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The Younger Siblings of Childbearing Adolescents: Parenting Influences on Their Academic and Social-Emotional Adjustment

Nina C. Chien and

Child Trends, 4301 Connecticut Ave NW, Suite 350, Washington, DC 20008, USA

Patricia L. East

Department of Pediatrics, University of California, San Diego, 9500 Gilman Drive # 0927, La Jolla, CA 92093-0927, USA

Nina C. Chien: nchien@childtrends.org; Patricia L. East: peast@ucsd.edu

Abstract

The younger siblings of childbearing adolescents have poorer school outcomes and exhibit more internalizing and externalizing problems compared to their peers without a childbearing sister. We test a model where living with an adolescent childbearing sister constitutes a major family stressor that disrupts mothers' parenting and well-being, and through which, adversely affect youths' adjustment. Data came from 243 Latino younger siblings (62% female, *M* age 13.7 years) and their mothers, 121 of whom lived with a childbearing adolescent sister and 122 of whom did not. Individual fixed-effects models controlled for earlier measures of each respective model construct, thereby reducing omitted variable bias from pre-existing group differences. Results show that, for boys, the relationship between living with a childbearing adolescent sister and youth outcomes was sequentially mediated through mothers' stress and parenting (i.e., monitoring and nurturance). For girls, however, the relationship was mediated through mothers' monitoring only. Findings elucidate the within-family processes that contribute to the problematic outcomes of youth living with childbearing adolescent older sisters.

Keywords

Adolescent pregnancy; Maternal stress; Monitoring; Nurturance; Parenting; Siblings; Individual fixed-effects; Adolescent outcomes

Introduction

That the younger siblings of childbearing adolescents are at greater risk of early pregnancy and parenting is well established (Cox et al. 1993; East and Jacobson 2001; East et al. 2007). The younger siblings of childbearing adolescents are also known to have poorer school outcomes and higher levels of behavior problems than their peers who do not have an adolescent childbearing sister (e.g., East 1996a). With regard to school outcomes, the younger siblings of childbearing adolescents have more pessimistic school aspirations and place less importance on school (East 1996b). With regard to behavior problems, the younger siblings of adolescent parents have higher rates of truancy, school suspensions, and drug and alcohol use, and engage in more frequent delinquent and partying behaviors (East

and Jacobson 2001). Thus, the younger siblings of childbearing adolescents have been consistently shown to exhibit widespread problematic functioning.

Why might the younger siblings of adolescent parents exhibit poorer adjustment? These youth share the same environments with their older sisters, including similar parenting practices and neighborhood characteristics, which could expose younger siblings to the same risks as the older sister for problematic adjustment. But the older sister's childbearing may itself also bring about changes in her mother's mental health and parenting practices, which, in turn, could impact siblings' development (East 1998). This latter process—mothers' mental health and parenting as affected by the older sister's childbearing—is the focus of the present study.

An adolescent's childbearing might alter her siblings' adjustment, for example, by creating significant stress for her mother, which then diminishes her mother's ability to practice warm and attentive parenting. Indeed, several prominent theories of parenting incorporate the adverse effects of stressful life events as disrupting adaptive parenting and thereby indirectly affecting children's adjustment (Abidin 1992; Belsky 1984; Patterson 1983; Conger et al. 2002). The present study conceptualizes a teenage daughter's childbearing as a major family stressor that affects her mother's feelings of stress and resulting parenting practices and, through which, impact younger sibling outcomes. Figure 1 shows a conceptual model of the pathways examined. The literature supporting each of the pathways is reviewed below. Latino families were targeted for study because Hispanics currently have twice the national teenage birthrate as women of other race/ethnicities (Hamilton et al. 2010). Research on Latino families and adolescents is integrated into the following sections. The current study aims to examine the effects of an adolescent's childbearing on her siblings' adjustment, through influences on the adolescent's mother, and among a sample of Latino families.

An Adolescent's Childbearing, Mothers' Stress, and Mothers' Parenting Practices

An adolescent's childbearing could create stress for her mother in a number of ways. The birth of a baby to an adolescent daughter would likely in and of itself create a crisis-like situation for the family (Moore and Brooks-Gunn 2002). From the middle-of-the-night feedings to the constant demands of a growing, mobile infant, it would be the rare individual who is not stressed by a baby's presence in the household. This may be true especially for the mother in the household, who is often thrust into the position of caring for the infant, as grandmother, while still maintaining parenting duties for her own children (Sands and Goldberg-Glen 2000). Indeed, undertaking multiple caretaking roles can often involve significant feelings of stress and burden (Pearlin et al. 1990). Still further, the unexpected birth of a baby could strain family finances, which could further contribute to mothers' distress (McLoyd 1990). Thus, an adolescent's childbearing may negatively affect mothers' mental health given that it is a major life event that poses significant stress for the adolescent's family.

As stated above, parental stress has been theorized to significantly disrupt the quality of parents' parenting, with many studies finding that high stress impacts parenting capacity (e.g., monitoring; Rodgers 1998) and affects parents' feelings toward their children (e.g., warmth and negativity; McMahon and Meins 2011; Webster-Stratton 1990). High maternal stress was associated with both mothers' more limited monitoring of their children and less nurturant parenting (McLoyd et al. 1994; Shea and Coyne 2011). Brody et al. (2002) also reported that mothers' poor psychological functioning (i.e., depression, low self-esteem) was linked to lower parental monitoring. Within a sample of Latino families, mothers who were more distressed were found to exhibit lower levels of nurturance, acceptance, and sensitivity

to their children (Mistry et al. 2002). Thus, parental stress appears to significantly compromise mothers' ability to practice involved, nurturing parenting.

In regards to the link between parents' parenting and youths' adjustment, almost all theories of parenting emphasize that children's high competence and favorable adjustment are optimized under conditions of emotionally supportive, warm and attentive parenting (e.g., Darling and Steinberg 1993; Williams and Steinberg 2011). Indeed, much evidence links parents' low monitoring (i.e., low supervision and involvement) with high levels of adolescents' delinquency, drug use and depression (Barnes et al. 2006; Richards et al. 2002; Wang et al. 2011), lower school achievement (Spera 2006), and among Latinos, more deviant youth behavior (Forehand et al. 1997) and lower school aspirations (Plunkett and Bamaca-Gomez 2003). Lower parental nurturance (i.e., low affection and support) also has been found to relate to higher levels of children's internalizing problems and acting-out behaviors (Brody et al. 2004; McLoyd 1990), and lower levels of academic achievement (Brody et al. 2002). These relationships have been replicated in a sample of Latino and African American boys, with lower parental nurturance associated with boys' more frequent behavior problems (Florsheim et al. 1996). Thus, across race and ethnicity, uninvolved parenting and low parental nurturance have been linked consistently with youths' more problematic adjustment and less favorable school functioning.

Effects of an Adolescent's Childbearing for Younger Brothers Versus Younger Sisters

Living with a childbearing adolescent sister has different effects on brothers versus sisters. For example, the younger sisters of childbearing adolescents increased their drug and alcohol use and partying behaviors from age 13 to 15, but younger brothers did not exhibit a change in these behaviors (East and Jacobson 2001). Another study also found relatively fewer behavioral problems exhibited by the younger brothers of parenting teenagers compared to younger sisters (East 1996b). In addition, girls who had one or more teenage parenting sisters had increased levels of behavioral problems (school problems, drug and alcohol use, and delinquent behavior), whereas effects on boys were seen only when they lived with three or more teen parenting sisters (East and Kiernan 2001). Thus, younger sisters appear to be more adversely affected by a teenage sister's childbearing than younger brothers.

Gender differences in sibling adjustment also could reside in the associations between mothers' mental health, the quality of their parenting, and youth well-being. That is, mothers' stress and compromised parenting that derive from living with a childbearing teenager might affect boys and girls in the household differently. The importance of gender-specific effects of parenting have been noted in Baumrind's typology of parenting theory, wherein she asserted that different parenting qualities are differentially salient for girls' and boys' development (Baumrind 1991). In one of her early studies, for example, Baumrind and Black (1967) found that parental control was more important for girls' competence, while parental nurturance was more central for boys' adjustment. Maccoby's gender socialization theory also emphasizes that different parenting qualities are uniquely important for boys' and girls' development (Maccoby 1990). For example, maternal depression stemming from chronic economic strain was related to lower maternal nurturance for boys (Conger et al. 1992), but a parallel study found that this relationship was not evident for girls (Conger et al. 1993). Another study found that maternal depression was more strongly related to girls' depression than boys' (Cortes et al. 2006). Mothers' high monitoring has, in numerous studies, been found to curb the problematic behaviors (cigarette and alcohol use, delinquent behavior) of girls but not that of boys (Bowman et al. 2006; Griffin et al. 2000; Jacobson and Crockett 2000). Thus, the parenting mediators that link a family stressor to youth outcomes might be different for boys and girls. Given the overall evidence that boys and girls may be affected differentially by an older sister's childbearing, and furthermore

that mothers' mental health and parenting practices may influence boys and girls differently, analyses in the current study will be stratified by gender.

The Current Study and Hypotheses

The current study examines the role of maternal stress and mothers' parenting in explaining why the younger siblings of childbearing adolescents exhibit poorer adjustment. Specifically, we conceptualize that living with an adolescent childbearing sister constitutes a major family stressor that disrupts mothers' parenting and well-being, and through which, adversely affect youths' adjustment. Using a sample of Latino younger siblings with and without a childbearing adolescent sister in the household, a model was tested wherein maternal stress and mothers' parenting practices (i.e., monitoring and nurturance) were posited as pathways through which living with a childbearing adolescent impacts younger siblings' outcomes (as shown in Fig. 1). Specifically, we hypothesized that having a childbearing adolescent in the household will lead to higher levels of maternal stress, which in turn will weaken mothers' monitoring and decrease mothers' nurturance. These parenting practices are then hypothesized to negatively affect younger siblings' school outcomes and increase their internalizing and externalizing behaviors. With regard to gender differences and based on previous studies, we expected that girls (but not boys) would exhibit externalizing problem behaviors as a result of living with a childbearing older sister. We further hypothesized that mothers' stress and compromised parenting that derive from living with a childbearing teenager would affect boys and girls differently. Based on previous research, we expected that higher maternal stress will lead to lower levels of mothers' nurturance for boys but not girls, and that mothers' monitoring will be associated with girls' level of problem behaviors but not that of boys. We used individual fixed-effects models to reduce bias due to unobserved variables (Duncan et al. 2004; Schneider et al. 2007), especially those related to pre-existing differences in families with and without a childbearing adolescent daughter. This method is described further in the analytic strategy. It should be noted that we specifically refer to "living with a childbearing sister" in our conceptual model and throughout this article to indicate that all younger siblings were in fact living with their adolescent child-bearing sister at the time of the study. Thus, in this study, risks were believed to derive specifically from *living with* a teenage childbearing sister.

Method

Participants and Study Design

The analytic sample involved 243 Latino (mostly Mexican–American) younger siblings, 121 of whom lived with a childbearing adolescent sister and 122 of whom either had a never-pregnant adolescent sister or had a childbearing adolescent sister who had moved out of the household prior to giving birth. One hundred-fifty younger siblings were girls (62%) and 93 were boys. The younger siblings were from 188 families (95 with a parenting adolescent and 93 without), and therefore the sample included 188 mothers (the siblings' mothers). All younger siblings of eligible age (11–18 years) per family were invited to participate. Thus, 140 families had one younger sibling participate, 41 families had two younger siblings participate, and seven families had three younger siblings participate. Younger siblings were an average age of 13.7 years, their older sisters were an average age of 16.9 years, and their mothers were an average age of 39.6 years ($SD = 5.2$) at study enrollment (see Table 1).

Younger siblings were eligible for the study if: (a) they were Latino, between 11 and 18 years of age, and had never been pregnant, (b) they had an older, unmarried sister between 15 and 19 years of age who had either never been pregnant, or was pregnant for the first time and intended to deliver and parent her child, (c) the older sister was biologically related to the younger sibling and had lived with the younger sibling for at least the past 5 years,

and (d) no other child in the family had become pregnant or fathered a child as a teenager. Younger siblings were recruited by first identifying eligible older sisters. Pregnant adolescents were recruited from high schools, Women, Infants, and Children (WIC) program centers, and community clinics throughout southern California. Never-pregnant adolescents were recruited using a two-pronged approach: (1) by asking participating pregnant adolescents to suggest a never-pregnant friend whose family fit the eligibility criteria, and (2) by going to high schools that had a Pregnant Minor or Teen Parenting Program and asking Latina students, after ascertaining that their families fit the eligibility criteria, whether they had a teenage girlfriend who was pregnant or parenting. This was done to obtain a comparison group of families that was as similar as possible to the adolescent childbearing families—net of the childbearing. Extensive literature shows that individuals select friends who are most like them in terms of attitudes, values and risk behaviors (Ennett and Bauman 1994). Thus, the families of the girlfriends of pregnant adolescents serve as a viable comparison group to the families of pregnant adolescents.

The mothers and younger siblings of all eligible adolescents were invited to participate, and 95% did so. Most of the younger siblings were born in the United States (82%), but only 14% of the mothers were born in the United States (the rest were born in Mexico or Central America). The sample of families was primarily low income, with a mean total annual family income of \$20,995.

Procedure

The younger siblings and their mothers completed a short interview and a self-administered questionnaire at four time points; this study drew on data from the first (7th month of pregnancy), third (6 months postpartum) and fourth (1 year postpartum) time points. The younger siblings and mothers in families without a childbearing adolescent were studied at comparable time points as families with a childbearing adolescent. Two female research assistants fluent in Spanish administered the interview in person at the participants' homes and provided instructions for completing the questionnaire. The home visit lasted about 1 h. All younger siblings completed the interview and questionnaire in English, and the mothers in either English (30%) or Spanish (70%), whichever they preferred. All participants were paid \$20 at each time point, and all were assured of the confidentiality of their responses. Study procedures were approved by the 2nd author's university Protections of Human Subjects Program.

Measures

Mother-Rated Stress—Maternal stress was assessed prenatally and at 6 months postpartum using mothers' responses on six items from the Perceived Stress Scale (Cohen et al. 1983). The items asked how often in the past month mothers had, for example, "felt nervous and stressed," and "felt difficulties were piling up so high that you could not overcome them." Response options ranged from 1 ("never") to 5 ("very often"). The internal reliability (Cronbach's alpha) for the prenatal and 6 month postpartum measures were .90 and .90, respectively. Therefore, the items were averaged to form two scale scores (one for each time point).

Mother-Rated Monitoring—Mothers' monitoring of their children was assessed by mothers' ratings of five items that asked how much they really knew about, for example, "who your children's friends are" and "what your children do with their free time" (adapted from Brown et al. 1993). Response options ranged from 1 ("don't know at all") to 5 ("know very much about"). The alphas for the prenatal and 1 year postpartum measures were .88 and .91, respectively, thus the items were averaged.

Mother-Rated Nurturance—Mothers' nurturance was assessed by mothers' responses for each of her (participating) children (i.e., if the family had two younger siblings participating in the study, mothers answered the set of nurturance items twice). Five items asked how often over the last month mothers praised, were affectionate with, had a good time with, and felt close to the child, and told the child that they had done something good. Response options ranged from 1 ("not at all") to 5 ("very often or more than once a day"). The alphas for the prenatal and 1 year postpartum measures were .78 and .81, respectively, thus the items were averaged.

Younger Sibling Outcomes—All younger sibling outcomes were assessed by youth reports prenatally and at 1 year postpartum. Outcomes included two indices of school outcomes (school grades, school involvement), three indices of internalizing behaviors (depressive symptoms, anxiety, and stress), and three indicators of externalizing behaviors (drug and alcohol use, delinquency, and defiant-partying behavior).

Youths' School Grades: Youths reported the *grades* they usually received in school within the last month on a scale from 1 ("mostly A's") to 8 ("mostly below D"). Responses were reverse-coded and halved to create a scale ranging from 0.5 to 4.0, with higher values indicating higher grades.

Youths' School Involvement: Youths reported their school involvement with three items assessing how much over the last month they were involved in school, felt connected to school, and cared about school on a scale from 1 ("not at all") to 5 ("very much"). One additional item assessed how often over the last month they went to school without their homework finished, on a scale from 1 ("never") to 5 ("all the time"); this item was recoded such that higher values represented more often finishing homework. The alphas of all four items at the prenatal and 1 year post-partum measures were .71 and .69, respectively, thus the items were averaged.

Youths' Depressive Symptoms: Youths' depressive symptoms were measured using five items asking how often in the past month they felt, for example, depressed, sad, or like crying (adapted from the Center for Epidemiological Studies Depression Scale; Radloff 1977). Responses were on a scale from 1 ("never") to 5 ("very often"). The alphas for the prenatal and 1 year postpartum measures were .92 and .88, respectively, thus the items were averaged.

Youths' Anxiety: Youths' anxiety was measured using three items assessing how often over the last month they, for example, "worried a lot of the time" (adapted from Reynolds and Richmond 1979). Responses were on a scale from 1 ("never") to 5 ("very often"). The alphas for the prenatal and 1 year postpartum measures were .71 and .87, respectively, and items were averaged at each time point.

Youths' Stress: Youths' stress was measured using the same six items used to assess maternal stress. Alphas for the prenatal and 1 year postpartum measures were .86 and .88, respectively, and items were averaged at each time point.

Youths' Drug and Alcohol Use: Drug and alcohol use was assessed with nine items asking whether the youth had, for example, smoked cigarettes, drunk beer or wine, drunk liquor, used methamphetamines, and used cocaine within the last month. Response options ranged from 1 ("never") to 5 ("more than 10 times"). This scaling resulted in extremely skewed and kurtotic distributions, so all item responses were dichotomized into 0 ("never") or 1 ("one or

more times”). A cumulative scale was then constructed by summing the number of behaviors the youth had engaged in one or more times, with a possible score range of 0–9.

Youths’ Delinquency: Delinquent behavior was assessed with seven items asking whether the youth had, for example, shoplifted, damaged property, carried a weapon, been part of a gang, or got questioned by the police. Scores were dichotomized into 0 (*never*) or 1 (*one or more times*) to reduce skewed and kurtotic distributions, and items were then summed to indicate the number of delinquent behaviors (0–7) the youth had engaged in one or more times.

Youths’ Defiant-Partying Behavior: Defiant and partying behavior was assessed with seven items asking whether the youth had, for example, snuck out of the house, ran away from home, lied to a parent about where they were going, or gone to a party where people their age were drinking alcohol or smoking marijuana. Scores were dichotomized into 0 (*never*) or 1 (*one or more times*) to reduce skewed and kurtotic distributions, and items were then summed to indicate the number of delinquent behaviors (0–7) the youth had engaged in one or more times.

Covariates—Study covariates were younger siblings’ age, older sisters’ age, and total annual family income.

Analytic Strategy

Families with and without a childbearing adolescent may be different in ways aside from childbearing status, in spite of design and recruitment efforts to keep the two groups as similar as possible. Therefore, we used individual fixed-effects models to reduce bias due to unobserved variables (Duncan et al. 2004; Schneider et al. 2007). Specifically, we regressed 6 month and 1 year postpartum measures (mothers’ stress, monitoring and nurturance, and younger sibling outcomes) on prenatal measures of these same constructs, as shown in Figs. 2 and 3. Controlling for prenatal measures serves two functions. First, we have greater confidence that this study’s findings are not merely the result of pre-existing family differences in maternal stress, monitoring, and nurturance, because these earlier levels are explicitly controlled for in the models. Second, the influence of time-invariant *unobserved* variables (e.g., mothers’ personality traits) is also reduced. This is because presumably these time-invariant variables influence prenatal and postpartum measures similarly; thus, when prenatal measures are controlled for, the influence of time-invariant unobserved variables on postpartum measures are also controlled for. Of course, time-varying unobserved variables remain unaccounted for (Duncan et al. 2004). Nonetheless, applying individual fixed-effects reduces bias from omitted variables and bolsters confidence that results are not merely due to spurious relations.

We used Mplus v5.1 (Muthén and Muthén 1998–2009) to test the path models shown in Figs. 2 and 3, separately for boys and girls. Eight models were conducted for each gender (16 models total), one for each of the eight youth outcomes: the two school outcomes, the three measures of internalizing behaviors, and the three measures of externalizing behaviors. We used three model fit indices to examine how well the models fit the data: the χ^2 , which are not significant when model fit is good; the comparative fit index (CFI; Bentler 1990, 1995), with values above .90 indicating a reasonably good fit (Hu and Bentler 1999); and the root mean square error of approximation (RMSEA), with values less than .08 indicating adequate fit (Browne and Cudeck 1993).

The sample included 243 younger siblings at the pre-natal time point, 203 at 6 months postpartum, and 196 at 1 year postpartum; of the 47 youths who dropped out, 32 were living

with a childbearing adolescent and 15 were not. Most cases were retained for analysis using the full information maximum likelihood (FIML) method of handling missing data, which fits the model being tested directly onto the nonmissing data for each participant. However, 26–28 cases (depending on the youth outcome) were missing on one or more exogenous variables (i.e., any covariates or prenatal measures) and were dropped. The estimator we used was weighted least squares (WLSMV). Some families had two or more younger siblings, and we used the CLUSTER command in Mplus to appropriately account for the nested data structure.

For all models, younger siblings' age was included as a covariate on youth outcomes. Maternal education and family income were initially also included as covariates, but were not significant except for family income on youths' defiant-partying behavior. Therefore, only family income was retained as a covariate, and only for the model of defiant-partying behavior. Older sisters' age was included as a covariate on the variable "living with a childbearing adolescent sister" because, as evident from Table 1, these two variables were strongly related.

Results

Comparing Families with and without a Childbearing Adolescent

Because the study aim was to examine the influence of living with a childbearing adolescent sister on youth outcomes, ideally there would be no pre-existing differences between youths living and not living with a childbearing adolescent. Table 1 shows descriptives of study variables for the two groups, and mean differences were indeed found at the prenatal time point. Compared to mothers in families without a childbearing adolescent daughter, mothers with a childbearing daughter reported monitoring their children less. Youths with a childbearing older sister were less involved in school (marginal), had more depressive symptoms, and reported more defiant and partying behaviors at study enrollment. Finally, both older sisters and younger siblings (marginal) were older in families with a childbearing adolescent.

Although there were indeed significant pre-existing differences between families with and without a childbearing adolescent, the individual fixed-effects method accounts for these pre-existing differences by simultaneously controlling for all constructs measured at the earliest time point. Finding a sample of families for which there are no pre-existing differences between those with and without a childbearing adolescent would be very difficult, if not impossible. Therefore, we believe that using the individual fixed-effects methodology to take into account pre-existing differences is a next-best solution.

Descriptive Statistics and Interrelations Among Study Variables

Table 1 shows the means and standard deviations of all study measures by gender. Comparison of boys and girls in the sample showed that at 1 year postpartum (or, for families with a never-pregnant adolescent sister, about 14 months after the first study time point), girls had higher grades, were more involved in school, had lower drug and alcohol use, exhibited fewer delinquent behaviors and defiant-partying behaviors but also had more stress and more frequent depressive and anxiety symptoms than boys.

Correlations were computed to provide an indication of the interrelations between the three mother-rated variables and the interrelations among the youth-rated outcomes. Results (using the total sample) were consistent with what would be expected from theories of the determinants of parenting (Abidin 1992; Belsky 1984), with mothers' higher stress (assessed at 6 months postpartum for the teen child-bearing families) related to mothers' lower nurturance toward their children and lower monitoring of their children 6 months later ($r =$

-.18, $p < .05$ and $r = -.19$, $p < .01$, respectively). Mothers' higher nurturance was also positively related to their higher monitoring at the study end point ($r = .42$, $p < .001$). Regarding youths' outcomes, more frequent internalizing symptoms (depression, anxiety, stress) were largely positively related with more frequent externalizing behaviors (drug/alcohol use, delinquency, defiant-partying behaviors) at the study's end point (r 's ranged from .15 to .23, $p < .05$), with the exception that anxiety was not related to drug/alcohol use nor delinquency. Frequent externalizing behaviors were all significantly related to lower GPA and lower school involvement (r 's ranged from -.16 to -.33, $p < .05$). For the interrelations between youths' internalizing symptoms and their school outcomes, school involvement was negatively related to stress and depressive symptoms (assessed at the study end point; $r = -.19$ and $-.21$, $p < .01$), and lower GPA was significantly related to more frequent depressive symptoms ($r = -.15$, $p < .05$).

We now present the results for the various paths in the model, separately for boys and girls.

Older Sisters' Childbearing → Mothers' Stress → Mothers' Parenting

Figures 2 and 3 show the associations between an older sister's childbearing and her younger sibling's outcomes, mediated by parenting processes, for boys and girls respectively. Path coefficients from living with an adolescent childbearing sister to the parenting variables were virtually identical (differences were in the hundredths place) for the eight models representing eight youth outcomes, and are therefore summarized in Figs. 2 and 3 with one coefficient per path (rather than eight almost-identical coefficients per path). Path coefficients to the eight youth outcomes at 1 year postpartum (childbearing status → youth outcome; monitoring → youth outcome; nurturance → youth outcome; and prenatal outcome → youth outcome) are unique, represented by double lines in Figs. 2 and 3, and are shown in Table 2. All models had good fit.

Boys—When analyzing boys only (Fig. 2), mothers in households with a childbearing adolescent exhibited higher levels of stress. Higher maternal stress, in turn, was associated with lower maternal nurturance. Higher maternal stress was also marginally related to less maternal monitoring, but only for the following youth outcome models: school involvement, depressive symptoms, anxiety, and stress; maternal stress was not related to monitoring for any other youth outcome models.

Girls—When analyzing girls only (Fig. 3), mothers in households with a childbearing adolescent exhibited significantly lower levels of monitoring. Living with a childbearing adolescent was not significantly related to mothers' stress or mothers' nurturance of younger sisters.

Mothers' Parenting → Youth Outcomes

Next we looked at relationships between mothers' parenting and youth outcomes. Regression coefficients for each youth outcome are shown in Table 2.

Boys—For younger brothers, lower levels of mothers' monitoring were associated with higher stress ($B = -.30$) and marginally associated with higher levels of depressive symptoms ($B = -.24$) and anxiety ($B = -.24$). Mothers' lower nurturance was associated with boys' lower grades in school ($B = .40$).

Girls—For younger sisters, lower levels of mothers' monitoring were associated with girls' higher stress ($B = -.37$), more drug and alcohol use ($B = -.34$), and more defiant-partying behaviors ($B = -.33$), and also marginally associated with girls' more frequent anxiety ($B = -.29$) and delinquency ($B = -.23$). Lower levels of mothers' nurturance were also marginally

associated with girls' more frequent depressive symptoms ($B = -.23$), but recall that mothers' nurturance was not associated with either living with a childbearing adolescent sister or mothers' stress.

Interaction by Gender

In addition to examining model relationships stratified by gender, we were also interested in whether the strength of relationships differed significantly for boys versus girls (i.e., interaction by gender). We ran models for boys and girls simultaneously, then applied the DIFFTEST command within Mplus to test whether each path differed in strength between boys and girls. Only three paths were found to be significantly different: the relationship between childbearing status and maternal stress was stronger for boys ($B = .26, p < .05$) than for girls ($B = .02, ns$); the relationship between nurturance and grades was stronger for boys ($B = .40, p < .05$) than for girls ($B = .00, ns$); and the relationship between childbearing status and depressive symptoms was stronger for boys ($B = .16, p < .05$) than for girls ($B = -.14, ns$).

Robustness Check

Because many families had two or more younger siblings, 53 youth were in families with both a younger brother and a younger sister. In the preceding analyses, these families appeared in *both* the boy and girl analyses. To check the robustness of results using only families with either all boys or all girls, analyses were rerun with these 53 youths omitted. The pattern of results were very similar, with the following changes: for girls, monitoring was no longer related to anxiety; for boys, nurturance was no longer related to grades; and for boys, the relationship between mothers' stress and nurturance became marginal or not significant (depending on which youth outcome was modeled). This lends confidence in the results from the preceding analyses which included all youth.

Discussion

Research has consistently shown that the younger siblings of childbearing adolescents suffer worse social, behavioral, and school outcomes. While multiple pathways and processes may simultaneously explain this link, the current study examined within-family parenting processes as explaining the poorer outcomes of youth who live with an adolescent childbearing sister versus youth who do not. A model was tested wherein living with a childbearing teenager was expected to cause significant feelings of stress for the mother in the household, which was expected to compromise the quality of her parenting and thereby negatively impact younger siblings. Our conceptual model was based on prominent theories of the determinants of parenting, which incorporate stressful life events as impinging on warm, loving and involved parenting (Abidin 1992; Belsky 1984; Patterson 1983). Individual fixed-effects models were used to compare siblings who lived with a teenage child-bearing sister versus those who did not. Models controlled for earlier measures of all study constructs, thereby reducing omitted variable bias from pre-existing group differences (Duncan et al. 2004). As a whole, the various paths in the model were supported for younger brothers, with results indicating that the poorer outcomes for boys living with a childbearing adolescent sister (versus not living with a childbearing adolescent sister) were explained by mothers' high stress, low monitoring, and low nurturance. Specifically, living with a childbearing adolescent was related to higher levels of mothers' stress, which was related to mothers' lower monitoring (marginal) and nurturance toward their sons; and mothers' lower monitoring and nurturance were then related to poorer outcomes for boys (higher stress, lower grades, and marginally, more frequent depressive and anxiety symptoms).

In contrast to boys, poorer outcomes for girls living with a childbearing adolescent sister were explained only by mothers' monitoring. Specifically, living with a child-bearing adolescent was related to lower levels of mothers' monitoring (of her daughters), which in turn was related to a number of problematic younger sister outcomes (higher stress, more frequent drug-alcohol use and defiant-partying behaviors, and marginally, more anxiety and delinquency). The relationship between living with a childbearing adolescent and mothers' monitoring was direct and did not involve mothers' stress. Indeed, having a childbearing adolescent in the household did not at all increase mothers' stress when the younger sibling was a girl. Perhaps having a younger daughter in the household reduces mothers' stress from caring for the older daughter's child because the younger daughter helps with the infant's care. Indeed, it is known that the younger sisters of parenting adolescents provide significantly more caretaking of their sister's baby than younger brothers (East et al. 2009). When younger brothers are present, though, living with a teenage child-bearing daughter may increase mothers' stress because the sons are not helping with the infant caretaking. Thus, having a childbearing adolescent in the household appears to affect younger siblings' adjustment by different within-family parenting processes for boys and girls.

Turning to gender differences in youth outcomes, based on previous studies (East 1996b; East and Jacobson 2001), we expected that younger sisters would exhibit more externalizing problem behaviors as a direct result of living with an adolescent childbearing sister than would younger brothers. This was not the case, with only one significant direct path from living with a childbearing adolescent sister to younger sibling outcomes (i.e., to boys' depressive symptoms). However, this is the first study of the younger siblings of childbearing adolescents to account for mediating explanatory pathways, that is, through mothers' parenting practices. In all previous studies of such siblings, only direct effects were examined. Thus, once parenting processes are accounted for, it appears that living with a childbearing teenager is associated with few sibling outcomes. This finding underscores the importance of parenting processes in contributing to younger sibling adjustment. That is, younger siblings were not directly impacted by their sisters' childbearing, but rather by the effects their sisters' childbearing had on their mothers' parenting.

Also consistent with expectations, higher levels of maternal stress were associated with lower levels of mothers' nurturance for boys but not girls, and mothers' lower monitoring was associated with externalizing behaviors for girls but not boys (i.e., girls' more frequent drug/alcohol use and defiant-partying behavior, and marginally, delinquency). Both sets of results have been reported previously (Conger et al. 1992, 1993; Griffin et al. 2000; Jacobson and Crockett 2000) and reinforce this study's overall finding that parenting effects on youths are gender-specific. These findings are consistent with Baumrind's (1991) and Maccoby's (1990) discussions of gender-specific parental socialization effects, and warrant greater consideration of within-family processes affecting boys and girls differently, particularly in the context of effects derived from family stressors.

Study Strengths and Limitations

A consideration of this study's findings is that participants were exclusively Latino from primarily low-income families. Thus, the current set of results reflects the parenting processes and youth outcomes for this particular racial/ethnic and socioeconomic group, and might not be generalizable to youth from other sociodemographic backgrounds. On the other hand, research evidence has demonstrated *similarities* in *family processes* across race/ethnicity. One study found that the pattern of relationships between parent distress and parenting practices, and between parenting practices and adolescent outcomes, were similar for Latino and non-Latino families (Mistry et al. 2002). Because the current study also focused on relationships between family processes (rather than on mean-level differences), perhaps the current findings may be generalized afterall to a broader population.

As noted earlier, all younger siblings and their mothers in the sample were living with the childbearing adolescent at the time of the study, with risks hypothesized to derive from the family-level changes that occur as a result of having a childbearing teenager as part of the household (East 1998). The level of risk might be entirely different for siblings who have a childbearing adolescent sister but do not live with her. Indeed, it would be interesting to compare youth who live with their childbearing adolescent sister to those who do not, with such a design able to reveal the unique risks derived from exposure to a teenage childbearing sister and, presumably, her baby (East and Kiernan 2001).

The measure used in the current study to assess mothers' monitoring of their children's activities should be recognized as involving parents' knowledge of their children's behaviors, which is highly dependent on youths' willingness to disclose to parents their activities (Stattin and Kerr 2000). Thus, results associated with mothers' monitoring should be interpreted as likely reflecting a strong youth component and not solely as a measure of mothers' supervisory efforts or vigilance per se. This notwithstanding, some have noted that high parental knowledge rests on parent-child trust and open communication and, as such, assesses important aspects of the parent-child relationship (Crouter et al. 1999). These various facets of maternal monitoring should be considered when interpreting this study's findings.

A definite strength of the study is the individual fixed-effects design, which reduces omitted variable bias and thereby offers a stronger case that observed relationships may be causal. In particular, controlling for prenatal measurements reduces the chance that this study's findings could be attributed to pre-existing differences between youths living with and without childbearing adolescent sisters. The individual fixed-effects model is a very conservative test of relationships and the fact that relationships emerged in these models firmly attests to the strength of those relationships.

A study limitation related to the individual fixed-effects model, however, is that the prenatal measures were collected after the older sister was already pregnant. Therefore, changes in the family may have already been set in motion from the pregnancy itself. Ideally, we would control for measures of parenting and youth outcomes collected *before* the older sisters became pregnant. However, collecting data before girls become pregnant would have required a prospective study design, which would have required a prohibitively large number of never-pregnant adolescent girls given the targeted nature of our study.

Conclusion and Policy Implications

The younger siblings of parenting teenagers have been found to engage in smoking, drinking, drug use, truancy, and delinquency at much higher rates than other youth their same age, race and socioeconomic status (East 1996a; East and Jacobson 2001). Clearly, this is a very high-risk population. Understanding the processes that contribute to adverse outcomes for these younger siblings—particularly unraveling the contributing family dynamics and parenting processes—can help inform efforts to improve the well-being of these youth. For example, among Latino families with younger brothers, maternal stress appears to be a gateway to mothers' nurturant parenting and monitoring. Reducing stress via mental health services that help Latina mothers cope with their multiple responsibilities could have a positive impact not only on a mother's psychological functioning but also on her parenting practices and her children's adjustment. In addition, greater availability of child care for the adolescent's child might relieve mothers of their (grandparental) child care responsibilities and lessen their burden so that they can practice involved and sensitive parenting for their own children.

In broad terms, this study's findings elucidate the within-family processes that occur in response to a family stressor, and through which, affect youth. Overall, findings suggest that having a childbearing adolescent in the household leads to problematic younger sibling functioning through its effects on their mothers. As such, results begin to explain why the younger siblings of childbearing adolescents exhibit poorer adjustment relative to other youth. Given that Latino adolescents currently have the highest teen birth rate in the country, such results have large ramifications for these adolescents, their families and their siblings.

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Biographies

Nina C. Chien is a Research Scientist at Child Trends. She received her Ph.D. from the University of California, Los Angeles. Her research focuses on adolescent pregnancy, early childhood education, and the effects of poverty on child development.

Patricia L. East is a Research Scientist at the University of California, San Diego School of Medicine in the Department of Pediatrics. She received her Ph.D. from the Pennsylvania State University. Her research focuses on identifying the effects of adolescent childbearing for families and siblings, and siblings' concordance of problem behaviors during adolescence.

Fig. 1.
Conceptual model

Fig. 2.

Individual fixed-effects model for boys. *Note* Unstandardized regression coefficients are shown. *Dashed paths* are not statistically significant. $^{\dagger} p < .10$; $^* p < .05$; $^{**} p < .01$; $^{***} p < .001$. a This coefficient was marginally significant in models for school involvement, depression, anxiety, and stress; it was not significant in models for any other youth outcomes. b This coefficient was marginally significant in models with the following younger sibling outcomes: grades, defiant/party behavior

Fig. 3. Individual fixed-effects model for girls. *Note* Unstandardized regression coefficients are shown. *Dashed paths* are not statistically significant. * $p < .05$; *** $p < .001$

Table 1
Sample descriptives by older sister's childbearing status and by younger sibling's gender

Variable (score range)	Total n = 243			Siblings without a childbearing adolescent sister n = 122			Siblings with a childbearing adolescent sister n = 121			Younger sisters n = 150			Younger brothers n = 93		
	M	SD		M	SD		M	SD		Sig.	M	SD	M	SD	Sig.
Parenting variables															
Maternal stress at prenatal (1–5) ^a	2.65	1.01		2.57	0.98		2.73	1.04		†	2.63	0.99	2.72	0.98	
Maternal stress at 6 months postpartum (1–5) ^a	2.60	0.91		2.48	0.87		2.74	0.94			2.61	0.89	2.56	0.85	
Mothers' monitoring at prenatal (1–5) ^a	4.14	0.66		4.26	0.57		4.02	0.73		*	4.13	0.67	4.23	0.64	
Mothers' monitoring at 1 year postpartum	4.10	0.80		4.23	0.75		3.95	0.83		*	4.08	0.84	4.19	0.76	
Mothers' nurturance at prenatal (1–5) ^a	3.63	0.71		3.62	0.67		3.65	0.75			3.60	0.77	3.66	0.66	
Mothers' nurturance at 1 year postpartum (1–5) ^a	3.49	0.73		3.51	0.72		3.46	0.76			3.47	0.74	3.58	0.67	
Younger sibling outcomes															
Grades at prenatal (0.5 = mostly below D, 4 = mostly A's)	2.67	0.87		2.75	0.87		2.59	0.86			2.78	0.85	2.50	0.87	*
Grades at 1 year postpartum (0.5–4)	2.57	0.96		2.65	0.96		2.47	0.95			2.68	0.96	2.37	0.92	*
School involvement at prenatal (1–5)	3.33	0.76		3.43	0.79		3.23	0.72		†	3.41	0.74	3.21	0.78	*
School involvement at 1 year postpartum (1–5)	3.15	0.88		3.23	0.92		3.05	0.83			3.24	0.83	3.00	0.95	†
Depressive symptoms at prenatal (1–5)	2.26	1.12		2.11	0.97		2.41	1.24		*	2.46	1.18	1.93	0.92	***
Depressive symptoms at 1 year postpartum (1–5)	2.22	1.01		2.09	1.01		2.38	1.01		*	2.40	1.04	1.91	0.90	**
Anxiety at prenatal (1–5)	2.44	0.96		2.34	0.90		2.54	1.01			2.54	0.98	2.27	0.90	*
Anxiety at 1 year postpartum (1–5)	2.30	1.09		2.16	1.10		2.46	1.06		†	2.47	1.13	1.99	0.95	**
Stress at prenatal (1–5)	2.41	0.94		2.39	0.93		2.44	0.96			2.49	0.94	2.29	0.95	
Stress at 1 year postpartum (1–5)	2.21	0.88		2.15	0.93		2.30	0.81			2.30	0.94	2.06	0.75	*
Drug and alcohol use at prenatal (0–9)	0.70	1.59		0.56	1.25		0.86	1.88		†	0.56	1.31	0.93	1.95	
Drug and alcohol use at 1 year postpartum (0–9)	0.80	1.67		0.60	1.42		1.04	1.91			0.48	1.25	1.35	2.12	**
Delinquency at prenatal (0–7)	0.90	1.65		0.75	1.44		1.05	1.84			0.53	1.21	1.49	2.05	***
Delinquency at 1 year postpartum (0–7)	0.72	1.53		0.64	1.46		0.82	1.61			0.40	1.12	1.29	1.92	***
Defiant and partying behaviors at prenatal (0–7)	1.08	1.58		0.83	1.25		1.34	1.84		*	0.88	1.48	1.40	1.71	*

Variable (score range)	Total				Siblings without a childbearing adolescent sister				Siblings with a childbearing adolescent sister				Younger sisters				Younger brothers			
	n = 243				n = 122				n = 121				n = 150				n = 93			
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	Sig.	M	SD	Sig.	M	SD	Sig.	*
Defiant and partying behaviors at 1 year postpartum (0–7)	1.13	1.70	0.82	1.43	1.51	1.91	1.48	1.99	1.49	1.99	1.49	1.99	1.48	1.99	1.49	1.99	1.49	1.99	1.49	1.99
Gender and covariates at study enrollment																				
Younger sibling is a girl	61.73%	–	63.93%	–	59.50%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Younger siblings' age	13.72	1.75	13.50	1.63	13.93	1.84	13.58	1.79	13.93	1.84	13.58	1.79	13.58	1.79	13.93	1.84	13.93	1.84	13.93	1.84
Older sisters' age ^a	16.92	1.30	16.54	1.31	17.25	1.20	16.86	1.30	17.25	1.20	16.86	1.30	16.86	1.30	17.13	1.16	17.13	1.16	17.13	1.16
Family income at prenatal ^a	\$20,995	\$13,096	\$21,102	\$13,541	\$20,887	\$12,708	\$19,595	\$12,052	\$20,887	\$12,708	\$19,595	\$12,052	\$19,595	\$12,052	\$22,124	\$14,319	\$22,124	\$14,319	\$22,124	\$14,319

[†] p < .10;
^{*} p < .05;
^{**} p < .01;
^{***} p < .001

^a For the total descriptives and descriptives by childbearing status, these variables were calculated with families as the unit of analysis; all other descriptives were calculated with younger siblings as the unit of analysis

Table 2

Ustandardized regression coefficients on youth outcomes at 1 year postpartum

	Living with childbearing adolescent sister → Youth outcome				Mother's monitoring → Youth outcome				Mother's nurturance → Youth outcome				Youth outcome (prenatal) → Youth outcome				Model fit indices			
	Boys		Girls		Boys		Girls		Boys		Girls		Boys		Girls		Boys		Girls	
	B		B		B		B		B		B		B		B		R ²		R ²	
School outcomes																				
Grades	0.06		-0.08		-0.16		-0.03		0.40 [*]		0.00		0.36 ^{**}		0.78 ^{***}		0.25		0.46	
School involvement	-0.10		-0.03		-0.17		-0.01		0.24		0.12		0.42 [*]		0.45 ^{***}		0.24		0.18	
Internalizing behaviors																				
Depressed	0.16 [*]		-0.14		-0.24 [†]		-0.21		-0.07		-0.23 [†]		0.38 ^{**}		0.32 ^{***}		0.29		0.31	
Anxious	-0.01		-0.02		-0.24 [†]		-0.29 [†]		0.02		-0.18		0.21		0.26 [*]		0.11		0.23	
Stressed	-0.02		-0.13		-0.30 [*]		-0.37 [*]		0.08		-0.10		0.14		0.25 ^{**}		0.20		0.25	
Externalizing behaviors																				
Drugs/alcohol	-0.02		0.09		-0.09		-0.34 [*]		0.28		0.07		0.71 ^{***}		0.20 [*]		0.52		0.23	
Delinquency	-0.02		-0.06		-0.30		-0.23 [†]		0.32		0.17		0.41 ^{***}		0.20 [*]		0.29		0.09	
Defiant/party behavior ^a	0.11		0.13		-0.04		-0.34 [*]		0.24		0.02		0.55 ^{***}		0.53 ^{***}		0.46		0.43	

[†] p < .10;

^{*} p < .05;

^{**} p < .01;

^{***} p < .001

^a This model included income as an additional covariate