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Family Structure and Adolescent Physical Health, Behavior, and Emotional Well-Being

Callie E. Langton and
University of Wisconsin–Madison

Lawrence M. Berger
University of Wisconsin–Madison

Abstract

This study uses data from the Child Development Supplement of the Panel Study of Income Dynamics to examine family structure's associations with adolescent physical health, behavior, and emotional well-being. Findings suggest that adolescents in most other family types tend to have poorer outcomes than those in two-biological-parent families. Adolescents living with their biological father but not their mother have similar outcomes to those living with their single, biological mother. Although transitioning to a single-parent family is adversely associated with multiple outcomes, few associations are found for other types of transitions, and there are few differences in adolescent outcomes by parental marital status. Estimates from models utilizing adolescent- and caregiver-reported outcome measures, though similar with regard to behavior problems, differ considerably with regard to physical health and emotional well-being such that those using adolescent reports suggest a stronger relation between family structure and adolescent well-being than those using caregiver reports.

More than half of all U.S. children spend a portion of their childhood in a single-parent family and approximately one-third spend time living with a social parent (Bumpass and Lu 2000; Manning and Smock 2000).¹ Research suggests that children and adolescents who spend time in these nontraditional family types exhibit lower average levels of well-being during both childhood and adulthood than do those who spend their entire childhood living with both of their biological parents (Amato 2005). Recent investigations examine whether well-being also differs by parental marital status for children living in two-parent families as well as by children's experience of family structure transitions. Findings suggest that children tend to fare better in married families than in cohabiting families (Nelson, Clark, and Acs 2001; Dunifon and Kowaleski-Jones 2002; Manning and Lamb 2003; Brown 2004) and that exposure to family structure transitions explains a considerable portion of the adverse child outcomes associated with residence in a single- or social-parent family (Cavanagh and Huston 2006; Magnuson and Berger 2009).

Yet, several limitations are evident in the extensive literature linking family structure to child and adolescent well-being. First, although there are a multitude of studies on cognitive, educational, behavioral, and socioemotional well-being, relatively few focus on children's physical health (for exceptions, see Angel and Worobey 1988; Dawson 1991; O'Connor, et al. 2000; Harknett 2005; Bramlett and Blumberg 2007; Liu and Heiland 2007). Second, most studies utilize samples of children who reside with their biological mother; these samples allow for comparisons of children living with both biological parents, those living

¹For the purposes of this study, a social parent is defined as a partner who marries or cohabits with the adolescent's biological parent but who is not biologically related to the youth.

with their biological single mother, and those living with their biological mother and a social father, but such studies are unable to examine outcomes and characteristics of those living with their biological father but not their biological mother (for exceptions, see Brown 2004; Hofferth 2006; Manning and Brown 2006; Bramlett and Bloomberg 2007). For example, analyses of data from the Fragile Families and Child Wellbeing Study and the National Longitudinal Survey of Youth are limited to such samples, although both data sets are widely used to study family structure's associations with child outcomes. Third, most studies of family structure's associations with child outcomes only examine outcomes reported by parents, teachers, or adolescents; the authors are aware of no studies that utilize both parent and adolescent reports on similar outcomes.² It may be informative to compare outcome data from adolescents with those from their parents, because parents' perceptions of adolescent well-being may differ from adolescents' own perceptions.

This study uses data from the Panel Study of Income Dynamics (PSID), including the 1997 and 2002 Child Development Supplements (CDS), to examine family structure's associations with physical health, behavior, and emotional well-being among adolescents ages 12–19. Analyses first examine family structure and specifically the type of family in which an adolescent resides. Family structure is defined by whether the family includes a single parent or two parents and, among two-parent families, whether the adolescent is biologically related to each parent. These analyses consider family structure's associations with both caregiver and adolescent reports of the adolescent's concurrent physical health, behavior, and emotional well-being. The primary analyses then explore whether these associations differ by parental marital status as well as by whether the adolescent experienced a family structure transition over the (approximately) 5 years prior to the assessment.

Although the PSID data offer a large, nationally representative sample of American families and include a wide range of physical health, behavior, and emotional well-being measures, these data are underutilized in studies of associations between family structure and child well-being, most likely because the CDS was not introduced until 1997. This current study takes advantage of these rich data; extending Sandra Hofferth's (2006) analyses of associations between family structure and child well-being in the 1997 CDS, the study examines such associations when the children are approximately 5 years older. It also investigates the ways in which adolescent well-being is influenced by changes in family structure during the 5-year interval.

This study builds upon existing research in three additional ways. First, it adds three measures of physical health to the list of commonly studied behavioral and emotional outcomes. Second, the sample includes adolescents who live with their biological father but not with their biological mother. As the discussion notes, most studies focus only on children or adolescents living with their biological mother; yet, families that include children's biological fathers but not their biological mothers are increasingly common (Brown 2000; Kreider 2008). Thus, there is a need for additional investigation into the well-being of adolescents in these families. Finally, this study analyzes both adolescent- and caregiver-reported measures of adolescent functioning. The authors caution that only one of the adolescent-reported measures (that for overall health) is identical to the caregiver-reported measure for that outcome. Because the other adolescent- and caregiver-reported measures are not identical, they are not directly comparable; nonetheless, these analyses may have implications for whether family structure's associations with adolescent well-being are likely to vary by reporter type.

²Studies comparing caregiver and child or adolescent reports of child or adolescent well-being (e.g., Achenbach, McConaughy, and Howell 1987; De Los Reyes and Kazdin 2005) do not examine whether differences in reports vary by family structure.

Background

Conceptual Framework

Parents make direct and indirect investments in their children by providing material resources, engaging in caregiving activities, transferring knowledge, maintaining the home environment, and supplying other social and economic supports (Hewlett 2000). Family structure's links to child and adolescent well-being are thought to operate through three primary mechanisms: the family's access to resources, the quality of parenting and the home environments to which children are exposed, and family stress and parental psychological well-being (Amato 1993, 2005; Carlson and Corcoran 2001). On average, children who grow up in stable two-parent families benefit from greater economic resources, higher quality parenting, closer emotional ties to parents, and fewer stressful events than do children exposed to other family structures or to family structure transitions (Amato 2005). Of course, social selection is also an important consideration in attempting to estimate family structure's associations with child and adolescent well-being. Each of these factors is discussed below.

Two-biological-parent families, particularly those in which the parents are married, tend to have greater access to economic resources than have all other family types (Manning and Lichter 1996; Manning and Brown 2006). In addition to income and assets, these families also have greater resources in such areas as access to health care (Simpson et al. 1997) and the ability to meet children's health-related needs (Heck and Parker 2002). Access to economic resources is associated not only with parents' ability to purchase goods and services for their children but also with parents' psychological well-being as well as the quality of parenting and the home environments that parents provide (McLoyd 1998; Votruba-Drzal 2003).

Differences in the quality of parenting and the home environment may be both indirectly and directly influenced by family structure. For example, the constraints on the time and effort that single mothers can invest in parenting are likely to be more stringent than those faced by two-parent families (Carlson and Corcoran 2001). Social parents may have fewer incentives to invest in children than biological parents do and also may have less parental authority in children's care (Cherlin 1978; Hofferth and Anderson 2003). Each of these factors suggests that the quality of parenting and home environments may be lower for children in single- and social-parent families than for those residing with both of their biological parents. Indeed, the empirical evidence suggests that children in single- and social-parent families receive lower quality parenting and fewer parental investments (Case, Lin, and McLanahan 2000; Case and Paxson 2001; Sandberg and Hofferth 2001; Hofferth and Anderson 2003; Berger 2007).

The children and adults in single- and social-parent families are also likely to face greater levels of stress and parental conflict, as well as lower levels of parental psychological well-being, than those faced in two-biological-parent families. Among single-parent families, these factors may reflect limited access to resources and social support, greater demands on parental time, restricted parental authority, and experience of family structure instability (Heck and Parker 2002; Amato 2005; Cooper et al. 2009; Osborne, Berger, and Magnuson, forthcoming). Furthermore, they are linked with lower levels of parental support, engagement, and warmth (Thomson, Hanson, and McLanahan 1994; Cavanagh 2008), as well as with limited parental attention to children's health and emotional needs (Heck and Parker 2002).

In addition, social selection is an important consideration in attempting to estimate family structure's associations with child outcomes (Foster and Kalil 2007); that is, an individual's

traits are likely to influence whether he or she will engage in stable, ongoing relationships. One's traits thereby affect the type (or types) of family structures his or her children experience as well as the children's subsequent development and well-being. This study adjusts for observable selection factors by controlling for sociodemographic characteristics that are associated with both family structure and child outcomes. Research suggests that adjusting for such factors considerably reduces, but does not fully explain, family structure's associations with child outcomes (Ginther and Pollak 2004; Amato 2005; Aughinbaugh, Pierret, and Rothstein 2005).

Prior Research on Family Structure and Adolescent Outcomes

Differences in adolescent well-being by family structure are widely documented. On the whole, research suggests that adolescents experiencing single- and social-parent families fare worse on a wide range of developmental outcomes than their counterparts in two-biological-parent families (Amato 2005; Wood, Goesling, and Avellar 2007).³ Recent analyses of data from the National Longitudinal Study of Adolescent Health find that single- and social-parent family structure is adversely associated with adolescent delinquency (Manning and Lamb 2003; Brown 2006), depression (Brown 2006; Cavanagh 2008), cognitive skills (Manning and Lamb 2003), school engagement (Brown 2006), school problems (Manning and Lamb 2003), emotional adjustment (Chase-Lansdale, Cherlin, and Kiernan 1995), grade point average (Manning and Lamb 2003), and marijuana use (Cavanagh 2008).

Although research examines most other domains of well-being, few studies of family structure focus on physical health, and the authors know of no study that specifically focuses on adolescent physical health. Results from a handful of studies suggest that, compared to young children living with both of their biological parents, young children living in other family types tend to fare worse on a range of health-related measures (Dawson 1991; O'Connor et al. 2000; Bramlett and Blumberg 2007; Liu and Heiland 2007). Gaining specific knowledge about associations between family structure and adolescent health is important, because many of adolescents' key developmental milestones are assessed in terms of physical activity, physical abilities, and limitations that may substantially affect health-related quality of life (Ness et al. 2008). It is also possible that family structure affects adolescent health differently than it affects the health of young children.

There are several reasons why an adolescent's time in a single- or social-parent family may be adversely associated with his or her physical health. First, economic resources are positively associated with physical health and, as noted above, it is well established that single- and social-parent families are less economically advantaged than two-biological-parent families. Furthermore, analyses by Anne Case, Darren Lubotsky, and Christina Paxson (2002) identify a distinct relationship between household income and child health; they find that this relationship becomes increasingly pronounced as children age. Second, adolescents in single- and social-parent families may also receive fewer health-related investments and potentially less parental supervision than their counterparts in two-biological-parent families. As such, they may have greater exposure to health-related risk factors; so too, they may be more susceptible to illness, accidents, and injury (Angel and Worobey 1988; Case et al. 2000; Case and Paxson 2001). The current analyses add to the existing literature by estimating family structure's associations with concurrent levels of adolescent physical health (as reported by both parents and adolescents). The analyses also consider a wider range of family structures than was possible in many prior studies.

³There are exceptions to this general pattern of association, however. Most notably, parental divorce may have a neutral or even positive influence on the well-being of children and adolescents who were exposed to high levels of parental conflict prior to the parents' break up (Amato and Booth 1997; Hanson 1999; Amato 2000; Booth and Amato 2001; Strohschein 2005).

Marriage

In addition to analyzing differences by family structure (as defined by biological relationships), researchers focus on differences by marriage and cohabitation among two-parent families. Some evidence suggests that parental cohabitation is less advantageous to children than parental marriage. Cohabiting families typically have fewer economic resources (Manning and Lichter 1996) and receive less social support (Eggebeen 2005) than married ones, perhaps because cohabiting partnerships are considerably less stable than marriages (Manning, Smock, and Majumdar 2004; Osborne and McLanahan 2007). So too, cohabiting parents, and particularly cohabiting social parents (Hofferth and Anderson 2003; Hofferth et al. 2007), face greater role ambiguity within the family than married parents do (Brown 2006).⁴ Consistent with these expectations, empirical evidence generally suggests that children and adolescents fare better in married two-biological-parent families than they do in cohabiting-parent families. However, findings are less conclusive concerning social-parent families and tend to differ across outcome measures (Thomson et al. 1994; Manning and Lamb 2003; Brown 2004, 2006; Hofferth 2006; Artis 2007). Studies that focus solely on adolescents generate mixed findings (Manning and Lamb 2003; Brown 2004, 2006). The current analyses add to the empirical research in this area by also estimating models that test whether children's physical health, behavior, and emotional well-being differ by parental marital status among children living in (biological and social) two-parent families.

Family Structure Transitions

Single- and social-parent families may result from processes of parental break-up and repartnering that occur over time. These processes are likely to engender considerable reorganization of family roles, relationships, and functioning (Hetherington 1992; Hetherington 1999). Such reorganization may cause stress for both children and parents (Cavanagh and Huston 2006; Fomby and Cherlin 2007). It also may diminish the quality of parenting that children and adolescents receive (McLanahan and Sandefur 1994; Cavanagh 2008) as well as the resources available for their care (McLanahan and Sandefur 1994; Hanson, McLanahan, and Thomson 1998). As such, family structure transitions may adversely influence child and adolescent well-being (Hanson et al. 1998; DeLeire and Kalil 2002; Cavanagh 2008). Further, the adverse effects of family structure transitions may be cumulative in nature, such that adverse outcomes may compound with the transitions a child or adolescent experiences over time (Cavanagh and Huston 2006; Fomby and Cherlin 2007; Osborne and McLanahan 2007).

Recent research on family structure transitions and adolescent well-being suggests that adolescents who experience transitions exhibit a range of poorer cognitive, behavioral, and socioemotional outcomes than adolescents who consistently reside in stable two-biological-parent families (Manning and Lamb 2003; Brown 2006; Cavanagh 2008). The authors are aware of no studies that directly assess the influence of family structure transitions on adolescent physical health, but studies of both young children and children of all ages find adverse associations (Mauldon 1990; Dawson 1991; Harknett 2005; Liu and Heiland 2007).

Adolescent and Caregiver Reports of Adolescent Health and Well-Being

One advantage of this study is that it is able to estimate family structure's associations with adolescent health and well-being by using outcome measures reported by primary caregivers and those reported by adolescents themselves. This is particularly salient for understanding adolescents' overall physical health, as the adolescent-reported item is identical to the item

⁴In addition, couples may be more likely to cohabit than to marry if they view their relationship as unlikely to last (i.e., if the relationship is of a low quality). In the case of social-parent families, couples may be more likely to cohabit if the social parent is less invested in his or her partner's children or less supportive of the partner's own investments in them (Brown 2006; Berger et al. 2008).

reported by the primary caregiver. There is considerable debate as to whether youth's self-reports or parental proxy reports are the more valid means by which to assess child health. In the measurement of relatively objective aspects of children's health, such as diagnoses, hospital stays, and physical activity, parent reports are found to achieve adequate validity (Canino et al. 2002; Bussing et al. 2003). This is also true of parental recall concerning their children's medical conditions (Daly, Lindgren, and Giebink 1994; Pless and Pless 1995). However, parent reports of adolescent health and well-being, more generally, often differ considerably from adolescents' own reports; these differences call into question the validity of parental proxy reports (Eiser and Morse 2001; Chang and Yeh 2005).

A potential explanation for such differences is that parents have incomplete knowledge of how an adolescent feels, both emotionally and physically, unless the adolescent chooses to communicate this information directly. Likewise, parents may be unable to observe the full range of behaviors in which adolescents engage. Consistent with this proposition, research suggests that parent reports of relatively subjective or internally oriented aspects of adolescent health and well-being, such as anxiety, somatic symptoms, and behavior problems, diverge considerably from adolescent reports on the same aspects (Edelbrock et al. 1986; Achenbach et al. 1987; Tamin, McCusker, and Dendukuri 2002). As such, there is ambiguity about the extent to which parent reports accurately reflect adolescent health and well-being across various domains of assessment. It may therefore be important to assess adolescent well-being via a combination of reporters, particularly if differences between parent and adolescent reports vary systematically by family structure.

Although relatively little research compares parent reports on the health and well-being of their adolescents with reports by those adolescents (for exceptions, see Theunissen et al. 1998; Ravens-Sieberer 1999; Sawyer et al. 1999; Jokovic, Locker, and Guyatt 2004), results from a handful of studies suggest that the level of agreement differs by domain of functioning (Sweeting and West 1998; Jokovic et al. 2004) as well as by adolescent, parent, and family characteristics (Goodman, Hinden, and Khandelwal 2000). Thus, it is unclear whether parental reports are valid indicators through which to assess the true effect of life events or circumstances, including family structure experiences, on adolescent functioning (Sawyer et al. 1999). In particular, it is unclear whether parents' reports can be used to measure internally oriented or subjective aspects of their adolescent's health and well-being. Furthermore, the authors are aware of no studies that examine whether parent and adolescent reports differ by family structure. Yet, the potential for such differences has important implications for the interpretation of family structure's associations with adolescent health and well-being. Although most family structure research utilizes parent reports, self-reported data may be crucial for monitoring adolescents' own perceptions of their subjective experiences over time, as such perceptions are linked to future health trajectories and to the development of illness (Riley 2004). By comparing findings from parent and adolescent reports on multiple domains of adolescent functioning, the current study may provide some (albeit limited) insight into whether such associations differ by reporter and, if so, how.

Method

Data

Data for the current analyses come from the PSID, a longitudinal study that began with a nationally representative sample of 4,800 U.S. families in 1968. Since its inception, the PSID has collected a wide range of data in such areas as employment, income, wealth, housing and food expenditures, family composition, marriage, fertility, and program participation. In 1997 and 2002, the PSID expanded its core survey to include the CDS. Through the CDS, additional data were collected on parenting, family functioning, and time use. It also collected data on the physical health, emotional well-being, and academic

achievement of adolescents, as well as on their social relationships with family and peers. Interviews were conducted with children's primary and secondary caregivers, and their teachers. Children age 8 and older were also interviewed directly. The original CDS sample from 1997 includes 3,563 children between the ages of 0 and 12; the 2002 CDS sample includes 2,907 of the original CDS sample members, who were ages 5–19 in 2002. When weighted, the 2002 CDS sample is nationally representative of children and their families in the United States; the current study applies the sampling weights to all of the analyses (Institute for Social Research 2010).

This study's analytic sample consists of children who were included in both the 1997 and 2002 waves of the CDS, were age 12 or older at the time of their 2002 CDS interview, and lived in the same household with at least one of their biological parents. Data come from interviews with the primary caregivers (PCGs) and the adolescents themselves. The adolescent's biological mother is identified as the PCG in 92 percent of the cases. The PCG in the remaining 8 percent of cases is identified as someone other than the biological mother; in most of those cases, the PCG is the adolescent's biological father or the married or cohabiting partner of the biological father.

Because the sample is limited to adolescents age 12 and older, the analyses are able to consider a wide range of self-reported adolescent outcomes that were not assessed among children younger than age 12. This allows an examination of potential differences between results from adolescents' own reports and those from their PCGs.

Multiple imputation techniques are employed to impute values for all variables with missing data for the full 2002 CDS sample ($N = 2,907$). Specifically, Stata's ICE (Imputation by Chained Equations) program is used to impute 10 complete data sets. From the fully imputed sample of 2,907 are excluded 1,449 children (50 percent) who were under age 12. Also excluded are an additional 697 cases (5 percent) across the 10 imputed data sets (the number of exclusions ranges from 67 to 73 cases per data set). In these cases, the adolescent did not live with either biological parent. The resulting sample includes 13,883 observations across the 10 imputed data sets (the number of observations ranges from 1,385 to 1,391 per data set). Following the strategy outlined by Paul von Hippel (2007), regressions in this study are estimated using only those cases for which no data are missing on the relevant outcome. As such, sample sizes for the empirical models range from 1,137 to 1,391. This variation reflects missing item-level data (ranging from 0 to 18 percent) for the outcome variables.⁵

Measures

Physical health—The analyses utilize one PCG- and two adolescent-reported measures of adolescent physical health. Both the PCG and adolescent are asked to indicate whether the adolescent's overall health is excellent, very good, good, fair, or poor. Responses are dichotomized to indicate whether the adolescent is reported to have good, fair, or poor health (1 = yes); that is, the adolescent is considered to be in low overall health if he or she is reported to have good, fair, or poor health. Such dichotomization is common in the health literature on populations (such as children and adolescents) characterized by relatively little variation in health status.⁶ The measure of physical health symptoms asks adolescents to report how often they experienced each of seven physical problems in the month prior to the interview: feeling sick, tired, and dizzy, and having chest pain, a headache, muscle or joint pain, and a stomach ache. Each item is scored on a six-point scale; possible responses range

⁵On the whole, 42 percent of cases in the sample are missing data on at least one outcome measure or covariate. The regression models include imputed values for one or more covariates in 29–31 percent of observations (depending on the outcome of interest).

from “never” (coded as 1) to “every day” (coded as 6). A composite measure ($\alpha = .65$) represents the mean score across the seven items.

Behavior problems—One PCG- and one adolescent-reported measure are used to examine adolescent behavior problems. Adolescent behavior problems reported by PCGs are assessed by the externalizing behavior problems subscale of the Behavioral Problems Index (BPI; Peterson and Zill 1986). For this measure, PCGs report whether adolescents engage in a series of 17 aggressive behaviors often, sometimes, or never. Responses are dichotomized to indicate whether the adolescent ever engaged in the behavior (1 = yes) and summed to create a total score that ranges from 0 to 17 ($\alpha = .86$). Adolescent-reported behavior problems are assessed by a composite measure that captures youth reports concerning 10 antisocial behaviors: staying out past curfew, physically hurting someone, lying to parents about something important, shoplifting, purposely damaging school property, having parents summoned to school because of inappropriate behavior, skipping school without permission, staying out at night without permission, being stopped and questioned by the police, and being arrested. The composite measure ($\alpha = .74$) is created by summing the number of activities (0–10) in which an adolescent reported engaging one or more times during the 6 months prior to the interview.

Emotional well-being—This study examines adolescent emotional well-being with one measure reported by PCGs and another reported by the adolescents. The PCG-reported measure consists of the internalizing behavior problems subscale of the BPI (Peterson and Zill 1986) and asks PCGs to report on adolescent engagement in 14 withdrawn, anxious, or depressive behaviors. Responses are dichotomized to indicate the presence (1 = yes) or absence of each behavior, and the number of reported behaviors is summed to create a total score that ranges from 0 to 14 points ($\alpha = .83$). This measure technically captures behavior problems, but because it is focused on withdrawn, anxious, and depressive behaviors, this study conceptualizes it as an indicator of adolescent emotional well-being. The adolescent-reported measure of emotional well-being is assessed by the Global Self-Concept subscale (Marsh 1990), which is comprised of six items. These items examine whether the adolescent believes that he or she has a lot to be proud of, is able to do things as well as most people, has a lot of good characteristics, is as good as most people, is perceived as a good person by others, and generally does things well ($\alpha = .82$). Responses to items are scored on a five-point scale and reverse coded, such that higher scores represent a lower self-concept. Scores are used to create a composite measure (1–5 points) that consists of the mean of the six items. To ease the interpretation of the results, the analyses standardize all continuous outcome variables to have a mean of 0 and a standard deviation of 1.

Family structure—The primary analyses code family structure in four distinct categories. These categories indicate whether, at the time of the 2002 CDS assessment, the adolescent is reported by the primary caregiver to live in a two-biological-parent family, a biological-mother and social-father family, a biological-single-mother family, or a biological-father family that does not include the youth's biological mother. Ideally, the last group would be further divided to indicate whether the family includes a single father or whether a social-mother is present. Due to small sample sizes for these family types (single-father families

⁶In the health literature it is standard to group reports of excellent, very good, and good health together, because those who rate themselves in these categories generally experience better long-term health outcomes than do those who rate their health as fair or poor (Sudano and Baker 2006). However, this study combines reports of good, fair, and poor health into a single category, because only 3 percent of PCGs rate adolescents as having fair or poor health, but 16 percent of PCGs rate adolescents as having good, fair, or poor health. Very little variation is observed if analyses use the standard method of dichotomization. Adolescents are considerably more likely to report their own health as good, fair, or poor (32 percent) than are their PCGs.

comprise 2.1 percent of the sample; biological-father and social-mother families comprise 1.4 percent), however, the two are combined into a single category.

Extensions to the primary analyses consider parental marital status within these family types as well as family structure transitions between the 1997 and 2002 CDS assessments. These analyses model three types of stable family structures between the 1997 and 2002 assessments: two-biological-parent families, social-parent families (consisting of either a biological mother and a social father or a biological father and a social mother), and single-parent families (consisting of either a single mother or a single father).⁷ They also model four types of transitions: (1) the adolescent is observed in a single-parent family in 2002 but in a two-biological-parent family in 1997; (2) the youth is reported to live in a single-parent family in 2002 but in a social-parent family in 1997; (3) he or she is observed in a two-biological-parent family in 2002 but in some other family type in 1997; and (4) the adolescent is reported to live in a social-parent family in 2002 but in some other family type in 1997.

Covariates—The study adjusts for two types of covariates. The first type is comprised of antecedent characteristics. These consist of (exogenous) selection factors that may be correlated with both family type and adolescent outcomes. They include a series of dichotomous indicators of whether the adolescent is black or Hispanic (white or other race or ethnicity serves as the reference category) and male, as well as whether the adolescent's birth weight was low and the PCG has less or more than a high school education (those with a high school education serve as the reference category). The antecedent characteristics also include continuous measures of adolescent age and PCG age.

The second type of covariate is comprised of potentially endogenous intervening factors. These covariates include the logarithm of mean family income during the adolescent's lifetime (i.e., from the year of his or her birth through 2001), presented in 2002 dollars; the logarithm of the PCG's average weekly work hours in 2001; the number of children in the household; the proportion of the adolescent's life spent in the same household as his or her biological father; the proportion of the adolescent's life spent in the same household as his or her biological mother; the number of family structure transitions the adolescent experienced between the 1997 and 2002 CDS interviews; an indicator for low PCG health in 2002 (reports of good, fair, or poor health are considered to indicate low overall health); and a continuous measure of PCG psychological distress. Psychological distress among PCGs is measured by the K6 scale of Nonspecific Psychological Distress (Kessler et al. 2003), which is comprised of six items assessing how often the PCG reportedly felt nervous, hopeless, restless, that everything was an effort, so sad that nothing could cheer him or her up, and worthless during the 30 days prior to the interview. Responses are scored on a five-point scale and range from “none of the time” (coded as 0) to “all of the time” (coded as 4). Scores are summed across the six items to create a composite measure ($\alpha = .82$); scores range from 0 to 24, and higher scores indicating greater psychological distress. This measure is standardized to have a mean of 0 and a standard deviation of 1.

Analytic Strategy

The primary analyses consist of a series of three regression models that estimate family structure's associations with PCG and adolescent reports of adolescent physical health, behavior, and emotional well-being. Probit regressions are employed to estimate these associations for the dichotomous measures of low overall health, and ordinary least squares

⁷For the purposes of this analysis, a stable family is one in which the child experiences the same family structure at both time points. This does not necessarily indicate same family composition at both points in time.

regressions are used to estimate these associations for all of the other outcomes. For each outcome, this study estimates three models. Model 1 includes only the family structure indicators as predictors. In model 2, the antecedent characteristics are added. Model 3 includes the family structure predictors, antecedent characteristics, and intervening factors. This strategy allows the authors to assess the influences of an increasingly detailed set of selection factors and potential mediators on the family structure coefficients.

Estimates also consider two extensions to the primary analyses. The first of these reestimates model 3, which includes the full set of covariates. The reestimate uses family structure categories that are further defined by marital status both for two-biological-parent families and for biological-mother and social-father families. These analyses enable an explicit assessment of whether two-parent family structure's associations with each outcome differ by parental marital status. The second of these extensions estimates models that separately examine family structure's associations with the measured outcomes for children who transitioned into particular family structures during the (approximately) 5 years prior to the assessment and those who were in the same family structure at the 1997 and 2002 interviews.

Results

Descriptive Statistics

Table 1 presents descriptive statistics reported for the family structure categories. Approximately 66 percent of the families in the sample include both of the adolescent's biological parents; just over 62 percent include both of the adolescent's married biological parents, and slightly more than 3 percent of the families include his or her cohabiting biological parents. Biological-mother and social-father families account for about 8 percent of the sample (7 percent are married, and 1 percent are cohabiting). Single-mother families represent approximately 23 percent of the sample, and about 4 percent of sampled families are said to include the adolescent's biological father but not his or her biological mother.

The bottom panel of the table 1 focuses on family structure stability and change between the 1997 and 2002 waves of the CDS. The vast majority of adolescents (83 percent) are observed in the same family structure at both time points, and this consistency is particularly prevalent among those who lived with both of their biological parents. However, some family transition is reported across the two time points for approximately 17 percent of sampled adolescents; between the 1997 and 2002 interviews, about 9 percent transitioned into a single-parent family, 3 percent transitioned into a two-biological-parent family, and 5 percent transitioned into a social-parent family.

Table 2 presents mean statistics for the PCG- and adolescent-reported outcome variables by family structure in 2002. As the raw data suggest, PCGs across all family types are considerably less likely to report that adolescents have low overall health than are the adolescents themselves. So too, scrutiny of patterns by family type reveals additional differences between reports by PCGs and those by adolescents. Specifically, the results from the PCG-reported measure suggest that low overall health is more likely among adolescents in single-mother families than among those in two-biological-parent families or among those in families that include a biological father but not a biological mother. By contrast, adolescents in two-biological-parent families are estimated to be in better overall health than are those in all other family types; those adolescents are statistically significantly less likely to report low overall health than are their counterparts in the other family types. In addition, adolescents in both single-mother families and families with the biological father but not biological mother present report experiencing the measured physical health symptoms much more frequently than do those in two-biological-parent families.

The analysis of behavior problems identifies similar differences. Estimates from PCG reports suggest that adolescents in all other family types exhibit more externalizing behavior problems than do youth in two-biological-parent families. So too, the estimates indicate that adolescents in single-mother families and those in families with both a biological-mother and a social-father report more antisocial behaviors than do youth in two-biological-parent families. Finally, analysis of data from the emotional well-being measures suggests that the number of PCG-reported internalizing behavior problems is higher among adolescents in all other family types than among those in two-biological-parent families; the estimates also suggest that adolescent-reported self-concept is lower among youth in single-mother families and in families with the biological father but not biological mother present than among those in two-biological-parent families. In short, the raw data suggest that adolescents in other family types fare worse than those in two-biological-parent families on most outcomes, although these differences are not always statistically significant and there are a few exceptions.

As described above, the various family types are also likely to differ systematically in terms of their antecedent characteristics (selection factors) as well as a range of intervening factors. Indeed, descriptive statistics (see Appendix table A1) suggest that black youth are more likely to live in other family types than in families with both of their biological parents. Youth in the other family types are estimated to experience lower levels of family income and to be in the care of PCGs who work a greater numbers of hours. The estimates also identify differences across family types in terms of PCG age, education, health, and psychological distress, as well as in the number of children in the household. Finally, the family types are estimated to differ in the average proportion of the adolescent's life spent with each parent and in the number of family structure transitions experienced. The models for which results are presented below estimate a series of regressions that take such differences into account.

Regression Results

Primary models—Table 3 presents the primary regression results for this study. Model 1 regresses the measured outcomes on the full set of family structure indicators but does not include any control variables. Model 2 adds the antecedent characteristics to these analyses, and model 3 includes the antecedent characteristics as well as the intervening factors. The reference category in all models is the two-biological-parent family.

Consistent with estimates from the raw data, results from model 1 generally suggest that, across the full range of PCG- and adolescent-reported outcomes, adolescents in all other family types tend to fair worse than those in two-biological-parent families, although a few of these estimates, most typically those for the mother and social-father family type, produce results that are statistically nonsignificant or only marginally significant. Results from model 2 are highly consistent with those from model 1 across the full range of outcomes. This consistency suggests that the antecedent characteristics explain few of the differences in health, behavior, and emotional well-being among adolescents in the various family types. The inclusion of intervening factors in model 3 has a limited influence on the family structure estimates for the health outcomes. The extent of that influence differs somewhat in results for the PCG- and adolescent-reported measures; however, their inclusion exerts a considerable influence on the family type estimates for behavior problems (externalizing problems and antisocial behaviors) and emotional well-being (internalizing problems and low self-concept); that influence operates relatively consistently regardless of whether the PCG or the adolescent reports the outcome.

The estimates for PCG-reported low overall health suggest that the coefficients for biological-mother and social-father families and those for single-mother families are

attenuated considerably and reduced to statistical nonsignificance if the intervening factors are added, but their influence increases the magnitude of the coefficient for low overall health among adolescents in families that include a biological father but no mother, and that coefficient becomes significant. These results suggest that, if intervening factors are considered, PCGs are 9 percentage points less likely to report low overall health among youth in this family type than among those in a two-biological-parent family. The results for the adolescent-reported version of this outcome are strikingly different; adding the intervening factors increases the size of the coefficient for each of the family types, and each coefficient is estimated to be statistically significant. Results from this full model (model 3) suggest that the likelihood of reporting low overall health is 33 percentage points higher among adolescents in biological mother and social-father families, 21 points higher among youth in single-mother families, and 30 points higher among those in families with the biological father but not the biological mother present, than among adolescents in two-biological-parent families. Moreover, estimates for the measure of physical health symptoms indicate that these symptoms occur .30 standard deviation units more frequently among adolescents in single-mother families and .57 standard deviation units more frequently among those in families with the biological father but not biological mother than among youth in two-biological-parent families.

Model 3's estimates for behavior problems reveal that most differences by family type are explained by intervening factors. This is true of estimates for both the PCG- and adolescent-reported measure. Indeed, the behavior problems coefficients (externalizing and antisocial behaviors) for each of the family types in model 2 are quite large (ranging from .26 to .52 SDs) and statistically significant. In model 3, however, each of these coefficients is reduced to statistical nonsignificance. The exception is the estimate for PCG-reported externalizing behavior problems among youth in biological mother and social-father families. Externalizing behavior problems are .38 standard deviation units higher among adolescents in this family type than among those in two-biological-parent families.

Finally, estimates for the measure of emotional well-being suggest that the inclusion of the intervening factors fully explains associations between family type and the PCG reported internalizing behavior problems measure, but the inclusion of the factors does little to explain these associations for the adolescent-reported measure of low self-concept. As in model 2, the model 3 estimates suggest that self-concept is .51 standard deviation units lower among adolescents in single-mother families and .67 standard deviation units lower among adolescents in families with the biological father but not biological mother present (than among youth in two-parent-biological families).

Extension 1: marriage—The top panel of table 4 presents results from analyses that estimate the full model (model 3) and define family structure to include parental marital status. The results suggest that most of the outcomes do not differ to a statistically significant degree by marital status, but there is one exception; the measure of PCG-reported internalizing behavior problems is .36 standard deviation units higher among adolescents living with their cohabiting biological parents than among those living with their married biological parents. Caution is warranted, however, because small cell sizes likely limit the precision of the estimates for this set of analyses (cohabiting-biological-parent families make up only 3.4 percent of the sample; cohabiting biological-mother and social-father families only represent 1.2 percent). Also, the magnitude of the coefficients for the married and cohabiting groups differs for several outcomes, and some of those differences are considerable. As such, the authors read these results as inconclusive.

Extension 2: stability and transitions—The bottom panel of table 4 presents results from an examination of family structure stability (the youth's family type remains the same

in both waves) and transitions (the youth's family type differs at the two waves). The estimates suggest that, on all but one measure, adolescents in a stable social-parent family at both the 1997 and 2002 waves fare relatively similarly to adolescents in a stable two-biological-parent family during that time period; the exception is the result for the measure of adolescent-reported self-concept among youth in a stable social-parent family structure. Self-concept is estimated to be .61 SDs lower among these youth than among their counterparts in the reference group. Results from the PCG-reported measure of overall health suggest that adolescents in a stable single-parent family are 10 percentage points less likely than those in the reference group to be in low overall health, but results from the adolescent-reported measure indicate that youth in stable single-parent families are 28 percentage points more likely to be in low overall health. Youth in those families also are estimated to have more frequent self-reported physical health symptoms ($SD = .52$) than their counterparts in stable two-biological-parent families. With regard to the other outcomes, adolescents in stable single-mother families are estimated to have more PCG-reported externalizing behavior problems ($SD = .52$) than youth in the reference group, but they do not differ from those in the reference group on any other measure.

The results for the family structure transitions identify consistent evidence of adverse outcomes for adolescents transitioning from a two-biological-parent family to a single-parent family. This is the case on all measures except those for PCG-reported low overall health and adolescent-reported antisocial behaviors. There is little consistent evidence concerning other types of transitions. For example, transitioning to a social-parent family is estimated to be positively associated with adolescent-reported low overall health and with PCG-reported externalizing behavior problems. Transitioning from a social-parent family to a single-parent family and transitioning into a two-biological-parent family are estimated to be negatively associated with PCG reports that an adolescent is in low overall health. However, the estimates identify no other statistically significant associations of family structure transitions with the outcomes.

One concern about these analyses is that small cell sizes for many of the transition categories may not provide the statistical power needed to detect effects. Therefore, an alternative set of models was estimated in which family structure transitions were defined simply by whether a parent (biological or social) entered or exited the household. These alternative estimates (results not shown) suggest that gaining a parent is positively associated with levels of adolescent-reported low overall health as well as with PCG-reported internalizing and externalizing behavior problems; losing a parent is positively associated with adolescent-reported low overall health, physical health symptoms, and low self-concept, as well as with PCG-reported internalizing and externalizing behavior problems. Thus, the alternative models' results for losing a parent mirror perfectly those for the transition to a single-parent family, and the alternative estimates for gaining a parent largely mirror those for the transition into a social-parent family (the exception to this trend is the finding that, in the alternative estimates, the transition to a social-parent family is not statistically significantly associated with internalizing behavior problems).

Discussion

This study's analyses take advantage of the rich PSID-CDS data, which have been underutilized in the study of family structure's associations with adolescent outcomes. Prior work repeatedly finds that single-mother as well as biological-mother and social-father family types are associated with adverse outcomes for youth. Such findings also show that these associations can be substantially, but not fully, explained by antecedent characteristics and intervening factors (Amato 2005); the current study's findings are consistent with previous research in this regard. On the whole, this study finds that adolescents in most other

family types have poorer outcomes than those living with both of their biological parents. Notably, however, the results suggest that there is considerable variation in the size and statistical significance of these associations by particular family type and by reporter (adolescents or PCGs).

Extensions to the primary analyses focus on marriage and family structure transitions. Few studies consider the ways in which parental marital status influences the well-being of both adolescents living in two-biological-parent families and of those living with a social parent; the findings of those studies are inconsistent (Manning and Lamb 2003; Brown 2004, 2006). The current study's results provide little evidence that adolescent well-being differs by parental marital status for either biological- or social-parent families. The authors caution, however, that these results are best interpreted as inconclusive, because the sample is small and there are substantial differences in the magnitude of the coefficients for married and cohabiting families. The results for family structure transitions are generally consistent with prior work (Manning and Lamb 2003; Brown 2006; Cavanagh 2008); transitioning from a two-biological-parent family to a single-parent family is found to be associated with adverse outcomes in most domains. However, there is little evidence of adverse associations for other types of transitions.

An important contribution of this work is that it estimates associations between family structure and adolescent physical health, which has received considerably less attention than the behavioral and emotional outcomes. The authors know of no study that focuses specifically on adolescent physical health, and only a handful of studies focus generally on child physical health. The current study's findings are consistent with those for children (Dawson 1991; O'Connor et al. 2000; Bramlett and Blumberg 2007; Liu and Heiland 2007). This analysis of adolescent-reported measures of physical health finds that the health outcomes of adolescents residing with both of their biological parents are better than those for adolescents in all other family types (differences between adolescent and PCG reports are discussed below).

Specifically, adolescents in biological-mother and social-father families, single-mother families, and families that include the biological father but not the biological mother are found to be more likely to report low overall health than are those in two-biological-parent families, even after the model adjusts for the full set of antecedent and intervening factors. So too, the number of reported physical health problems is found to be greater among adolescents in single-parent families and those that include the biological father but not the mother than among youth in two-biological-parent families. Additionally, both transitioning from a two-biological-parent family to a single-parent family and transitioning into a social-parent family are found to be associated with a decline in overall health, and the former transition is also associated with an increase in the measured physical health symptoms. These findings may reflect that adolescents experiencing such family structures or transitions receive fewer health-related investments, are monitored and supervised less by parents, or experience greater exposure to health-related risk factors relative to adolescents who consistently live with their biological parents (Angel and Worobey 1988; Case et al. 2000; Case and Paxson 2001). Each of these possibilities may leave youth more susceptible to illness, accidents, and injury than their counterparts in two-biological-parent families. Testing these mechanisms, however, is beyond the scope of this study and should be the subject of future research.

A second advantage of this study is that the sample includes adolescents living with their biological father but not their biological mother. Few studies examine this increasingly common living arrangement. Results from models that adjust only for antecedent characteristics suggest that this family type is adversely associated with all of the outcomes

except PCG-reported low overall health. Indeed, the adverse associations for adolescents living in this family type are quite similar to those for children living with their single mother; however, families of this type are likely to represent a select group. The findings of statistically significant associations with adolescent-reported low overall health, physical health symptoms, and low self-concept, even in models that adjust for the intervening factors, suggests that at least some of these adverse associations cannot be fully explained by such factors as income and prior family instability. Similar findings emerge from the few existing studies that include children living with their biological father but not biological mother. Susan Brown (2004) and Hofferth (2006) find that such children have more behavioral and emotional problems than those living with both of their biological parents; Matthew Bramlett and Stephen Blumberg (2007) find poorer physical and mental health among children in families that include the biological father but not the mother (only Brown [2004] provides estimates specific to adolescents). Additional research in this area is also warranted because very little is known about father-only families and how that family type influences child development.

A third contribution of this study is that it provides estimates for both PCG- and adolescent-reported outcomes in multiple domains of well-being. The results for overall physical health, the only measure assessed identically across reporters, provide consistent evidence that associations between family structure and adolescent well-being are sensitive to whether the report comes from the adolescent or the PCG. For example, results from the model adjusted for the full set of antecedent characteristics and intervening factors suggest that PCG-reported overall health is not adversely associated with any of the family types. Conversely, families with the father but not the mother present are found to be positively associated with overall health. Yet, results from the model using the adolescent-reported measure suggest that overall health is poorer among youth in all other family types than among those in two-biological-parent families. This finding is reinforced by the results for the adolescent-reported measure of physical health symptoms. With regard to the other domains of well-being, the findings suggest that results for the PCG-reported measure of externalizing behavior problems are relatively consistent with those for the adolescent-reported measure of antisocial behaviors, but results for the PCG-reported measure of internalizing behavior problems are less consistent with those for adolescent-reported low self-concept. This study finds that adolescents in other family types are considerably more likely to report low self-concept than are those in two-biological-parent families, whereas PCG-reported internalizing behavior problems do not differ by family type.

That results based on adolescent and PCG reports diverge with regard to physical health and emotional well-being implies that caregiver perceptions in these domains differ from those of adolescents. A potential explanation may be that caregivers lack the information needed to accurately make such assessments in these areas. It is possible that PCG and adolescent reports differ more in these domains than in externalizing or antisocial behavior problems because measures of physical health and emotional well-being are more subjective in nature and, potentially, more difficult for PCGs to observe. Prior research documents that parent and adolescent reports of adolescent well-being often differ for such outcomes (Edelbrock et al. 1986; Achenbach et al. 1987; Sawyer et al. 1999; Chang and Yeh 2005). Nonetheless, PCG- and adolescent-reported measures for problem behavior and emotional well-being, though assessing well-being within the same domains, are not identical; similarities or differences by reporter may simply reflect similarities or differences in the measures themselves. At the very least, however, these findings suggest the need for future research with large-scale survey data that include identical measures of multiple domains of health and well-being. Those data should capture reports from both adolescents and their caregivers.⁸

This study has several limitations that merit consideration. First, the PCG- and adolescent-reported measures are not identical, except for those on overall health. The use of dissimilar measures precludes direct comparison. Second, the analyses control for a range of antecedent characteristics and intervening factors, but omitted variable bias is always a concern in observational studies. Unfortunately, the study is unable to take full advantage of the longitudinal nature of the PSID, because the 1997 and 2002 waves of the CDS were conducted 5 years apart and relatively few of this study's outcome measures utilize data collected in 1997. However, the analyses do control for the proportion of an adolescent's life spent with each parent and for the extent of his or her exposure to family instability. Nonetheless, these results are like those of all existing family structure studies, in that they identify associations but do not lend themselves to causal interpretation.

Third, the extensions to the primary analyses investigate the role of marriage and family structure transitions, but small cell sizes may limit the precision of the estimates. An attempt is made to address this problem in the transitions models by estimating supplemental analyses that combine the full set of transitions into two categories (gain a parent or lose a parent); results largely mimic those produced by the primary transitions model.

Fourth, there is likely to be considerable heterogeneity in associations between family structure and adolescent well-being, but this heterogeneity may be masked in the current analyses. Indeed, prior work finds that these associations sometimes differ by race, ethnicity, child age, child gender, whether children coreside with grandparents, and levels of family conflict (Hetherington 1992; Hill, Yeung, and Duncan 2001; DeLeire and Kalil 2002; Dunifon and Kowaleski-Jones 2002; Foster and Kalil 2007). The already limited sizes of cells for many of the analyses prevent exploration of these possibilities with these data, but the authors recognize that they will be important in future work.

Finally, like most studies in this area, this investigation uses two-biological-parent families as the reference group, but family demography has changed over the past half century, and children are increasingly less likely to experience this family type throughout their entire childhood. The authors also conducted tests of the equality of the coefficients across the other family types and found very few differences. Thus, although the outcomes of adolescents in stable (married) two-biological-parent families differ from the outcomes of youth in most other family types, the authors emphasize that adolescents appear to fare similarly well across the other family types.

Conclusion

The findings highlight important differences in adolescent health and well-being by family structure. They add to the existing literature by including families in which adolescents reside with their biological father but not their biological mother. This family type is found to be adversely associated with child health and well-being, and such associations are quite similar to those found for single-mother families. The findings also suggest that estimates of family structure's associations with physical health (and, potentially, with emotional well-being) differ by whether the adolescent or the PCG reports the outcome. This insight highlights the importance of also collecting data on perceived well-being from adolescents themselves, rather than relying solely on caregiver reports. Future research could benefit from additional comparisons of caregiver and adolescent reports. By using identical well-being measures and longitudinal data, such comparisons could provide insight into whether a particular type of report better predicts adolescents' future functioning.

⁸It is also possible that reports may differ by PCG gender.

On the whole, these findings concur with prior research in suggesting that adolescents in two-biological-parent families tend to fare better than those in other family types. They also suggest that these associations cannot be fully explained by antecedent characteristics or intervening factors. Therefore, it may be possible to help promote adolescent well-being by adopting policies to support and preserve families in which adolescents live with both of their biological parents. The findings do not easily lend themselves to a discussion of implications for policies with regard to other family types. However, the study does not fully explore the potential mechanisms through which family structure and adolescent well-being are thought to be linked. The success of policies intended to promote well-being for adolescents in single- and social-parent families may depend on whether and how the efforts are related to such mechanisms, which likely include access to resources, the quality of parenting and the home environments to which children are exposed, family stress, and the psychological well-being of parents (McLanahan and Bumpass 1988; Amato 1993, 2005; Aquilino 1996; Carlson and Corcoran 2001; Thomson et al. 2001). Future work would benefit greatly from an exploration of these mechanisms.

Appendix

Table A1: Descriptive Statistics for Covariates by Family Structure

	Two-Biological-Parent Family	Mother and Social-Father Family	Single-Mother Family	Father But not Mother Present
Antecedent characteristics:				
Black (%)	.09	.13	.38 ^{a,b}	.21 ^c
Hispanic (%)	.14	.05 ^a	.13 ^b	.08
Adolescent age	15.23 (.95)	15.82 ^a (.07)	15.50 (.05)	15.19 (.08)
Adolescent is male (%)	.48	.46	.53	.59
Low birth weight (%)	.05	.04	.05	.12
PCG age	41.59 (.08)	38.56 ^a (.23)	40.58 ^b (.15)	44.96 ^{b,c} (.63)
PCG less than high school (%)	.16	.20	.22	.24
PCG more than high school (%)	.53	.49	.40 ^a	.54
Intervening factors:				
LN mean income during the adolescent's life	10.98 (.01)	10.66 ^a (.02)	10.31 ^{a,b} (.01)	10.77 ^c (.03)
LN PCG work hours	2.78 (.02)	2.91 (.52)	3.11 ^a (.02)	3.16 (.09)
No. of children in HH	2.39 (.02)	2.65 (.09)	2.26 (.03)	1.91 ^{a,b} (.07)
Proportion of life in HH with father	.98 (.00)	.45 ^a (.01)	.55 ^{a,b} (.01)	.92 ^{a,b,c} (.01)
Proportion of life in HH with mother	.99 (.00)	.89 ^a (.01)	.86 ^a (.01)	.67 ^{a,b,c} (.02)
No. of family structure transitions, 1997–2002	.06 (.00)	.66 ^a (.02)	1.86 ^{a,b} (.01)	1.23 ^{a,b,c} (.05)
Low overall PCG health (%)	.38	.35	.55 ^{a,b}	.35 ^c
PCG psychological distress (z-score)	−.08 (.01)	.17 (.04)	.21 ^a (.02)	.02 (.04)

	Two-Biological-Parent Family	Mother and Social-Father Family	Single-Mother Family	Father But not Mother Present
Total obs. across 10 imputed data sets	7,905	1,132	4,238	608
Range of obs. across imputed data sets	787–95	111–19	418–28	60–63

Note.—PCG = primary caregiver; LN = logarithm; HH = household; obs. = observations. 13,883 observations with non-missing data on at least one outcome measure across 10 imputed data sets (1,385–91 observations per data set). Means (and standard deviations) presented for continuous outcomes; percentages presented for dichotomous outcomes.

^aStatistically significantly different from two-biological-parent family at $p < .05$.

^bStatistically significantly different from mother and social-father family at $p < .05$.

^cStatistically significantly different from single-mother family at $p < .05$.

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Table 1
Descriptive Statistics for Family Structure

	%
Family structure in 2002:	
Two-biological-parent family	65.65
Married	62.29
Cohabiting	3.36
Mother and social-father family	7.98
Married	6.75
Cohabiting	1.23
Single-mother family	22.85
Father but not mother present	3.51
Father and social-mother family	1.39
Single-father family	2.12
Family structure stability and transitions between 1997 and 2002:	
Stable family structure between 1997 and 2002	82.89
Two-biological-parent family in both 1997 and 2002	62.90
Social-parent family in both 1997 and 2002	3.96
Single-parent family in both 1997 and 2002	16.21
Family structure transition between 1997 and 2002	16.91
To single-parent family between 1997 and 2002	8.76
Two-biological-parent family in 1997, single-parent family in 2002	6.21
Social-parent family in 1997, single-parent family in 2002	1.99
Adoptive parent or no parent family in 1997, single-parent family in 2002	.56
To two-biological parent family between 1997 and 2002	2.74
Single-parent family in 1997, two-biological-parent family in 2002	2.09
Social-parent family in 1997, two-biological-parent family in 2002	.54
Adoptive parent or no parent family in 1997, two-biological-parent family in 2002	.11
To social-parent family between 1997 and 2002	5.41
Single-parent family in 1997, social-parent family in 2002	3.92
Two-biological-parent family in 1997, social-parent family in 2002	1.46
Adoptive parent or no parent family in 1997, social-parent family in 2002	.03

Note.—13,883 observations with nonmissing data on at least one outcome measure across 10 imputed data sets (1,385–91 observations per data set). Figures may not sum to 100 percent due to rounding.

Table 2
Descriptive Statistics for Outcome Variables by Family Structure in 2002

	Two-Biological-Parent Family		Mother and Social-Father Family		Single-Mother Family		Father but Not Mother Present	
	M or %	SD	M or %	SD	M or %	SD	M or %	SD
Health:								
Low overall health, PCG ($n = 13,883$; 1,385–91; %)	.13		.22		.25 ^a		.08 ^b	
Low overall health, AD ($n = 12,299$; 1,228–32; %)	.28		.44 ^a		.38 ^a		.51 ^a	
Physical health symptoms, AD ($n = 12,369$; 1,235–39)	–.06	.88	.10	1.19	.18 ^a	1.05	.36 ^a	1.10
Behavior:								
Externalizing behavior problems, PCG ($n = 13,823$; 1,379–85)	–.16	.92	.38 ^a	1.07	.27 ^a	1.07	.30 ^a	.92
Antisocial behaviors, AD ($n = 11,380$; 1,137–39)	–.14	.97	.24 ^a	1.11	.17 ^a	1.02	.12	.93
Emotional well-being:								
Internalizing behavior problems, PCG ($n = 13,753$; 1,372–78)	–.04	.95	.30 ^a	1.15	.29 ^a	1.19	.39 ^a	1.03
Low self-concept, AD ($n = 12,269$; 1,225–29)	.01	.95	.14	1.12	.28 ^a	1.09	.52 ^a	1.04
Total obs. across 10 imputed data sets	7,905		1,132		4,238		608	
Range of obs. across imputed data sets	787–95		110–19		418–28		60–63	

Note.—PCG = primary caregiver report; AD = adolescent report; obs = observations. Means and standard deviations are presented for continuous outcomes; percentages are presented for dichotomous outcomes. Continuous outcomes have been standardized to have a mean of 0 and a standard deviation of 1. The sample size for each outcome represents the number of observations with nonmissing data on that measure. The first figure listed represents the total number of observations across the 10 imputed data sets; the second figures represent the range of observations across the 10 imputed data sets.

^aStatistically significantly different from two-biological-parent family at $p < .05$.

^bStatistically significantly different from single-mother family at $p < .05$.

Table 3

Regression Results

	OLS Models					
	Low Overall Health (Probit)		Phys. Health Symptoms		Ext. Behavior Problems	
	PCG	AD	(AD)	(PCG)	(AD)	(PCG)
Model 1 (no controls):						
Mother and social-father family	.10 ⁺ (.06)	.16 ⁺ (.08)	.15 (.18)	.54 ^{***} (.15)	.38 [*] (.18)	.34 ⁺ (.18)
Single-mother family	.13 ^{***} (.04)	.10 [*] (.05)	.24 ^{**} (.10)	.43 ^{***} (.09)	.31 ^{***} (.10)	.32 ^{**} (.11)
Father but not mother present	-.06 ^b (.06)	.23 [*] (.09)	.41 [*] (.19)	.46 ^{**} (.17)	.26 (.17)	.43 [*] (.18)
Model 2 (antecedent characteristics):						
Mother and social-father family	.11 ⁺ (.06)	.16 ⁺ (.09)	.16 (.18)	.52 ^{***} (.14)	.33 ⁺ (.19)	.35 [*] (.17)
Single-mother family	.12 ^{**} (.04)	.10 [*] (.05)	.34 ^{***} (.10)	.42 ^{***} (.10)	.26 [*] (.11)	.40 ^{**} (.11)
Father but not mother present	-.06 ^{a,b} (.05)	.26 ^{**} (.10)	.47 [*] (.19)	.47 ^{**} (.17)	.29 ⁺ (.18)	.48 ^{**} (.18)
Model 3 (antecedent characteristics and intervening factors):						
Mother and social-father family	.08 (.08)	.33 ^{***} (.10)	.08 (.22)	.38 [*] (.19)	.31 (.26)	.19 (.20)
Single-mother family	.04 (.07)	.21 [*] (.11)	.30 ⁺ (.18)	.16 (.19)	.09 (.21)	.14 (.18)
Father but not mother present	-.09 ^{a,d} (.04)	.30 [*] (.14)	.57 [*] (.27)	.28 (.23)	.26 (.23)	.31 (.23)
Total obs. across 10 imputed data sets	13,883	12,289	12,369	13,823	11,380	13,753
Range of obs. across imputed data sets	1,385-91	1,228-32	1,235-39	1,379-85	1,137-39	1,372-78
						1,225-29

Note.—PCG = primary caregiver; AD = adolescent report; OLS = ordinary least squares regression; Phys. = physical; Ext. = externalizing; Beh. = behavior; Int. = internalizing; obs = observations.

Marginal effects (and standard errors) presented for probit regressions; coefficients (and standard errors) presented for OLS regressions. Standard errors have been corrected for intraclass correlation in the error terms for multiple children observed in the same household. Continuous outcomes have been standardized to have a mean of 0 and a standard deviation of 1. The antecedent characteristics and intervening factors are listed in Appendix table A1. Two-parent-biological families serve as the reference category for all models.

^a Statistically significantly different from mother and social-father family at $p < .05$.

^b Statistically significantly different from single-mother family at $p < .05$.

⁺ $p < .10$;

$p < .05$; *
 $p < .01$; **
 $p < .001$; ***

Table 4

Extensions

	OLS					
	Low Overall Health (Probit)		Phys. Health Symptoms		Antisocial Behaviors	
	PCG	AD	(AD)	(PCG)	(AD)	(PCG)
Marriage: model 3 (antecedent characteristics and intervening factors):						
Biological parents, cohabiting	.11 (.09)	.14 (.12)	-.08 (.24)	.25 (.24)	.19 (.28)	.36 ⁺ (.21)
Mother and social father married	.11 (.09)	.34 ^{**} (.10)	.03 (.23)	.43 [*] (.20)	.37 (.27)	.21 (.21)
Mother and social father cohabiting	.08 (.16)	.41 ⁺ (.22)	.36 (.49)	.29 (.39)	.10 (.38)	.44 (.43)
Single-mother family	.08 (.08)	.26 [*] (.11)	.31 (.20)	.22 (.20)	.12 (.23)	.26 (.18)
Father but not mother present	-.08 (.05)	.33 [*] (.13)	.58 (.26)	.32 (.23)	.28 (.23)	.40 ⁺ (.23)
Stability and transitions: model 3 (antecedent characteristics and intervening factors):						
Social-parent family in 1997 and 2002	-.00 (.08)	.17 (.14)	.22 (.28)	.31 (.23)	.25 (.28)	-.04 (.25)
Single-parent family in 1997 and 2002	-.10 ⁺ (.05)	.28 [*] (.13)	.52 [*] (.25)	.52 [*] (.25)	-.01 (.24)	.32 (.27)
Two-biological-parent to single-parent	-.01 (.07)	.34 ^{**} (.11)	.49 [*] (.22)	.44 [*] (.18)	.11 (.21)	.44 [*] (.19)
Social-parent to single-parent	-.10 ^{**} (.04)	.21 (.18)	.20 (.33)	.18 (.27)	.28 (.27)	-.05 (.36)
Adopted or no parent to single-parent	.14 (.22)	-.18 (.22)	.47 (.47)	1.05 (1.01)	.08 (.75)	.35 (.64)
To two-biological-parent family	-.11 [*] (.05)	.05 (.15)	.28 (.23)	.44 (.29)	-.20 (.24)	.24 (.22)
To social-parent family	-.04 (.06)	.42 ^{***} (.12)	.21 (.27)	.63 ^{**} (.22)	.22 (.32)	.41 (.26)
Total obs. across 10 imputed data sets	13,883	12,289	12,369	13,823	11,380	13,753
Range of obs. across imputed data sets	1,385–91	1,228–32	1,235–39	1,379–85	1,137–39	1,372–78
						1,225–29

Note.—PCG = primary caregiver; AD = adolescent report; OLS = ordinary least squares regression; Phys. = physical; Ext. = externalizing; Beh. = behavior; Int. = internalizing; obs = observations.

Marginal effects (and standard errors) presented for probit regressions; coefficients (and standard errors) presented for OLS regressions. Standard errors have been corrected for intraclass correlation in the error terms for multiple children observed in the same household. Continuous outcomes have been standardized to have a mean of 0 and a standard deviation of 1. The antecedent characteristics and intervening factors are listed in Appendix table A1. The group two biological parents, married, serves as the reference category for the marriage models; the reference category for the transitions models is comprised of those in the group two-biological-parent family in 1997 and 2002.

⁺ $p < .10$;

$p < .05$; *
 $p < .01$; **
 $p < .001$; ***