TRENDS IN THE HEALTH OF BLACK AND WHITE CHILDREN WHO LIVE WITH PARENTS OR GRANDPARENTS, U.S. 1972-2008*

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ABSTRACT

Over the past 40 years, children have become less likely to live in nuclear and more likely to live with single parents or with grandparents. Further, there are marked racial differences in family structure and the relationship between family structure and children's health. We use the National Health Interview Survey to examine the relationship between family structure and health for black and white children from 1972 to 2008. We find some similarities by race: black and white children who live with married parents are quite healthy, as are, surprisingly, black and white children who live with single fathers. Further, black and white children who live with grandparents but not parents are among the least healthy. But we also find important differences by race. For example, black children who live with married parents and at least one grandparent are relatively healthy, whereas that family structure is associated with poorer health among white children. We conclude with our plans for additional analyses and the limitations of our data.

Co-residential family structures (what family members live with whom) have changed markedly over the past 35 years. The prevalence of divorce, the age at first marriage, the share of children born outside of marriage, and the geographic dispersion of extended families has increased over time, and the average couple has fewer children at later ages (Cherlin 2009; Cherlin and Frurstenberg 1986). Against this demographic backdrop, research suggests that the prevalence of children living with single parents or grandparents increased over the period (Casper 1997; Fuller-Thomson and Minkler 2001; Pebley and Rudkin 1999), and the factors giving rise to those diverse living arrangements and their consequences for children' health may have changed.

A substantial body of research documents the many ways that family structure is important for the health and wellbeing of children. Children who live with both of their parents generally do better in school, have better health, and have fewer behavioral problems than children raised by single mothers or fathers, or some combination of parents and step-parents (Ginther and Pollak 2004), although there are some exceptions to these patterns. Concomitantly, some studies report that children who live with their grandparents (with or without their parents) are worse off than their counterparts who live with both married parents only, although other studies find no differences or even advantages for children whose grandparents play an active role in their lives (Anderson 1999; Dunifon and Kowaleski-Jones 2002, 2007; Solomon and Marx 1995). Although many of studies focus on current family status (as will the current study), some research has also found that family transitions are associated with adverse behaviors among children in some circumstances (Fomby and Cherlin 2007; Wu and Thomson 2001).

Given the growing diversity of children's co-residential family structures, and the potential risks associated with living in non-nuclear families, we specifically examine the

relationship between family structure and the health of black and white children between 1972 and 2008. We use data that allow us to focus on relatively rare family structures that hold an increasing share of children over the past 36 years—including families that hold co-resident grandparents or that are headed by single fathers—that have received little attention in the empirical literature. The share of children living with grandparents has increased in recent decades (Pebley and Rudkin 1999), although prior research on children living with grandparents is limited by small, non-nationally representative samples; little regional diversity; and limited information on health. Similarly, the share of children living with single fathers has increased in recent decades (Casper 1997), although few surveys allow detailed examination of such families. In sum, we: (1) document the relationship between family structure and children's health between 1972 and 2008, with a particular focus on families that hold single parents or grandparents; (2) evaluate whether the relationship between family structure and children's health differs among black and white children over the past 36 years; and (3) assess the role of family socioeconomic factors, age structure, and parent and grandparent health in shaping trends in black and white children's health over time. Our analyses take advantage of National Health Interview Survey data that span a 36-year period. The size and design of the NHIS is key to identifying large numbers of children who live with grandparents or single parents.

Family Structure and the Health of Children

Two theoretical perspectives point to the importance of family structure for influencing children's health and wellbeing. First, the social support/social control perspective emphasizes that the presence of two married parents allows for the effective social control of children, provision of social support, and socioeconomic advantage. In turn, social and economic resources foster the pro-social development of children, and improve their health by providing

access to medical care, encouraging healthy behaviors and success in school, and discouraging unsafe or unhealthy practices.

The presence of grandparents in the household may also provide benefits to children. In extended families, children may benefit from having access to both supportive parents and grandparents. Grandparents may have a unique perspective on parenting, given that they were likely involved in the rearing of their own children, and they have a greater historical perspective on appropriate childrearing strategies. As such, especially in extended families, children may benefit from the social support and pro-social control provided by a variety of caregivers, including parents and grandparents. Grandparents who are still in good health may be well positioned to spend time caring for their grandchildren, and grandparents who are still working may contribute to the socioeconomic resources of the household, and even retired grandparents may have substantial savings, retirement accounts, or other assets (Crystal and Shea 1990; Ghez and Becker 1975). Having grandparents in good health and with many material resources may substantially improve the wellbeing of children.

Second and in contrast to the social support/social control perspective, the social stress perspective focuses more on the disadvantages of marital dissolution and the number of family structure changes. Marital dissolution, through divorce, separation, or widowhood, is thought to be stressful for children, depending on the circumstances of the dissolution and the age of the child (Fomby and Cherlin 2007; Wu and Thomson 2001). That stress can then lead to risky behaviors and worse health. Regardless of the stress or disruption of the transition itself, family structures that result from marital dissolution may be less able to care for children. Single mother and, to the extent that data are available, single father families, typically have fewer financial resources, less time, and less social support to devote to caring for children. Indeed, the

availability of only one parent instead of two may make it harder for the care-giving adult to balance work, childcare, and other family responsibilities, which likely results in lower earnings trajectories for single parents while simultaneously providing less time for the supervision and care of children. Given that women typically earn less than men, children living with single mothers may be especially disadvantaged in terms of socioeconomic resources. Single fathers, however, may be better able to garner socioeconomic resources for their children.

In some circumstances, children may have worse health if they live in extended families that include at least one parent and one grandparent. For example, frail grandparents may draw the time and financial resources of parents, contribute fewer socioeconomic resources to the household, and leave leaving children with less supervision and fewer financial resources than their counterparts who live solely with married parents (Brandon 2005; Fuller-Thomson and Minkler 2003). Further, some grandparents may have outdated childrearing strategies that may not be helpful for children as they seek to manage the influences of their peers, do well in school, or cope with pressures to have sex, use alcohol or drugs, or participate in dangerous activities.

Skipped generation households that include grandparents and grandchildren, but where the parents are absent, may be associated with even worse health among children for several reasons. First, children may rely solely on grandparents as the primary caregivers, and the absence of parents to counterbalance the outdated childrearing practices of grandparents, may lead to worse outcomes for children. Second, skipped generation households may have very few socioeconomic resources, especially if they have few savings, little time to devote to work, depressed earnings, or are transitioning out of the labor force. Just by virtue of being older and born in earlier cohorts, grandparents often have less education than parents who are raising children of the same age. Finally, although a parent may be absent for pro-social reasons such as

attending school or seeking work, it seems likely that parents may be more often absent due to extremely adverse social circumstances including death, incarceration, abandonment due to drug or alcohol abuse, or mental illness (Harknett 2008; Minkler, Roe, and Price 1992; Pettit and Western 2004). Those adverse circumstances, in addition to the absence of either parent itself, may have an important detrimental impact on the health and well being of children. In sum, the social stress that gives rise to skipped generation families may impact both the child and the grandparent. Further, grandparents in skipped generation families may be unable to rely on parents if their budgets are pinched or if their health fails, thereby impacting the health of grandparents and resulting in fewer social and material resources for the care of children.

Family Structure and Health Over Time

Research on trends in the relationship between marital status and health have noted several patterns (Liu and Umberson 2008). First, the poor health associated with being never married, divorced, or separated may decline over time, potentially because the stigma associated with those statuses may decline. At the same time, welfare policies may become more supportive, and child support in case of divorce may become more normative, making it easier for non-nuclear families to care for children. Second, however, the factors that shape family formation may change over time in ways that impact the health of family members. For example, scholars suggest that parental absenteeism or incarceration due to addiction to crack cocaine prompted large increases in grandparent headed households among low socioeconomic status blacks in the mid to late 1980s (Minkler et al. 1992; Pettit and Western 2004). Divorce and non-marital childbearing has become relatively more common over the last several decades, which may have made it more commonplace for children and their custodial parent to move in with grandparents. Third, older adults are living to older ages, often in better health, resulting in a

greater availability of grandparents for grandchildren to live with, although concomitant delays in fertility may have also increased the spacing between generations (Uhlenberg 2006; Uhlenberg and Kirby 1998). The better health and greater affluence of some grandparents may mean that the costs of living with grandparents, in some circumstances, have fallen over time.

Race, Family Structure, and Children's Health

There are important racial differences in family structure and children's health. Some researchers note that grandparents may play a particularly central role in the lives of black grandchildren, by providing material support and moral role models, especially given the many forces that have historically led to the disruption of the black family in the U.S., including slavery, the great Northern migration, and the formation of segregated urban ghettos (Anderson 1999; Cherlin and Frurstenberg 1986). Black children are also more likely than white children to live in single mother households, in part because black fathers have low levels of employment and education that make them unattractive as spouses, and high rates of incarceration that leave them unable to with mothers (Harknett 2008; Pettit and Western 2004).

Given the greater reliance and acceptance of grandparents caring for children in the black community, it seems likely that the implications of family structure for children's health may differ for blacks and whites. Indeed, some research finds that multiple family transitions are more harmful for white children than black children, although black children are more adversely affected by repeated decrements in socioeconomic status (Fomby and Cherlin 2007; Wu and Thomson 2001). Other research finds that living with grandparents is substantially more detrimental in terms of the cognitive stimulation received by black grandchildren than received by white grandchildren, in part due to differences in parenting styles by race (Dunifon and Kowaleski-Jones 2007). Further, because the average black child typically does not live in a

nuclear family, living with single parents or grandparents may be more accepted in the black community and more sources of informal support may available to help those families.

DATA AND METHODS

The National Health Interview Survey (NHIS) provides nationally representative data on all family members who live in the same household, and their relationships with each other, from 1972-2008. We pool 36 years of data, which gives us a substantial number of children from birth through age 17 in skipped generation, extended, and single mother or father families. Prior research that focuses on grandchildren is marked by small, regional samples; little diversity on characteristics including race/ethnicity, gender, family structure, and socioeconomic status; or little information about health. For example, the 2000 US Census collects information on grandparents who were primary caretakers of grandchildren, but offers little insight into health (see Fuller-Thomson and Minkler 2001). The National Survey of Families and Households (NSFH; N=~170 custodial grandparents), Panel Study of Income Dynamics (PSID; N=~2,100 co-resident grandchildren), National Longitudinal Survey of Youth (NLSY; N=~550 co-resident grandchildren), and the National Educational Longitudinal Study (NELS; N~=400 co-resident grandchildren) are relatively modest in size (sample sizes reported in Brandon 2005; DeLeire and Kalil 2002; Dunifon and Kowaleski-Jones 2007; Fuller-Thomson and Minkler 2001). In comparison, we rely on data that have over 35 times as many co-resident grandchildren as the PSID—the next largest survey—and detailed data on all co-residential family members. Thus, the large sample size in the NHIS and the long span of data collection provides us with a much richer source of data than are available elsewhere. Nevertheless, these data are not without limitations, as we discuss in our conclusion section.

Variables

Our dependent variable is caregiver assessed health. The family respondent reports whether the child's health is excellent, very good, good, fair, or poor (1982-2007) or excellent, good, fair, or poor (1972-1981). The primary caretaker of the child typically reports the variables for young children, and often for older children. This is particularly useful if the caretaker is aware of the child's health and wellbeing. To account for the different response categories over time, we follow Liu and Umberson (2008) and code the global health measure as poor (=1), fair (=2), good (=3), and very good/excellent (=4), and we include a dummy variable in our multivariate analyses to indicate whether the item was originally measured on a four-point or a five-point scale. Separate analyses show that our results are substantively similar when using a dichotomous measure that indicates whether respondents are in fair or poor health, versus good, very good, or excellent health, or when we use a three point scale that ranges from poor, fair, or good/very good/excellent.

We are unaware of research that systematically examines the validity of caregiver assessed health for children of various ages. Table 1 shows correlations with our measure of global health and other variables that indicate the health or wellbeing of the child. Activity limitations are negatively correlated with better health assessments for both children under age 5, and children aged 6 to 17.[1] School aged children who missed more days of school were less likely to be in better health. For the years 1982-2007, we also have measures of children's progress through school. Children who are one or more years behind in school, relative to modal number of years completed for children of the same age in the same year of interview, are also significantly less likely to be in good health. In contrast, students who have completed more years of school than the modal child of the same age in the same survey year, are more likely to

be in better health. Thus, the validity of the global health measure is bolstered by its correlations in the expected directions with other health and school outcomes of children.

(Table 1 about here)

The key independent variables in our analyses include family structure, survey year, and race. Family structure is categorical and indicates whether children are living in a: (1) skipped generation family, where they live with one or more grandparents, but no parents; (2) extended, mother only family that contains the mother and one or more grandparents, but no father; (3) extended, father only family that contains the father and one or more grandparents, but no mother; (4) extended, married couple family that holds both married parents and one or more grandparents; (5) a single mother family, where children live with their mother, but the father and grandparents are absent from the household; (6) single father family, where children live with their father, but their mother and grandparents are absent; and (7) a family with married parents, but no grandparents.

Several aspects of the family relationship information in the NHIS warrant particular attention. First, a small number of children live in other kinds of families, and typically live with other family members (such as aunts or uncles) or unrelated adults. The NHIS is best suited to identifying "vertical" relationships among family members, such as grandparents, parents, children, and grandchildren, but collects little information on relationships among siblings, cousins, aunts, or uncles, so we exclude children living in other family structures. Second, the NHIS identifies families based on social rather than genetic relationships, so we cannot distinguish among genetic, half-, step-, or adoptive relationships among children and their siblings or caretakers. Third, the NHIS did not ask about cohabiting relationships until 1997. Given our interest in examining trends in children's health over time, we coded cohabiting adults

according to their legal marital status when assigning them to groups for our analysis.

Survey year is measured continuously in single years, ranging from 0 in 1972 to 36 in 2008. Separate models (not shown) also included year-squared to test for a non-monotonic relationship between year and children's health. But the quadratic term was only inconsistently significant, and when we graphed the results, the estimated trends diverged only slightly from linear relationships. For the ease of presentation, we focus on linear trends in the results we present below. Race is coded dichotomously as white or black. The NHIS does not begin collecting information on Hispanic ethnicity or other detailed race/ethnic groups until 1978.

All models adjust for various demographic factors. Age is coded as years ranging from 0 (less than one year old) to 17. Sex is coded dichotomously as male or female. Census region is coded categorically as the South, Midwest, West, or Northeast to account for regional variation in living with grandparents (Cherlin and Frurstenberg 1986; Fuller-Thomson and Minkler 2001), that might be correlated with regional variations in health and wellbeing (Krueger, Bhaloo, and Rosenau 2009).

We also create a series of caregiver level variables, based on both parent and grandparent characteristics, although we have not yet incorporated these into our multivariate analyses. We focus on characteristics that may be correlated with the factors that prompt diverse family structures to arise and the wellbeing of children.

Family socioeconomic status (SES) includes an employment ratio, education, and family income. The employment ratio is measured as the proportion of all individuals in the household who are working for pay. We calculate two measures of education that we will compare in our final models: the mean level of education among parents and grandparents (if present), and the maximum level of education among parents and grandparents. Family income was reported in

categories that varied across survey years. To approximate a continuous variable, we took the midpoint of each closed-ended interval and estimated a median value for the open-ended interval (Parker and Fenwick 1983), converted all values to 2008 dollars (U.S. Census Bureau 2007), adjusted for the purchasing power of different sized families (Van der Gaag and Smolensky 1982), and divided the variable by 10,000 and took the log to account for the diminishing returns to health as income increases (Rogers, Hummer, and Nam 2000).

We adjust for the health of parents and grandparents because caregivers who are in poor health may draw resources away from children, and there may be some correlation in the self-assessments of caregivers health and their assessments of children's health. We calculate measures for the proportion of parents and grandparents who report any activity limitations, and the proportion of parents and grandparents who are in fair or poor health.

Statistical Analyses

We use ordered logistic regression to model global health assessments. All of our analyses are weighted to the US population and use the "svy" commands in Stata to account for the stratified and clustered sampling frame used by the NHIS (National Center for Health Statistics various years; StataCorp 2007). Family income is missing for over 15% of the observations. The current draft of the paper uses a single imputation with stochastic variation added into the models (see Gelman and Hill 2007), but later drafts will use multiple imputation methods to account for missing data.

RESULTS

Figure 1 shows the trends in family structure by race over time. We present both the observed percentages for each year, as well as smoothed trends from logistic regression models that regress each family structure on race, cubic splines for calendar year (with knots at 1980,

1990, and 2000), and interactions between race and the calendar year splines. Figure 1a shows that the share of children living with married parents has declined over the period, although the decline was faster among blacks. By 2008, less than 77% of white children and 40% of black children lived in married parent households. Figure 2a shows that less than 4% of the children in our sample live in single father households between 1972 and 2008, although the percentage has been increasing over time (see also Casper 1997). In contrast to the other family structures examined here, both black and white children have fairly similar rates of living with single fathers. Figure 1c shows that living with a single mother is the second most common family structure for both black and white children, although the share of children living in such households has increased more quickly among blacks than among whites.

(Figure 1 about here)

Figure 1d, Figure 1e, and Figure 1f show trends for children living in extended families with the father present, extended families with the mother present, and skipped generation families. As suggested by prior literature, black children are more likely to live with grandparents in all cases (Fuller-Thomson and Minkler 2000; Fuller-Thomson, Minkler, and Driver 1997; Minkler 1999). However, for all three family structures, there is evidence of convergence among blacks and whites in the most recent years due to declining rates among blacks, increases rates among whites, or both. Figure 1g shows that in contrast to all of the other family structures we examine that include grandparents, a greater share of white children than black children live in extended families that include both married parents and at least one grandparent.

Table 2 presents descriptive statistics for the sample. The child characteristics show that caregiver assessed health varies widely across the family structures. Only 58% of children in

skipped generation households are in very good/excellent health, compared to about 61% of children living in extended households with a mother or father, 69% of children living in extended households with married parents, 64% of children living with single mothers, 72.5% of children living with single fathers, and 73.8% of children living with married parents. There are some interesting sex differences in the share of children who live in each family structure. Although there are slightly more boys than girls in most of the family structures, this pattern is accentuated in households where there are fathers but not mothers, including extended families with fathers (52.6% boys), and father only households (54.6% boys). The average share of children that are boys falls below 50% only in households that are headed by a mother only.

(Table 2 about here)

Table 2 also describes some key grandparent and parent characteristics that we plan to include in subsequent analyses. Our descriptive results suggest that parent and grandparent characteristics have the potential to explain differences in children's health across family structures. For example, the proportion of family members who are employed is lowest in skipped generation households (also the group with the smallest share of children in very good/excellent health), and is highest in father only and married couple families (the two groups with the highest share of children in very good/excellent health). A similar pattern holds for the education variables. We present both the family income equivalence (adjust for family size), and a measure of family income that is not adjusted for family size, to facilitate comparison across families of different sizes. Generally, skipped generation households and single mother families have the lowest levels of income, but extended families that hold married couples have among the highest income levels, followed by families headed by married couples only, fathers only, or extended families that also include fathers. Nearly 40% of grandparents in skipped generation

households report activity limitations or being in fair or poor health, compared to less than 10% of parents in married couples, which suggests marked differences in the ability of adults across family structures to effectively care for children.

Table 3 presents results from the ordered logistic regression models of children's caregiver assessed health. Model 1 shows that, compared to children living in married couple households, children in skipped generation households have 49% (odds ratio [OR]=$e^{-.683}$=0.505) lower odds, children in extended mother households have 44% lower odds, children in extended father households have 45% lower odds, children in an extended household with their married parents have 18% lower odds, children living with a mother only have 34% lower odds, and children living with a father only have 12% lower odds of having better health. Notably, children who live in a skipped generation household have worse health than those who live in extended families with one or both parents. Interestingly, the children with the best health after those who live only with their married parents, are those children who live with a single father. Model 1 also shows that black children have worse health than white children, and the variable for survey year indicates that children's health improves steadily between 1972 and 2008.

(Table 3 about here)

Model 2 includes all of the two and three way interactions between race, survey year, and family structure. Each block of interactions are jointly significant at the $p<0.01$ level. Separate models that included each set of 2 way interactions separately, before including the 3 way interactions, also found that each block of coefficients were jointly significant; we do not present those results here to preserve space. To more easily interpret the results from models that include multiple sets of interactions terms, we graph the results from Model 2.

Figure 2 shows the predicted probability that white children will be in very good/

excellent health, by survey year, with all other covariates at their means (from Model 2, Table 3). Children in married couple families had the highest probability of being in very good/ excellent health in 1972, and their health increased for 36 years and remained among the highest in 2008. Children living in single father households had a somewhat lower probability of being in very good/excellent health in 1972, but their health increased rapidly for the subsequent 36 years and their health was as good as that of children in married couple families in 2008. Among white children, living in single mother families or living in extended families that included only a mother or father were associated with worse health, and perhaps surprisingly, children living in extended families with married parents were the one group to experience a decline in the probability of being in very good/excellent health between 1972 and 2008. Children in skipped generation households had the lowest probability of being in very good/ excellent health in 1972, and by 2008 their health remained quite poor, although their health had improved somewhat and was be roughly equivalent to those living in extended families.

More generally, Figure 2 shows that in 1972, there was substantial heterogeneity in the health of children across family structures. However, by 2008, children rough fell into two groups based on their family structure. Two groups (married parents, and single father only) were associated with high probabilities of being in very good/ excellent health. But children in all other family structures had similarly low probabilities of being in good/excellent health.

(Figure 2 about here)

Figure 3 shows the predicted probability that black children will be in very good/ excellent health, by survey year, with all other covariates at their means (from Model 2, Table 3). Black children living with married parents, in extended families with married parents, or single father families were among the healthiest in 1972, and largely maintained that advantage through

2008. Black children in extended families with fathers were also among the healthiest in 1972, but the health of children in this group fell over time so that in 2008 they were among the least healthy children. Black children who lived in single mother, skipped generation, or extended families that include fathers only had relatively low probabilities of being in very good/ excellent health in 1972; children in each of these groups experienced improving health over time, but by 2008 there were clear differences among these three groups, with children in single mother families being in substantially better health than children in skipped generation families.

(Figure 3 about here)

There are several notable differences between the patterns for black and white children (compare Figures 2 and 3). First, the black children in each family structure had lower probabilities of being in very good/ excellent health in 1972 than their white counterparts. Second, in direct contrast to the pattern among whites, black children in 1972 fell into roughly two groups based on their health, as determined by their family structure. Black children living with married parents, extended families with married parents, father only households, or extended families with fathers were had fairly similar health and were consistently among the healthier black children. A second group of children in skipped generation families, extended families with mothers, or single mother families were marked by consistently lower probabilities of being in very good/ excellent health. However, by 2008, there was much more heterogeneity in the health of children among different family structures.

DISCUSSION AND CONCLUSION

Our results confirm patterns that have been documented elsewhere (Casper 1997; Cherlin 2009; Fuller-Thomson and Minkler 2001): the share of children living in families headed by married parents has declined in the past 36 years, with concomitant increases in the share of

children living with single parents or in skipped generation or extended families. Further, black children were substantially less likely than whites to live in families headed by married parents, a gap that increased between 1972 and 2008. Further, black children were more likely to live in families headed by single mothers, skipped generation households, or extended families headed by either fathers or mothers. White children, in turn, were more likely to live in households that included both their married parents and one or more grandparents—thus, black children were not uniformly more likely to live in all household structures that held grandparents.

We also found some similarities in the relationship between family structure and health among black and white children. Not surprisingly, both black and white children had better health if they lived with married parents, and no grandparents. Somewhat more surprisingly, both black and white children who live with a father only are often as healthy or sometimes healthier than children living with married parents. Our descriptive statistics on Table 2 provide some clues to why this might be the case: single father families often had substantial socioeconomic resources that they might be able to use to improve the living conditions and well being of their children. Our data cannot offer direct insight into study family transitions, but it seems likely that many father only families would have gone through some sort of transition such as widowhood, divorce, or separation, which intuitively might have adverse impacts on child well being (Fomby and Cherlin 2007; Wu and Thomson 2001). Thus, our finding is counterintuitive both because children in single father families appear to be so healthy, but also because single father households seem similarly salubrious for both black and white children. Although the share of children living with fathers only has been increasing in recent decades (see Figure 1b and Casper 1997), this living arrangement remains somewhat rare, and finding merits further study. Notably, fathers were less able to bolster the health of either black or white children when grandparents

were also in the household.

Another similarity among black and white children is that both groups were in poor health if they lived in skipped generation households, or if they lived in families where the mother was present and the father was absent (i.e., single mother families, and extended families with mothers). Black and white children who live in skipped generation households were consistently among the least healthy for most, if not all, of the 36 year period. Skipped generation households likely arise out of serious adversity when both parents may be absent due to abandonment, drug or alcohol abuse, incarceration, or death (Minkler and Fuller-Thomson 1999; Minkler et al. 1992). Although skipped generation households and especially grandmother headed households are often described as gatekeepers of morality and pro-social values in the black community (Anderson 1999), grandparents in those households may be unable to provide substantial socioeconomic resources, and may have health problems that may limit their ability to care for grandchildren (see Table 1). Although single mother families and extended families that include mothers may have more caretakers or caretakers who are in better health, the mothers in those families may have relatively low levels of education and may have low paying jobs that limit those families' resources for promoting children's health.

There are also substantial differences in the patterns between family structure and health by race. Black children who live with married parents, regardless of whether grandparents were also in the household, were quite healthy compared to their peers in most of the other family structures 1972 to 2008. In contrast, white children who lived with married parents only were very healthy over the 36 year period, whereas white children who lived with both married parents and one or more grandparents were quite healthy in 1972, but their health steadily declined over the next 36 years. Only black children who lived in extended families with their

fathers saw similar declines in their health over the 36 year period.

Another striking difference is that over the 36 year period we examine, variation in health across the family structures was reduced substantially among white children, but became much greater among black children. In 1972, the family structures we examined were quite heterogeneous in their implications for health among white children. However, by 2008, children largely feel into two groups: the healthiest white children lived with married parents or single fathers, while children in the remaining family structures had worse health. Among black children, the opposite pattern manifests. In 1972, black children largely fell into two groups based on their family structure: children who lived with married parents (with or without grandparents present), single fathers, or extended families with the father present were in better health than their counterparts who lived with single mothers, extended families with mothers present, or skipped generation households. By 2008, however, there was substantially more heterogeneity in black children's health across family structures.

Next Steps for Analysis before PAA

We will revise and extend our analyses in several ways before the 2010 meetings of the Population Association of America. First, we will estimate additional multivariate models that include measures of the family's socioeconomic status, age structure, or the health of parents and grandparents, in an effort to understand the factors that might lead to divergent health outcomes by race and across family structures. Our descriptive results in Table 2 and prior research suggests that economic inequality among families can be substantial (Western, Bloome, and Percheski 2008), and might account for differences in health among children. We will also graph trends in the health and socioeconomic factors over time, by family structure, to understand what role the changing characteristics of families over time might impact the health of children.

Second, we will draw on additional information from the NHIS to further validate the measure of caregiver assessed health. The recent waves of the NHIS have information on doctor visits, medical conditions, and birth weight for children (also reported by the primary caregiver), that might provide additional insight into the validity of the caregiver assessed health measure, and that could illuminate whether some family structures are disproportionately marked by caregivers who have limited knowledge about the health of children. For example, if single fathers seldom take their children to physicians, then they may overstate the health of their children. Further, if data permit, we will compare caregiver and adolescent reported health; each might have limitations, but might also provide valuable insight into the health of older children (Boardman 2006).

Third, we will take several steps to better understand the unexpected relationship between children's health and residence in families headed by single fathers. By examining the marital status of single fathers (and single mothers), it would be possible to gain some insight into whether such families arise out of widowhood, divorce, separation, or did not have their roots in marriage—patterns that will likely vary for mothers and fathers. Although we do not have information about parents that are not living in the household, the marital status of the parent in the household can provide some insight into the selective forces that may have given rise to particular family structures.

Fourth, subsequent analyses will further adjust for the order of children in the household (from oldest to youngest), and will further stratify the analysis by the age of children. Indeed, the presence or absence of parents or grandparents may have different implications for children who are too young to attend school, school aged children, or adolescents. Further, because our data include all children in surveyed households, we will estimate random effects models to account

for the non-independence of observations within families.

Finally, given the relatively high levels of missing data for the income variable, and smaller rates of missing data for other covariates in our models, we will use multiple imputation methods in an attempt to reduce the potential biases associated with missing data.

Limitations

Several limitations of our study warrant mention. First, the NHIS data—much like many other data sources—have limited ability to model the forces that lead grandparents to co-reside with their grandchildren. The literature describes a number of possible mechanisms that might lead non-nuclear families to arise, many of which might have implications for the health of children. For example, early childbearing among mothers and fathers; divorce or separation; and the absence of parents due to parental abandonment, incarceration, drug or alcohol abuse, mental illness, or death might reduce the likelihood that parents will be married or involved in children's lives. But, strengths of our analyses nevertheless allow us to make important insights, including a large, nationally representative sample that includes children from a 36 year time period, and a substantial amount of information on the demographic, health, and socioeconomic characteristics of all family members.

On a related point, we have no information on family members that are not in the household. Indeed, we do not know whether grandparents that are absent are even alive (early death and poor health may run in families for a variety of genetic and social reasons), and we do not have information on absent parents. Prior research, however, has noted that some parents and grandparents may be quite involved in the lives of their children or grandchildren, even if they live in separate households (Cherlin and Frurstenberg 1986; Hughes et al. 2007).

Conclusion

Although some prior research paints a picture where children's wellbeing suffers whenever they live in family structures that are comprised of anything other than nuclear family arrangements (Ginther and Pollak 2004), not all research confirms those findings (Solomon and Marx 1995). Indeed, we find both similarities and differences in the experiences of black and white children over the past 36 years. Our findings generally confirm that both black and white children are quite healthy when they live in families headed by married parents. But we also find that black and white children are also quite healthy when they live in single father households—although our current analyses have not fully revealed why that might be the case. In contrast, black children are healthy when they live with married parents and grandparents, but white children living in the same family structure have seen markedly declining health over the past 36 years. Both black and white children are in poor health when they live in skipped generation households.

In sum, our findings may inform policies that aim to improve the health of children. For example, policies that provide care giving support or financial resources to children who live with grandparents when parents are absent might be especially helpful for some of the least healthy children. Given the socioeconomic and health burdens of grandparents who care for grandchildren (Brandon 2005; Minkler and Roe 1996; Minkler et al. 1992), additional support may be particularly helpful for both grandparents and grandchildren. Further, future research could also examine more closely examine the reciprocal relationships among the health of members of different generations. Both children (or grandchildren) and parents (or grandparents) bring potential resources to the family, but might also contribute time, energy, or money to other family members, perhaps at the expense of their own health. The NHIS data are uniquely

suited—given that it provides health and socioeconomic data on individuals from all generations—to examine these relationships.

ENDNOTES

1. We do not use the variable for activity limitations as a dependent variable in our analyses for two reasons. First, the meaning of activity limitations is unclear for young children who do not attend school or have other household responsibilities. Second, in early waves of the NHIS, those who are missing data on the item for activities limitations cannot be distinguished from those who have activity limitations. Given that the levels of missing data on many items in the NHIS increase with time, this makes it difficult to identify trends in limitations over time. Nevertheless, this item is correlated in expected ways with the measure of caregiver assessed health, which lends support to the validity of both items.

2. http://www.census.gov/population/www/socdemo/hh-fam.html

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Table 1: Correlations Between Assessed Health and Other Indicators of Wellbeing, U.S. Children Aged 0 to 17 years, 1972-2008.

	Ages 0 to 5	Ages 6 to 17
Limitations of Activities		
Limited in any daily activities	-0.211*	-0.211*
Days lost from school[a]		
Days lost from 1972 to 1996	--	-0.114*
Days lost from 1997 to 2008	--	-0.056*
Progress in School (1982-2008)[b]		
$\geq$ 1 year behind in school (age $\geq$ 7)	--	-0.074*
$\geq$ 2 years behind in school (age $\geq$ 8)	--	-0.096*
$\geq$ 1 year ahead in school (age $\geq$ 6)	--	0.014*

Notes: * $p \leq 0.05$ (two-tailed test)

[a]The item for days lost from school asks about the past 2 weeks from 1972 to 1996, and the past year from 1997 to 2008.

[b]In 1982, the NHIS began asking about children's highest year of school completed.

Table 2: Weighted descriptive statistics for children aged 17 or younger, by family structure, U.S. 1969-2007

	Family Structure						
	Skipped generation	Extended, mother	Extended, father	Extended, married	Mother only	Father only	Married couple
Child Characteristics							
Caregiver rated health, %							
Poor	0.6	0.5	0.5	0.3	0.7	0.2	0.3
Fair	5.1	4.2	3.2	2.4	4.6	2.6	2.3
Good	35.2	33.4	33.2	27.1	29.9	24.1	23.1
Very good/Excellent	58.3	61.0	61.9	69.6	64.1	72.6	73.8
Race, %							
White	56.2	59.0	74.0	90.6	66.1	83.9	91.9
Black	43.9	41.0	26.0	9.4	33.9	16.1	8.1
Age in years, mean	10.1	5.8	7.5	9.1	9.0	11.0	8.6
Sex, %							
Female	49.5	49.8	47.4	49.8	50.2	45.4	49.3
Male	50.5	50.2	52.7	50.3	49.9	54.6	50.8
Region, %							
Northeast	15.1	18.4	18.6	27.4	20.5	17.9	20.7
South	53.5	47.0	44.6	31.7	36.8	33.9	32.6
Midwest	18.3	19.1	20.4	20.4	23.6	26.5	28.0
West	13.2	15.5	16.5	20.5	19.2	21.8	18.7
Survey year, mean	17.6	15.8	15.8	14.1	14.8	16.4	13.4
Grandparent & Parent Characteristics							
Socioeconomic status							
Proportion employed	0.40	0.52	0.54	0.54	0.56	0.79	0.71
Mean education, mean	9.7	10.5	10.4	11.0	11.7	12.3	12.5
Maximum education, mean	10.2	12.3	12.1	13.0	11.7	12.3	13.3
Family income equiv., mean dollars	15,305	19,203	23,415	32,609	12,913	24,803	31,807
Family income, mean dollars	32,626	46,788	52,678	72,617	27,140	47,844	66,065
Age structure							
Minimum age, mean	58.1	24.4	29.3	35.5	34.6	40.7	35.1
Mean age, mean	59.6	39.7	46.0	47.9	34.6	40.7	36.9
Maximum age, mean	61.1	56.3	60.5	67.1	34.6	40.7	38.7
Health Status							
Activity limitation, proportion	0.39	0.20	0.25	0.21	0.14	0.15	0.09
Fair or poor health, proportion	0.38	0.22	0.24	0.18	0.17	0.12	0.08
Percent	0.88	3.56	0.62	1.79	15.94	1.59	75.62
N	27,611,679	111,762,209	19,424,649	56,068,617	499,726,713	49,894,980	2,371,089,174
N (unweighted)	9,662	40,016	6,847	17,748	169,499	15,943	725,255

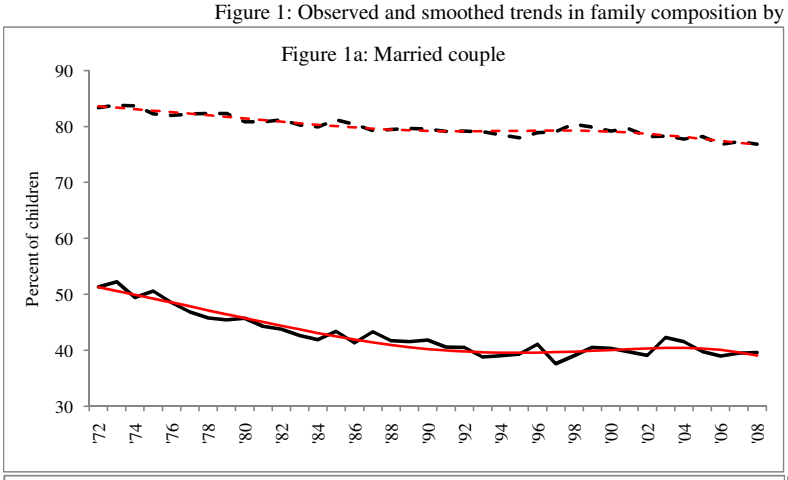
Table 3: Ordered logistic regression coefficients for the relationship between family structure and child health, U.S. children aged birth through 17, 1972-2008

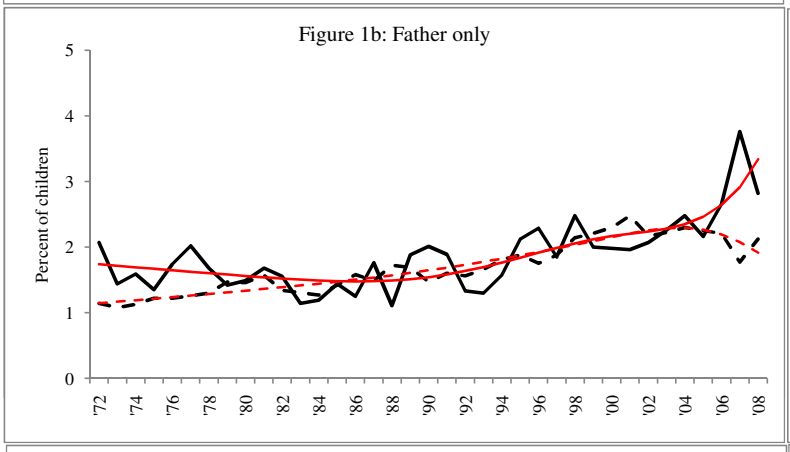
	Model 1	Model 2	
Family structure, race, and year			
Skipped generation	-0.683***	-0.755***	a
Extended, mother	-0.578***	-0.440***	
Extended, father	-0.595***	-0.509***	
Extended, married parents	-0.193***	0.018	
Mother only	-0.429***	-0.329***	
Father only	-0.128***	-0.248***	
Married couple	ref.	ref.	
Black (=1)	-0.539***	-0.643***	
Survey year	0.015***	0.016***	
Race by year			
Black * year		0.004*	
Family structure by year			
Skipped * year		0.000	a
Extended, mother * year		-0.013***	
Extended, father * year		-0.011*	
Extended, married * year		-0.020***	
Mother only * year		-0.010***	
Father only * year		0.007*	
Family structure by race			
Skipped * black		0.422**	a
Extended, mother * black		0.067	
Extended, father * black		0.418**	
Extended, married * black		-0.075	
Mother only * black		-0.005	
Father only * black		0.170	
Family structure by race by year			
Skipped * year * black		-0.015*	a
Extended, mother * year * black		0.005	
Extended, father * year * black		-0.012	
Extended, married * year * black		0.016*	
Mother only * year * black		0.006*	
Father only * year * black		-0.004	
Sociodemographic variables			
Age in years	-0.011***	-0.011***	
Male (=1)	0.002	0.002	
Region			
Northeast	ref.	ref.	
South	-0.154***	-0.154***	
Midwest	0.009	0.009	
West	0.028	0.030	
Health measure recoded	0.814***	0.810***	
Cut 1	-5.522***	-5.509***	
Cut 2	-3.316***	-3.302***	
Cut 3	-0.727***	-0.713***	

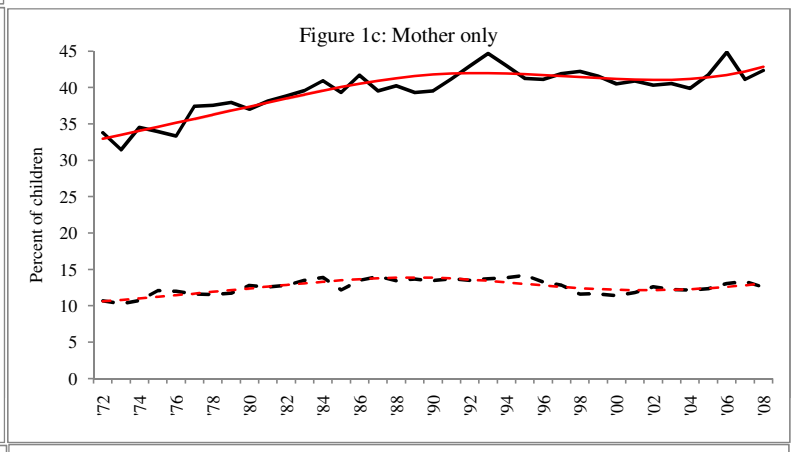
Notes: * p<.05; ** p<.01; *** p<.001

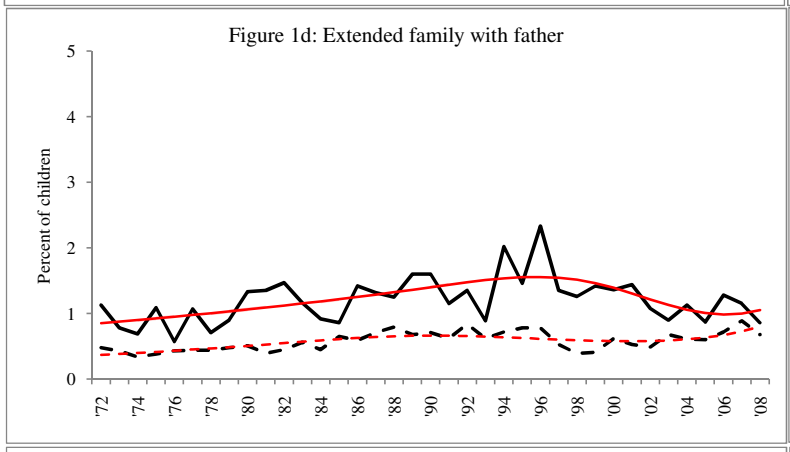
[a]Wald tests indicate that these groups of coefficients are jointly significant at the p>0.01 level of significance

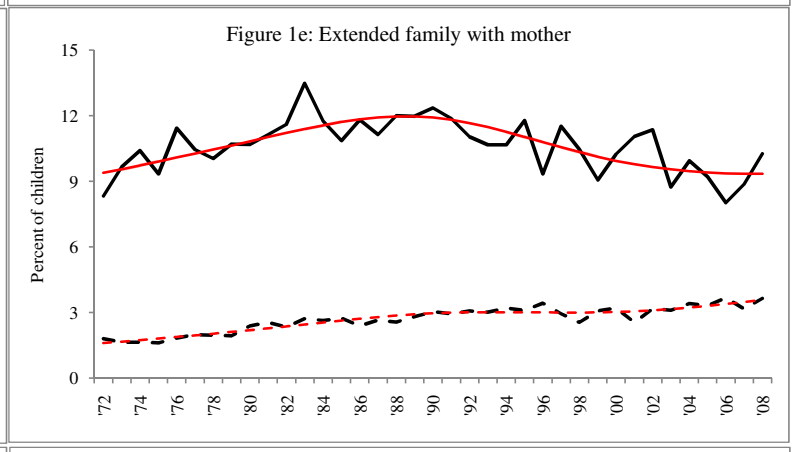
Figure 1: Observed and smoothed trends in family composition by race and calendar year, U.S. children aged birth through 17 years.

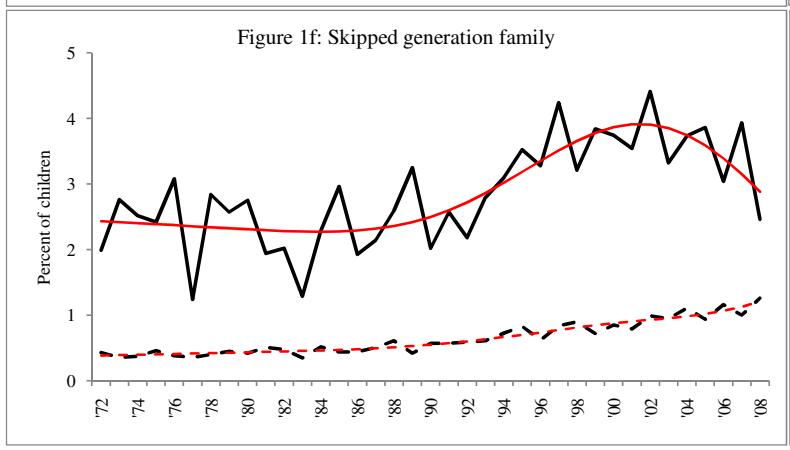












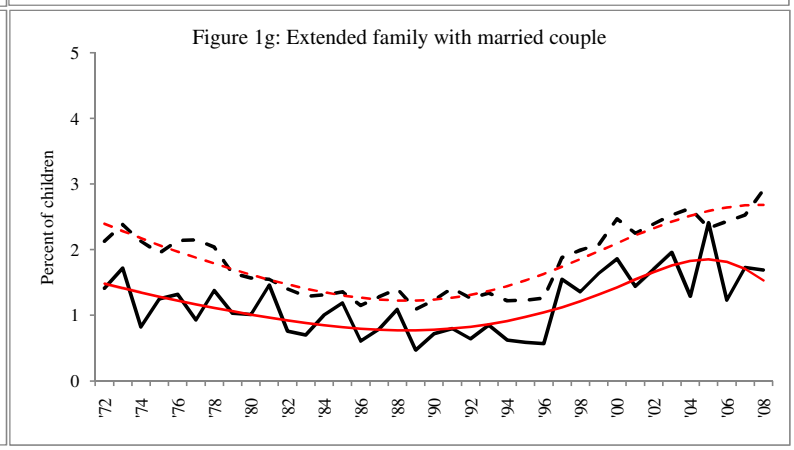


Figure 2: Probability of very good/excellent health, by family structure and calendar year, white children aged birth through 17

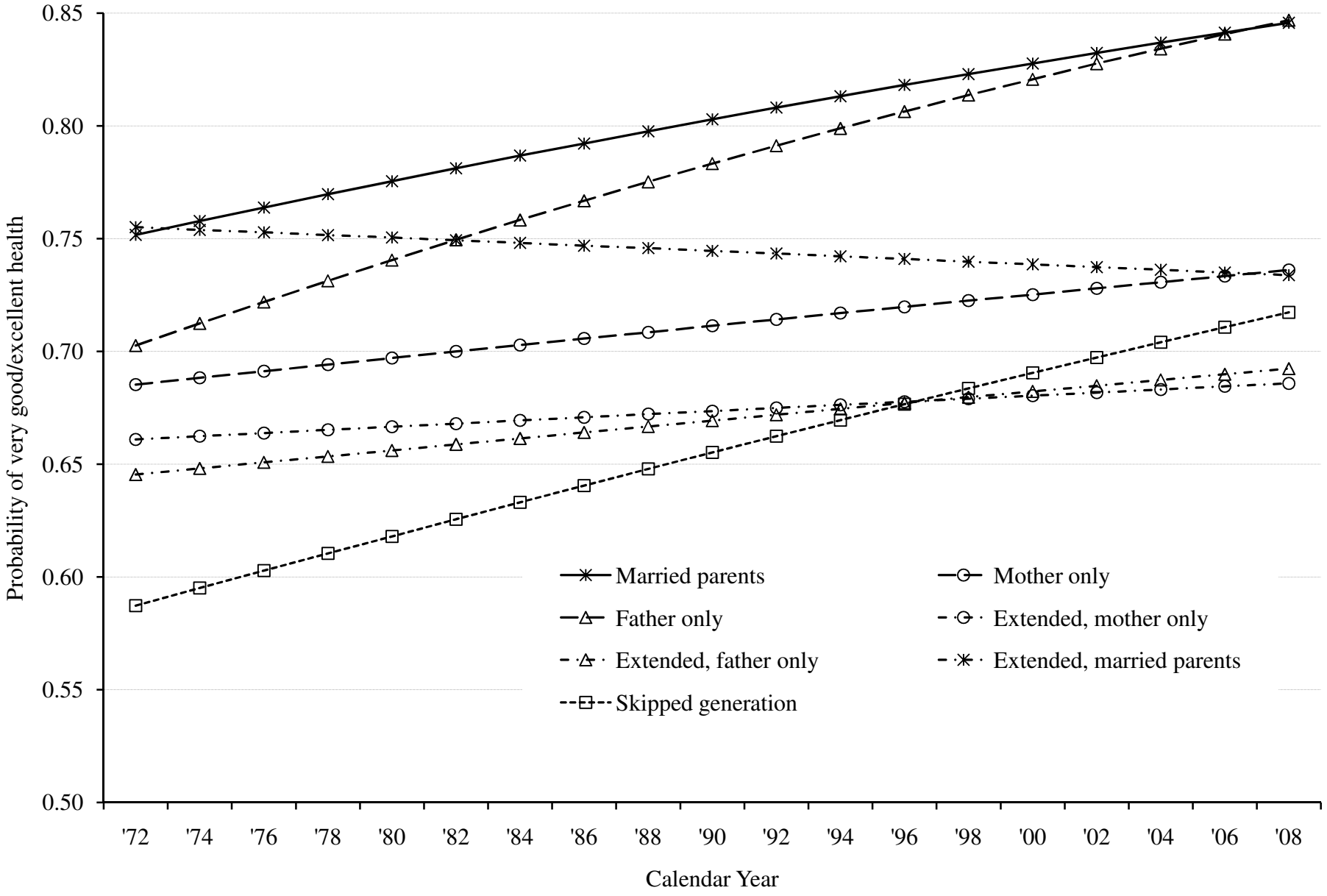


Figure 3: Probability of very good/excellent health, by family structure and calendar year, black children aged birth through 17