structure measures.