
Adolescent Mothers and the Criminal Behavior of Their Children

Daniel S. Nagin

Greg Pogarsky

David P. Farrington

There is little research on the relationship between adolescent motherhood and the criminality of the children. Data from the Cambridge Study in Delinquent Development reveals that children from large families who were born to women who began childbearing early are at greatest risk of criminality. Three alternative explanations for this relationship are explored—the life course–immaturity account, the persistent poor parenting–role model account, and the diminished resources account. We find no evidence supporting the first account, but in various ways the analysis provides credible support for the latter two accounts, which themselves are not mutually exclusive.

The United States has the highest teenage birth rate of all industrialized countries; its rate is twice the United Kingdom's, which has the second highest rate, 4 to 10 times larger than that of any other European country, and 15 times larger than Japan's. Further, unlike most other industrialized countries, the U.S. teen birth rate is on the increase (McElroy & Moore 1997).

The problem of teen pregnancy in contemporary America has not gone unnoticed. Hoffman, Foster, and Furstenberg (1993:1) describe adolescent childbearing as "an important social problem with substantial costs to teen mothers, their children, and even the public at large." Much research has documented the adversities of adolescent mothers. They are more likely to engage in problem behaviors (Elster, Ketterlinus, & Lamb 1990; Passino et al. 1993), fail to complete high school (Ahn 1994), head a single-parent household (Butler 1992), and live in poverty and receive welfare (Grogger & Bronars 1993). Children growing up in such circumstances are more likely to suffer physical and emotional deprivations.

We thank Linda Babcock, Laura Dugan, Seth Sanders, George Loewenstein, Magda Stouthamer-Loeber, LaRue Allen, and anonymous referees for helpful comments. All errors remain our own. Address correspondence to Daniel S. Nagin, H. John Heinz III School of Public Policy and Management, Carnegie Mellon University, Pittsburgh, PA 15213-3890.

But do the early life circumstances of the children of adolescent mothers result in these children having behavioral problems that endure throughout their lives? Public debate on early childbearing might suggest that the answer is settled, but in fact there is surprisingly little research on this question. The state of research with respect to children's outcomes has changed very little since 1987, when Furstenberg, Brooks-Gunn, and Morgan (1987:77) observed: "In point of fact, very little is known about the life course of the children of adolescent parents, or whether and how early parenthood effects their life chances." In this article we examine the criminal behavior of offspring of adolescent mothers. As will be developed below, we focus on the maternal rather than paternal age at the child's birth because in the data used in this study only the former is associated with the child's criminality. The question we then ask is: Why this association? As it turns out, characteristics of the father play an important role in answering this question.

The handful of studies examining the linkage between adolescent motherhood and the criminality of the offspring do find a connection, but in various important ways the results are incomplete. Moore (1986) found that children of mothers who were young at the birth of their *first* child were significantly more likely to engage in problem behaviors such as running away, fighting, stealing, smoking, being suspended from school, and becoming teen parents themselves. Furstenberg et al. (1987) also found that the children of adolescent mothers were more likely to engage in problem behaviors comparable with those Moore studied. Neither of these two studies followed the children beyond age 16. This is a substantial limitation because in most children delinquent and other problem behaviors are self-limiting; for whatever reason, desisting from antisocial behavior by early adulthood is the rule, not the exception (Farrington 1986; Moffitt 1993).

While the analyses of Moore and of Furstenberg et al. leave unresolved the question whether such problem behavior persists into adulthood, in a study based on four data sets Morash and Rucker (1989) do find some evidence that the early onset of childbearing is a risk factor for the adult criminality of the study individual (i.e., the child whose behavior is tracked in the study). One of the data sets used in the Morash and Rucker study—the Cambridge Study in Delinquent Development—also forms the basis for this study. In their analysis of the data Morash and Rucker examine three categories of variables—biological, family structure, and social handicap—for evidence of an association with early childbearing. The authors find no evidence that physical or biological factors are associated with the mother's age at first birth. Early childbearing is associated with a number of variables from the latter two categories. However, the objective of

Morash and Rucker was to identify risk factors in a bivariate way rather than to identify possible mechanisms through which early childbearing might result in criminal offspring. In particular, they do not examine whether these factors singly or in combination offer an explanation why early onset of childbearing is associated with the criminality of the offspring.

Also, Morash and Rucker do not examine the role of maternal age at the birth of the child. In fact, a key limitation of all these studies is that they do not disentangle two distinct measures of maternal childbearing age—the age when a woman first gave birth and the age when she gave birth to the study child. The Morash and Rucker and the Moore studies focus exclusively on the mother's age at the onset of childbearing without controlling for the mother's age at the birth of the study child. The design of the Furstenberg et al. study makes it impossible to separate the association of these two maternal birth ages with the behavior of the study child because it is based on the children of women who became first-time mothers under age 18. Thus, the mother's age at the birth of the study child and her age at the birth of her first child are the same. As we will demonstrate, simultaneously controlling for both maternal birth ages can provide important insights into the mechanisms underlying any association between adolescent motherhood and the criminality of offspring.

Only one study controls for both maternal birth ages. Grogger (1997), like earlier researchers, has found that criminality, measured by the rate of incarceration, was higher for individuals born to mothers who began childbearing early. He also found evidence that incarceration risk was higher for individuals whose mothers were young when the individual was born, but this finding is sensitive to the definition of a "young" mother.¹

Morash and Rucker's (1989:50) rationale for focusing on the mother's age at first birth was that it is "the major influence on the social status of a mother and her children." As suggested by Morash and Rucker, the mechanism underlying a linkage between adolescent childbearing and the offspring's criminality may indeed involve the early onset of motherhood permanently fixing the woman, and her first and subsequent children, in an inferior social status. But the explanation for this linkage need not be based on a mechanism so permanent that it places all her children at disproportionate risk of engaging in problem behav-

¹ Grogger reports results for two alternative specifications of the mother's age at the birth of the study child—a continuous measure and a dichotomous measure that defines a mother as "young" if she was 17 or younger at the birth of the study child. Only the continuous measure is significantly related to imprisonment risk. After addressing whether early fertility is associated with greater incarceration rates for the children, Grogger then estimates the incarceration-related costs of early childbearing. Our ultimate goal is quite distinct from Grogger's. We seek evidence for the reasons underlying the association, by testing various "accounts" of how adolescent motherhood might lead to heightened criminality for the children.

iors. It may be that adolescent mothers simply lack the maturity to socialize a child properly. This hypothesis suggests that the mother's age at the birth of the study child, not at the birth of her first child, is the theoretically relevant maternal childbearing age. Further, even if age at first birth is the theoretically relevant maternal age, there are plausible explanations other than social disadvantage for a linkage between adolescent childbearing and the offspring's criminality. For example, an early first birth may be associated with an enduring inability to be an effective parent. In summary, in light of the limited research it is premature to make a priori assumptions either about which maternal birth age is theoretically relevant or about the mechanism underlying any association between adolescent childbearing and the children's behavioral outcomes.

Here we revisit the question posed by these earlier studies: What is the connection between the mother's age at childbearing and her children's criminality? We undertake this analysis, however, exploiting the interpretive value of *both* maternal birth ages (as well as paternal birth ages). We also attempt a more comprehensive analysis of the mechanisms through which the association might operate by examining the behaviors and characteristics of both mother and father.

Section I poses alternative explanations for the link between adolescent motherhood and the criminality of the offspring. Section II reports the results and addresses the implications of the findings. Section III offers conclusions.

I. Theory

A. Overview

Research on teen childbearing suggests very diverse explanations for a link between adolescent motherhood and children's behavioral outcomes. This is most evident from the policy interventions which have been advanced in the literature. Leadbeater and Bishop (1994:646), who found that adolescent mothers suffer disproportionately high levels of depression and stress, recommend "screening for depressive symptoms . . . [to] help to identify subgroups of adolescent mothers and their children at greatest risk for long-term negative outcomes."

Implicit in this recommendation is the presumption that the mother's depression may at least partly be an "outcome or result" of the early motherhood, which in turn has an adverse effect on the child. Economic disadvantage might represent another such negative outcome. Thus, Leadbeater and Bishop's conclusion suggests a broader category of explanations attributing "long-term negative outcomes" for children to one or more "adverse outcomes" of early motherhood. Alternatively, previous work has

found that delay of subsequent childbearing significantly predicts positive outcomes for adolescent mothers (Furstenberg et al. 1987). Seitz and Apfel (1994) therefore advocate a public school program designed, in part, to delay further childbearing by adolescent mothers. The proposition that delaying subsequent childbearing predicts positive outcomes suggests a converse proposition; negative outcomes are somehow related to the size or spacing of the family. Finally, Causby, Nixon, & Bright (1991:620) recommend a “specialized school curriculum to teach parenting skills to adolescents.” Causby et al.’s recommendation suggests yet another category of explanations for a linkage between adolescent motherhood and antisocial behavior of her offspring—poor parenting skills. To be fair, none of the policy interventions summarized here is advanced to the exclusion of all others. Yet they demonstrate the great variety of explanations for negative behavioral outcomes for the children of adolescent mothers.

B. Theoretical Framework

We now offer three conceptually distinct accounts of how adolescent motherhood might produce criminal behavior in offspring. This discussion is not meant to suggest that such a process can be explained by any one set of factors. We fully recognize that “multiple causes and various developmental paths” may explain the relationship between family factors and criminality (Loeber & Stouthamer-Loeber 1986). The accounts are not intended to be general theories per se but rather simplified explanations that highlight a distinct set of factors. Their purpose is to provide a framework for structuring the analysis and interpreting the results.²

Also, the accounts are not intended to be exhaustive. We limit our attention to explanations that can reasonably be tested with the data at our disposal. The data are drawn from a prospective longitudinal survey of 411 males from a working-class area in London, England. Measurements of the study boy’s family social network within the community are very limited, and the design of the study greatly limits variability in neighborhood factors. These features of the data limit our ability to explore an account emphasizing social support networks or neighborhood effects.³

² The explanatory variables for each account are given in the appendix.

³ There is some evidence that younger mothers have fewer people available for support (Higgins et al. 1993; Levine, Coll, & Oh 1985) and that adolescent mothers may be more likely to hold negative views toward those offering support, such as health professionals (Barrera 1981). Also adolescent parents may not recognize the importance of positive and nurturing social stimuli for their children (Cooper, Dunst, & Vance 1990). Finally, because adolescent motherhood is more common in depressed, urban communities, where crime is particularly severe, the children of teen mothers might be influenced by criminogenic surroundings.

While the data afford little opportunity to test the role of such factors, there is a silver lining. At least with regard to neighborhood effects, the data do provide a natural control. Because all the children are drawn from the same area, any association between adolescent childbearing and the child's subsequent criminality is not readily attributable to the children of adolescent mothers disproportionately living in communities suffering from high levels of social disorganization.

While the accounts that follow focus on mothers, we recognize that fathers are also important figures in the development of the child even by default if they abandon their families. As will be shown, fathers figure prominently in our analysis. But in our judgment a more detailed focus on the mother, specifically on her economic circumstances and her childrearing skills, is still required both because public discourse has framed the issue in these terms and because mothers are a central figure in a child's life and generally the primary caregiver.

There is also an empirical basis for our focus on maternal childbearing age. As will be shown, there is an association between adolescent motherhood and her children's criminality, but there is no such association with the age of the male when he becomes a father. Empirically, then, maternal age is a risk factor for antisocial behavior of the child but paternal age is not. Perhaps this is because in our data fathers are distinctly older than the mothers. Maternal childbearing age, however, cannot be a causal factor per se. Rather, it is a marker for problems in the child's environment that are shaping his development. Thus, the discussion that follows should not be interpreted as implying that the mother is solely responsible for the antisocial behavior of her children. Instead the accounts are attempts to explain why maternal age is a marker for such behavior.

Life Course–Immaturity Account

Caspi, Elder, and Herbener (1990:15) define the life course as “a sequence of culturally defined age-graded roles and social transitions that are enacted over time.” The life course–immaturity account starts from the presumption that adolescents are at a stage in the life course in which they lack the capacity to be an effective parent; they simply lack the maturity and development necessary to raise a child properly. There is a very large body of evidence suggesting that poor parenting, as evidenced by inadequate supervision, failure to enforce pro-social behavioral norms consistently, and use of harsh and erratic discipline, is associated with enduring problem behaviors of the child (Loeber & Stouthamer-Loeber 1986).

Under the life course–immaturity account, this inability to be an effective parent is neither permanent nor reflective of some

character deficiency. Just as life course theory emphasizes developmental progressions, the life course–immaturity account assumes that parenting effectiveness improves with age. Consequently, while it predicts that *most* adolescents are too young to raise a child effectively, *most* adolescents should have the potential with maturity to be an effective parent. There is evidence, for example, that teen parents are less proficient than adults in problem solving and display higher levels of parenting stress (Passino et al. 1993). These underdeveloped aspects of adolescent life betray a deeper inability to socialize a child appropriately. As a result, the child is more susceptible to delinquent behavior in youth and to criminal behavior in adulthood.⁴

Our data include the mother’s age at the birth of her first child and her age at the birth of the study boy. Were “immaturity” of adolescent mothers paramount, the criminality of each child should be predicted by the mother’s age during the formative years *of that child*. This view therefore predicts a significant “study-age” effect—namely, regardless of when the mother *first* gave birth, study individuals whose mothers were “young” at their birth should exhibit greater criminality than the rest. Conversely, study boys whose mothers were older at their birth even if their mothers began childbearing early should not be disproportionately criminal.

Figure 1 summarizes this prediction in the form of a two-dimensional table with one dimension defined by whether the woman was young at onset of childbearing and the other dimension defined by whether she was young at the birth of the study child. Observe that one cell is blocked out because it is logically impossible. The other three cells are feasible: mother young at both first and study birth (YF-YS for “young first–young study”), mother young at first birth but old(er) at study birth (YF-OS for “young first–old study”), and mother old at both first and study birth (OF-OS for “old first–old study”). The entries in the figure should be interpreted as measuring the probability of criminality of the study individual. The life course–immaturity account predicts $\pi_1 > \pi_2 = \pi_3$; that is, the proportion convicted for YF-OS and OF-OS boys should be equal to one another and less than the proportion for YF-YS boys.

Persistent Poor Parenting–Role Modeling Account

The persistent poor parenting–role model account shares the premise of the life course–immaturity account that the criminal-

⁴ Adolescent motherhood might also be a risk factor for delivery complications or pregnancy problems if, for example, immaturity is associated with failure to maintain an adequate diet or to receive adequate prenatal care. While there is evidence of delivery problems and pregnancy complications placing the child at risk for problem behaviors (Moffitt 1993), no such association is found in the Cambridge data (West & Farrington 1977).

		Mother's Age, 1st Birth	
		Young	Old
Mother's Age Study Birth	Young	YF-YS π_1	X
	Old	YF-OS π_2	OF-OS π_3

- Life Course Account: $\pi_1 > \pi_2 = \pi_3$
- Persistent Poor Parenting: $\pi_1 = \pi_2 > \pi_3$
- Diminished Resource: $\pi_2 > \pi_1 > \pi_3$

Fig. 1. Maternal age matrix

ity of the children of adolescent mothers is attributable to ineffective or poor parenting. However, the former account assumes that ineffective childrearing is a time-stable feature of the parent's behavior; certain people, *regardless of their age*, are predisposed to be effective parents, while others are not.

There are at least two explanations for the source of this stability. The first considers poor parenting as an intrinsic characteristic that develops early in life and is resistant to change. Early onset of childbearing, then, actually reflects a "selection" mechanism in which those worst suited to be parents become parents soonest. Gottfredson and Hirschi (1990), for instance, would surely support this argument. They argue that people who engage in crime lack what they call "self-control," an enduring personal characteristic established early in life. Persons who lack self-control are impulsive, self-centered, quick-tempered, inconsistent, and avoid difficult tasks with delayed benefits. In short, they are the antithesis of good parents. They are also the types of individuals most likely to be involved in adolescent childbearing, either as a mother or a father, with the result that they become

agents of the intergenerational transmission of a criminal predisposition.⁵

A second explanation for the stability of poor childrearing relaxes the notion that poor parenting is so intrinsic that it is essentially impervious. Although parenting skills may improve with maturity, an early pregnancy may thwart the parents' development and somehow cement in place the ineffective parenting practices. *Assortative mating (or marriage)*, where individuals knowingly or unknowingly choose like others as partners to preserve stability and continuity in their personality traits (Caspi & Herbener 1990), offers one explanation why development of parenting effectiveness might be arrested by early childbearing. Young women who begin childbearing early may be disproportionately pairing with men who, like them, lack the skills to be an effective parent. According to assortative mating theory, both individuals would have been more likely to evolve into effective parents had they not remained together because as a couple they mutually reinforce behavior patterns which in this case are behavioral repertoires not conducive to pro-social parenting and role modeling.

The persistent poor parenting–role modeling account predicts that the association between young motherhood and delinquency should be influenced by the age of the mother at her first birth rather than at the study child's birth. This prediction would be supported by a finding that $\pi_1 = \pi_2 > \pi_3$. Further, it predicts that the association with age at first birth should be attributable to the character and childrearing capabilities of the parents. Women who begin childbearing early, along with their mates, should disproportionately be poor parents and role models. The data provide a rich set of measurements of childrearing capabilities and of parental background for testing these predictions. Also, we can explore the assortative mating view by examining the characteristics of men married to young mothers.

Diminished Resources Account

The prior two accounts focus on parenting skills. The diminished resources account focuses on the consequences of resource deprivation for long-term behavioral patterns. Under this account the offspring of adolescent mothers are more crime prone because of impoverishment. Here we are referring not only to

⁵ Hagan and Palloni (1990) argue that explanations of the intergenerational transmission of criminality such as the persistent poor parenting account, which they call "cultural or characterological" theories, are incomplete. Such accounts fail to consider "structural or imputational processes" in which the offspring of parents with criminal records are labeled as more crime prone by official agents of social control such as the police. The label in turn becomes self-fulfilling. We acknowledge their argument but reiterate our earlier caveat that our purpose is not to present an exhaustive set of accounts but rather to focus on a number of plausible alternatives. Hagan and Palloni do not dispute cultural or characterological explanations. Their point is that they are incomplete.

the consequences of economic poverty but also to scarcity of nonfinancial resource factors such as cultural objects (e.g., books, pictures, and music), personal attention, teaching and supervision, and participation in activities that allow the child to interact with the outside world (Blake 1981). Also, economic deprivation may increase familial stress and impede the opportunity for healthy, consistent, and noncoercive parent-child interaction (Sampson & Laub 1994; McLoyd 1990).

The diminished resources account adopts the central theme of the McLanahan and Sandefur (1994) analysis of the impact on children of growing up with a single parent. They argue that in large measure the lower achievement and higher incidence of social problems of such children are attributable to poverty and to the reduced capacity of a single parent to supervise and otherwise participate in the development of the child. As adolescent mothers disproportionately head single-parent households (McElroy & Moore 1997), the arguments of McLanahan and Sandefur apply directly. Only the outcome variable is different—it is the child's criminality (rather than, e.g., lower educational attainment and idleness).

But the consequences of early onset of childbearing may be even more severe than suggested by this straightforward adaptation of McLanahan and Sandefur's arguments. Beyond the heightened risk of the mother being left as the single head of the household, other factors may increase the risk of economic deprivation in households of adolescent mothers. First, the child may divert the mother's attention from enhancing her own long-term professional and economic capabilities, thereby cutting short the young woman's investment in human capital. This argument is supported by the finding that adolescent mothers are less well educated and are more likely to drop out of high school than women who delay childbearing (McLanahan & Sandefur 1994). Second, children present substantial, additional economic demands on parents. Even for intact families in which both parents are young, but especially in households headed by young single mothers, such demands are occurring at the very time the parents are least equipped to meet them—at the initial stage of their work career when their earning power is typically lowest.

We earlier noted the argument of Morash and Rucker that early onset of childbearing fixes the woman and all her children in an inferior social status. The diminished resources account offers a specific explanation for why this occurs—poverty. Thus, this account predicts that study individuals born to women who begin childbearing early should be disproportionately criminal. This is also the prediction of the persistent poor parenting-role modeling account, but the two accounts can be distinguished by another prediction. According to the diminished resource ac-

count, the age-at-first-birth effect should be explicable by impoverishment of study individuals during their youth.

Another even more important distinguishing prediction is that the diminished resources account suggests an *interaction* between the two maternal childbearing ages. This interaction stems from the link between family size and maternal age at the onset of childbearing. Individuals born to older mothers who began childbearing early will disproportionately live in households with more children (Moore 1986). This result is not surprising because by definition such individuals cannot be only children. If early childbearing places the mother at greater risk of permanent poverty, her later children will suffer most from her impoverished status because financial resources per child will diminish as family size increases. Perhaps equally important, younger children in large families may receive less parental attention than even their older siblings did when they were young simply because parents must allocate their limited time and energies to the parenting of more children. At least one study has found that diminishment of such nonfinancial resources in large families predicts poor educational performance (Downey 1995). The diminished resources account extends such reasoning to children's criminal behavior.

In sum, the diminished resources account predicts that the children later in the birth order of mothers who began childbearing early are at greatest risk of criminality. This argument predicts an interaction between the two maternal age variables; namely, children born to older mothers who began childbearing early should be at greatest risk of criminality. Combined with the prediction of an age-at-first-birth effect, the diminished resources account predicts $\pi_2 > \pi_1 > \pi_3$.

II. Analysis

A. Data

The analysis is based on a panel data set assembled by David Farrington and Donald West as part of the Cambridge Study in Delinquent Development. This is a prospective longitudinal survey of 411 males from a working-class area in London (West & Farrington 1973, 1977; Farrington 1995). Data collection began in 1961. The sample was randomly drawn from all boys aged 8–9 registered to six state primary schools located within one mile of the research office. The sample is nearly entirely white Caucasian. Information about criminal involvement was obtained through repeated searches in the central Criminal Record Office of the United Kingdom. Convictions regarded as “minor,” such as traffic offenses, public drunkenness, and “common assault,” were excluded because they are not recorded in that office.

The boys were interviewed and tested in school by psychologists at about ages 8, 10, and 14. They were later interviewed in the research office at about three-year intervals up until age 32.⁶ In addition to interviews with the boys, interviews were conducted with parents, teachers, and peers as well. Through this variety of contacts, the data provide a comprehensive picture of the boys' family structure, socioeconomic circumstances, and physical and psychological health at various ages. There is also extensive information about the parents, including the ages of both mother and father at the study and first child's birth. About 36% of the boys had at least one criminal conviction during the study period (ages 10–32), and 21% had at least one juvenile conviction.

For mothers of the London sample, the mean age at first birth was 23.3 years, while for fathers it was 27.6 years. The mean maternal age at study birth was 27.6 years; for fathers it was 31.5 years.

B. Adolescent Motherhood and the Child's Criminality

The analysis proceeds in two phases. First, we explore the association of the study boy's criminality with the two theoretically relevant measures of maternal childbearing age: the age of the mother at first birth and the age of the mother at the study boy's birth. Second, after specifying the precise association between maternal childbearing age and children's criminality, we examine alternative explanations for the association.

Because we are examining the impact of young motherhood, the lower tails of the age distributions are particularly relevant. For purposes of this analysis, we had to specify an age at which mothers would no longer be deemed "young." The choice of "under 21" as a cut-point was dictated by both practical and theoretical concerns. From a practical standpoint, a cut-off below 21 would curtail the statistical power of group-wise comparisons. Table 1 provides the distribution of maternal childbearing age in the sample. While 22% of boys were born to mothers who first gave birth at age 19 or younger, only about 7% of the boys were born when their mothers were age 19 or younger. A cut-off greater than 21 made little theoretical sense, since the focus of this work is on *adolescent* motherhood. The "under 21" criterion also possesses a certain intuitive appeal since 21 was the age at which the parents became legally adult in the United Kingdom at the time. The following analysis therefore employs two dichotomous age variables: whether the mother was under 21 at first birth and whether she was under 21 at study birth. We recognize, however, that any cut-off is to some degree arbitrary. Accord-

⁶ In the analysis, we only included the 403 individuals who survived until age 32.

Table 1. Proportion of Births, by Maternal Birth Age^a

Age of Mother	At First Birth	At Study Birth
10-14	0.01	0.00
15-19	.21	.07
20-24	.50	.32
25-29	.20	.30
30-34	.07	.19
35-39	.02	.10
40-44	0.00	0.03

^a London sample consists of 403 boys.

ingly, in the regression analyses that follow, we also report results in which the maternal childbearing ages are entered into the specification as linear covariates. As will be seen, our results are insensitive to this specification issue.

Table 2 reports the proportion of study individuals ever convicted by maternal childbearing age for each of the groups in Figure 1. Contrary to the life course–immaturity account, there is no difference between the proportion ever convicted of study individuals born to young study (YS) and older study (OS) mothers. These proportions appear in the margins of Table 2 and are, respectively, 0.34 and 0.37. In contrast, individuals born to women who began childbearing early, young first mothers (YF), do have significantly higher conviction proportions than

Table 2. Proportion Ever Convicted, by Maternal Childbearing Age

		Mother's Age, 1st Birth		
		<= 20	>20	<u>Marginal Rate:</u>
Mother's Age, Study Birth	<= 20	YF-YS $\pi_1 = .34$ (n = 53)	X	.34
	> 20	YF-OS $\pi_2 = .52$ (n = 89)	OF-OS $\pi_3 = .32$ (n = 261)	.37
<u>Marginal Rate:</u>		.45	.32	.36

their counterparts who were born to older first mothers (OF)—0.45 versus 0.32.

While the finding of a significant age-at-first-birth effect is consistent with both the persistent poor parenting–role model account and the diminished resources account, the conviction rates by group do not comport exactly with the predictions of either. Consistent with the diminished resources account, a distinctly higher proportion of the YF-OS individuals have been convicted ($p_2 = .52$) than have individuals from the other two groups. But contrary to the predictions of all three accounts, the proportion for the YF-YS group, $p_1 = .34$, is not significantly greater than that for the OF-OS group, $p_3 = .32$. This pattern of $\pi_2 > \pi_1 = \pi_3$, which we call the “young first–old study” effect, is robust to the measurement of criminality. Table 3 reports counterpart results for five alternative measures of criminality. In all cases the pattern mirrors that in Table 2.

We also examined whether the father's age at the birth of the study child or his age at the birth of his first child predicted his offspring's criminality. We found no evidence of either relationship. Specifically, neither regression analysis relating the two paternal ages of fatherhood to the child's criminality nor tabular analyses provided any evidence of an association. Perhaps the reason for the lack of association is that the fathers are substantially older, about 4 years older on average, than the mothers. Characteristics of the father do, however, figure prominently in the later phase of the analysis and in our conclusions.

Table 3. Five Measures of Criminality, by Maternal Age Categories

Maternal Childbearing Age Category	Mean Total Convictions (1)	Mean Total (at Least 1) ^a (2)	Mean Juvenile Convictions (3)	Mean Juvenile (at Least 1) ^a (4)	Self-Reported Violence ^b (% of Boys) (5)
YF-YS	1.17	3.44	0.50	1.44	22
YF-OS	3.2	6.2	1.26	2.26	33
OF-OS	1.15	3.63	0.53	1.43	16

NOTE: For cols. (1)–(4), sample sizes are 53, 89, and 261 for YF-YS, YF-OS, and OF-OS categories respectively. For col. (5), sample sizes are 50, 82, and 257.

^a Excludes those with 0 convictions.

^b The self-reported violence measure refers to boys scoring “high” on a composite variable encompassing involvement in fights and carrying a weapon at age 18.

C. Explaining the “Young First–Old Study” Effect

While findings in Tables 2 and 3 are not entirely supportive of any of the accounts, they come closest to supporting the diminished resources account. One possible explanation for the failure to find an age-at-first-birth effect is that the early onset of childbearing may not fix the young mother in an impoverished economic status. Perhaps the diminished resources account can be reduced to the argument that the early onset of childbearing

is associated with large family size and that children late in the birth order of large families tend to suffer most from the financial and nonfinancial resource deprivations emphasized by this account.

Individuals born to YF-OS mothers do indeed come from larger families. The average number of children in YF-OS households is 5.19 compared with 3.0 and 3.29 for OF-OS and YF-YS families, respectively. Further, as shown by the birth order distributions in Table 4, the study boys in YF-OS households are later in the birth order (i.e., youngest siblings) than those in YF-YS households.⁷

Table 4. Birth Order for Maternal Birth Age Categories

Maternal Childbearing Age Category	Proportion of Boys (<i>n</i> = 403)		
	Youngest	Middle	Oldest ^a
YF-YS (<i>n</i> = 53)	0.02	0.24	0.74
YF-OF (<i>n</i> = 89)	.26	.74	.00
OF-OS (<i>n</i> = 261)	.29	.39	.32

^a Only children considered oldest.

If family size, or some measure of resources per child, was the primary mediating force in the relationship between the maternal childbearing age and the study individual's criminal behavior, we would have support for the diminished resources account. Specifically, for family size or resources per child to "explain" the YF-OS effect, we would expect (1) a positive and significant association between family size (resources per child) and the eventual criminality of the children and (2) inclusion of a family size (or resources per child) variable in a multivariate regression model should account for the impact of maternal childbearing age.

Table 5 reports three logit regressions designed to test these two propositions. The dependent variable measures whether the study individual was convicted at least once. The first regression controls only for the two maternal childbearing age variables: whether the mother was young at first birth, and whether she was young at the study birth. This regression provides the algebraic equivalent of Table 2. To see this, consider the relationship of the regression to the conviction probabilities of the three groups. For the OF-OS group, both dummy variables are 0, while for the YF-YS group, both dummy variables are 1. Because the coefficients of the two age variables are of opposite sign but of nearly identical magnitude, the regression equation will predict virtually identical conviction probabilities for these two groups. By contrast, for the YF-OS group, only the young at first birth dummy is

⁷ In Table 4, only children were considered "oldest" (i.e., first in the birth order) because their lack of competition for familial resources most closely resembles the circumstances of a first-born child, at least until a second child is born.

Table 5. Probability of Conviction: Logit Model (*t* Ratios in Parentheses)

	Coefficients		
	Without Family Size	With Family Size	With Inadequate Income per Child
Constant	-.76** (5.71)	-1.43** (6.61)	-.91** (6.25)
Young first-age (1 if mother ≤ 20 at first birth; else 0)	.83** (3.32)	.49* (1.84)	.76** (3.0)
Young study-age (1 if mother ≤ 20 at study birth; else 0)	-.73* (2.03)	-.33 (.89)	-.67** (2.76)
Family size (total # of children, including study boy)		.20** (4.04)	
Family income per child			.68** (2.76)

* $p < .05$ ** $p < .01$

1. Because the regression coefficient for this variable is positive, the model predicts this group will have a higher conviction probability than the two other groups. This is precisely the pattern in Table 2 (and Table 3).

The second regression in Table 5 augments the specification by adding family size, as measured by the number of children in the household at the boy's tenth birthday. The family size coefficient estimate is positive and highly significant. Including the family size variable reduces the study-age coefficient substantially (-.73 to -.33) and renders it statistically insignificant. The age-at-first-birth coefficient is reduced as well, though it remains significant. Thus, the results are consistent with the argument of the diminished resource account that the heightened proportion convicted of the YF-OS boys is attributable to large family size. After controlling for family size, only the age-at-first-birth effect predicted by the diminished resource account (and the poor parenting-role model account) remains.

We obtain virtually the same pattern of results when we estimate the models presented in Table 5 treating age in a linear fashion. Using continuous measures of maternal childbearing age, the coefficient for age at first birth is -.13, while the study birth coefficient is .06, with *t*-values of 3.97 and 2.45, respectively. When we add family size, the coefficient for age at first birth is reduced by about half to -.06 ($t = 1.7$), the study birth coefficient is driven nearly to 0 ($\beta = .01$; $t = .4$), and the coefficient for number of siblings is .19 ($t = 3.44$).

Table 6 reports actual conviction proportions by maternal age at first birth controlling for family size. The pattern in this table conforms closely to arguments underlying the diminished resources account. Observe that for all but one family size, the proportion ever convicted is greater for individuals born to YF mothers. This is consistent with the prediction that YF mothers are disproportionately fixed in a low social status because of impoverishment. Also, observe that the conviction proportion rises

Table 6. Proportion Ever Convicted by Maternal Age at First Birth and Family Size (Sample Sizes in Parentheses)

Family Size (No. of Children)	Mother \leq 20 at First Birth	Mother $>$ 20 at First Birth
1	.25 (8)	.21 (38)
2	.26 (27)	.26 (74)
3	.38 (34)	.31 (64)
4	.44 (25)	.33 (36)
\geq 5	.65 (48)	.49 (49)

with family size regardless of maternal childbearing age. This, too, is consistent with the diminished resources account.

While the results in Table 5 provide good support for the diminished resources account, two findings militate against a strong endorsement. First, the diminished resources account predicts that, holding constant the number of siblings, individuals born later in the birth order should be more crime prone. We found no support for this prediction. Specifically, the addition of controls for birth order to the family size specification did not increase the explanatory power of the model. Whether the study individual is the first-, middle-, or last-born child, all fail to predict criminality. West and Farrington (1973:33) also found that when family size is controlled for, birth order had no impact on juvenile convictions. Second, a direct measure of inadequate income does not explain the link between adolescent childbearing and the offspring's criminality.

The third model in Table 5 replaces family size with a dichotomous measure of inadequate income equal to 1 if inadequate. This income-inadequacy measure is based on a subjective classification by a psychiatric social worker of income inadequacy based on the number of dependents and the demands of the household. While the inadequate income per child coefficient is positive and significant, indicating a positive association between impoverishment and criminality, its addition to the model has very little impact on the maternal childbearing age coefficients.⁸ We would have preferred a more precise and objective measure of income per child based on an actual accounting of household financial resources, but no such measure was available. Thus the failure of the inadequate income measure to explain the maternal childbearing effects should not be taken as a conclusive finding against the diminished resources account. Notwithstanding,

⁸ Again, these results are insensitive to the form of the maternal childbearing age variables. Using the linear specification of age, when we add the income per child measure, all three coefficients are significant and, as with the dichotomous measures, the magnitude of the age coefficients are nearly unaffected.

it is reason for caution. The fact that the inadequate income measure is significantly related to conviction probability does suggest that the subjective assessment has some validity.

In summary, the analysis has thus far found no evidence to support the life course–immaturity account⁹ and mixed evidence with respect to the other two accounts. While the results in Table 2 do not conform exactly with the predictions of either the poor parenting–role model account or the diminished resources account, controls for family size do produce the age-at-first-birth effect anticipated by both these accounts. We turn now to exploring alternative explanations for this effect.

D. Explaining the Young-at-First-Birth Effect

The strategy for explaining the young-at-first-birth effect is first to identify distinguishing characteristics of the households of YF mothers suggested by both the persistent poor parenting–role model and diminished resources accounts. We then add these characteristics to the maternal childbearing age model to assess their impact on the maternal childbearing age coefficients.

Table 7 reports cross-tabulations of maternal age at first birth with a series of variables. The variables are grouped into three categories: one each for the diminished resources and persistent poor parenting–role model accounts and the third for additional appropriate controls. It is striking that at least one measure from each category of variables significantly distinguishes the households of the women who began childbearing early.

Consider first the persistent poor parenting–role model account. We have four measures of poor parenting at our disposal. By three of these measures, poor parenting is significantly more common in the households of YF mothers. Study boys growing up in YF households are significantly more likely to be physically neglected, to be poorly supervised, and to have parents who have little interest in their education. However, surprisingly, an overall measure of poor childrearing behavior does not distinguish YF households.

We also have three measures of poor parental role models—father has a criminal record, both father and mother have a criminal record, and father has an erratic work history. By all three measures, the parents of individuals born to YF mothers are poor role models.¹⁰ In this regard the finding that the fa-

⁹ Further evidence against the life course–immaturity account lies in the fact that there were no statistically significant differences between YS and OS households in parenting measures such as physical neglect of the study boy, poor supervision, and parental interest in the boy's education.

¹⁰ Indeed, the study parents are not the only members of these “at risk” families engaging in criminal conduct. Children born to mothers who were under 21 at first birth are also significantly more likely to have a criminal older sibling. In a two-way cross-tabulation which excludes all children without an older sibling, we find that 23% of boys born

Table 7. Characteristics Associated with Young (at First Birth) Mothers

	Mother's Age at First Birth (Cells Refer to Proportion of Boys)		χ^2
	Younger (≤ 21) ($n = 142$)	Older (> 21) ($n = 261$)	
Persistent poor parenting–role model:			
Physical neglect (of child)	.17	.09	5.34*
Low parental interest in child's education	.26	.11	13.75**
Poor parental childrearing behavior	.24	.22	0.16
Poor parental supervision	.29	.14	13.33**
Father with erratic job record	.31	.17	9.11**
Criminal record:			
Father (convicted before child is aged 10)	.23	.15	4.21*
Both parents (convicted before child is aged 10)	.11	.03	8.43**
Diminished resources			
Parental separation (by age 10)	.35	.15	19.67**
Inadequate Family Income (per child)	.28	.20	3.92*
Social assistance	.30	.14	15.00**
Very unsatisfactory housing	.39	.31	2.97
Other			
Low IQ	.34	.30	0.53
Daring	.41	.23	14.85**

* $p < .05$ ** $p < .01$

d.f. = 1 in all cases

ther's job and criminal record are distinguishing characteristics of households of the YF mothers is a reminder that the role of the father may be crucial in unraveling the young-at-first-birth effect. Fathers may occupy a central role in the process by which early initiation of motherhood results in criminal offspring. This may be due to an inability of these fathers to provide an appropriate male role model and to contribute to the proper socialization of the child. We explore this issue further in the regression analysis below.

Consider next the diminished resources account. We have three direct measures of impoverishment—inadequate family income, receiving social assistance, and residing in very inadequate (slum) housing. By all three of these measures, YF households are at greater risk of impoverishment and the difference is significant, at least at the .05 level, in two of three cases. The diminished resource account also emphasizes the negative impact of separation of a boy from a parent on household resources. Periods of at least temporary parental separation are much more common in YF households.

Finally, it made little sense to formulate a model without controlling for salient individual differences. Low IQ and a preference for engaging in risk-taking activities, as measured by daring,

to YF mothers have a convicted older sibling, compared with just 13% of the others ($\chi^2 = 4.37$).

were chosen because they are known predictors of criminality (Wilson & Herrnstein 1985; Nagin & Land 1993; Farrington 1993; Moffitt 1993).

Table 8. Expanded Logit Model, with Variables Correlated with Young First Birth ($n = 353$)

	Coefficient	<i>t</i> -Ratio
Constant	-1.90**	6.60
Young first age (≤ 20)	.12	.36
Young study age (≤ 20)	-.56	1.26
Family size: No. of siblings	.18**	2.38
Persistent poor parenting-role modeling		
Physical neglect (of child)	.61	1.24
No parental interest in child's education	.15	.38
Poor parental supervision	-.08	.21
Father with erratic job record	-.14	.38
Criminal record:	.73*	1.9
Father (convicted before child is aged 10)		
Both parents (convicted before child is aged 10)	1.28*	2.09
Diminished resources		
Parental separation (by age 10)	1.05**	2.82
Inadequate family income (per child)	.71*	1.71
Social assistance	.66	1.53
Other		
Daring	.94**	3.37
Parental separation \times Criminal father	-.78	1.24

* $p < .05$

** $p < .01$

In the logistic regression results reported in Table 8, the family size model in Table 5 (second column) is expanded to include each variable that significantly distinguished YF households. Also included in the expanded model is a dichotomous variable equal to 1 if there is separation from a criminal father and 0 otherwise. If the "poor role model" view explains the impact of criminal fathers on study boys, we would expect boys separated from criminal fathers to fare *better* than boys who were not separated from such a father. This prediction would be confirmed by a *negative* association between this interaction variable and conviction probability. Such a negative association would indicate that separation from a criminal father mitigates the deleterious impact of such a role model. The hypothesized result would also be inconsistent with a genetic interpretation of the association between the criminality of the father and his child.

In this expanded model the age-at-first-birth effect is rendered statistically insignificant, a result that reflects the substantially reduced magnitude of this coefficient from its initial level (.12 compared with .83 in Table 5). The additional explanatory variables in the full model, taken together, therefore provide at least one way of accounting for our earlier finding that the children of women who begin childbearing early have more criminally prone children.

The childhood variables that are significantly related to the study individual's eventual criminality are large family size, separation from parents, parental criminality, inadequate family income, and a daring disposition. While only one of the two direct measures of impoverishment are significantly related to conviction probability, the finding that parental separation and family size contribute to explaining the age-at-first-birth effect supports the diminished resources account. Similarly, while none of the parenting variables are significant predictors of conviction probability, the finding that parental criminality is a significant predictor supports the persistent poor parenting–role model account. Further, parental criminality is a strong predictor of ineffective parenting. We created a “mean poor parenting index” by taking the average binary (1 or 0) score on the three childrearing variables that significantly distinguish YF households. In the case of 0 parents convicted, the mean poor parenting score is .11. For one parent convicted, the score rises to .21, and for both parents convicted, the score rises still higher to .55. Because of this close correspondence between parental criminality and poor parenting, removal of the parental criminality variables from the specification has the expected result—the parenting variable becomes statistically significant.

The poor parenting–role model account is also supported by the finding for the interaction variable (parental separation and criminal father). While short of significance at conventional levels, the coefficient is negative and its absolute magnitude is nearly identical to the positive criminal father coefficient. Were there a genetic explanation for the finding that criminal parents disproportionately produce criminal children, we would expect the higher proportion convicted for children of criminal parents to be unaffected by whether the child had been separated from his parents. This result did not occur. Indeed, because the absolute magnitude of the negative interaction coefficient is nearly equal in magnitude to the positive criminal father coefficient, the results suggest that separation from such a father wholly avoids his poor influence.

Sensitivity analyses show that none of the significant factors alone can explain the age-at-first-birth effect. Also, we obtain the same overall pattern of results employing alternative measures of criminality such as total number of convictions (rather than the dichotomous “ever convicted” variable) and self-reported adult criminal involvement in a variety of criminal acts.¹¹ Further, the

¹¹ The distribution of convictions is very highly skewed. Thus, in a regression model in which the dependent variable is number of convictions, the few individuals with very large numbers of convictions have a very pronounced influence on the results. Our model does not “explain” the age-at-first-birth effect in the entire sample, but if we restrict our attention to those individuals with fewer than 19 convictions—the 99th percentile of the conviction distribution—the model unambiguously explains this effect.

pattern of findings is unaltered if the maternal birth ages are entered into the model in a linear format.

III. Conclusion

In this study we have probed three stylized explanations why adolescent motherhood might be a risk factor for the criminal behavior of her children—the life course–immaturity account, the persistent poor parenting–role model account, and the diminished resources account. The analysis offered no support for the life course–immaturity explanation. This null finding is important because it implies that long-term problem behaviors of the children do not stem from transitory behaviors or circumstances attendant to the youthfulness of the mother. Rather the problem behaviors seem to be rooted in the more enduring circumstances and behaviors emphasized in the poor parenting–role model and diminished resources accounts. In various ways the analysis supports both these accounts. Specifically, our finding that children from large families born to women who begin childbearing early are at greatest risk of criminality seems to be explained by a combination of factors, some emphasized by the poor parenting–role modeling explanation, such as physical neglect and poor supervision, particularly among parents with criminal records, and others by the diminished resources explanation, such as inadequate income and parental separation.

Because these two accounts are not mutually exclusive, there is no internal contradiction. Indeed, in our judgment, the ambiguity of the results concerning which of these two accounts dominates should not be surprising. The onset of early childbearing is not a cause of children's subsequent problem behavior but rather a marker for a set of behaviors and social forces that give rise to adverse consequences for the life chances of children. Thus, it should not be surprising that our findings replicate earlier analyses of these and other data sets about risk factors for criminality. Our analysis adds to this literature by drawing the connection between these risk factors and the early onset of parenting.

Definitive conclusions on the relationship of adolescent childbearing to the antisocial behavior of the offspring must, however, await further research. Replication of our findings with contemporary U.S. data would be a particularly worthwhile endeavor. Although England and the United States share a common language and have many cultural and political similarities, they are different countries, with all that entails. Further, our data were assembled in an era when the social circumstances of adolescent mothers were quite different from what they are now. Young mothers now commonly remain unmarried, whereas in the era when the Cambridge data were assembled, doing so was

unusual. Relatedly, family structure has changed dramatically, as has the social and economic position of women.

Beyond replication with a more contemporary data set, a complete research program would address at least the following three issues. First, the present study relies on inexact measures of household financial resources. Also, its measures of parenting quality were not designed to capture the impact of family size on parental attention per child. Better measures of both financial and parenting resources per child are necessary for a thorough testing of the diminished resources account. Second, an important missing link in this analysis concerns whether the assortative mating process is simply a selection process that tends to bring together individuals who are predestined to raise antisocial children in impoverished households or whether assortative mating tends to fix in place poor parenting and impoverishment. Our data do not enable us to test these alternative hypotheses. Such an assessment requires repeated measures of parenting quality and a sample sufficiently large to compare the evolution of parenting skills based on the criminality of the parents and the length of time they stay together. This issue deserves special attention because distinguishing between them has important policy implications. If assortative mating among individuals with criminal histories tends to reinforce their antisocial and poor parenting tendencies, incentives to keep them together may be ill advised. Third, we were unable to assess the impact of neighborhood factors and social support networks on adolescent mothers and their children. As we have already noted, such mothers and children are likely to suffer disproportionately from being poorly connected to social support networks and from the ill-effects of living in disadvantaged neighborhoods.

Appendix: Description of Explanatory Variables

Persistent Poor Parenting–Role Model

Physical Neglect (of child)

Noticeable neglect of the child's clothing, hygiene, or food—measured at 8–9

Low Parental Interest in Child's Education

Parents uninterested and unaware of child's progress with respect to school activities and problems—measured at 8–9

Poor Parental Childrearing Behavior

Rates parental behavior according to parents' attitude toward the child, consistency between parents, the presence of disagreement, and existence of harsh or erratic discipline—measured at 8–9

Poor Parental Supervision

Parents poorly supervised child (combination of parental vigilance and lax rules)—measured at 8–9

Father Erratic Job Record

- Frequent and unexplained changes in employment, poor worker, or frequently unemployed—measured at 8–9
- Criminal Record (Father)
 - Father convicted at least once before boy is aged 10
- Criminal Record (Both Parents)
 - Both parents convicted at least once before boy is aged 10

Diminished Resources

- Separation from Parent before age 10
 - Separation from an operative or natural parent for at least 1 month before age 10 (if for reasons other than the death or hospitalization of a parent)—measured at age 10
- Inadequate Family Income (per Child)
 - Impressionistic classification based on size of family and style of living. About £15 or less per week for 2 adults and 4 children (1961)—measured at 8–9
- Social Assistance
 - Assesses whether the family has used social service agencies for support—measured at age 8–9
- Very Unsatisfactory Housing
 - Housing deemed “very unsatisfactory” if general squalor or overcrowding—measured at 8–9

Other

- Low IQ
 - Scored 90 or below on progressive matrices IQ test—measured at 8–9
- Daring
 - Composite measure of adventurousness and risk-taking behavior. Boy scores in approximately upper 30%—measured at 8–11

References

- Ahn, Namkee (1994) “Teenage Childbearing and High School Completion: Accounting for Individual Heterogeneity,” 26 *Family Planning Perspectives* 17–21.
- Barrera, Manuel, Jr. (1981) “Social Support in the Adjustment of Pregnant Adolescents: An Assessment of Issues,” in B. H. Gottlieb, ed., *Social Networks and Social Support*. Beverly Hills, CA: Sage Publications.
- Blake, Judith (1981) “Family Size and the Quality of Children,” 18 *Demography* 421–42.
- Butler, Amy C. (1992) “The Changing Economic Consequences of Teenage Childbearing,” 66 *Social Service Rev.* 1–31.
- Caspi, Avshalom, Glen H. Elder, & Ellen S. Herbener (1990) “Childhood Personality and the Prediction of Life-Course Patterns,” in L. Robins & M. Rutter, eds., *Straight and Devious Pathways from Childhood to Adulthood*. New York: Cambridge Univ. Press.
- Caspi, Avshalom, & Ellen S. Herbener (1990) “Continuity and Change: Assortative Marriage and the Consistency of Personality in Adulthood,” 58 *J. of Personality & Social Psychology* 250–58.
- Causby, Vicki, Cynthia Nixon, & Judy M. Bright (1991) “Influences on Adolescent Mother-Infant Interactions,” 26 *Adolescence* 619–30.

- Cooper, Carolyn S., Carl J. Dunst, & Sherra D. Vance (1990) "The Effects of Social Support on Adolescent Mothers' Styles of Parent-Child Interaction as Measured on Three Separate Occasions," 25 *Adolescence* 49–57.
- Downey, Douglas B. (1995) "When Bigger Is Not Better: Family Size, Parental Resources, and Children's Educational Performance," 60 *American Sociological Rev.* 746–61.
- Elster, Arthur B., Robert Ketterlinus, & Michael E. Lamb (1990) "Association Between Parenthood and Problem Behavior in a National Sample of Adolescents," 85 *Pediatrics* 1044–50.
- Farrington, David P. (1986) "Age and Crime," in Tonry & Morris 1986.
- (1993) "Childhood Origins of Teenage Antisocial Behaviour and Adult Social Dysfunction," 86 *J. of the Royal Society of Medicine* 13–17.
- (1995) "The Development of Offending and Antisocial Behaviour from Childhood: Key Findings from the Cambridge Study in Delinquent Development" (12th Jack Tizard Memorial Lecture), 360 *J. of Child Psychology & Psychiatry* 929–64.
- Furstenberg, Frank F., Jr., J. Brooks-Gunn, & S. Philip Morgan (1987) *Adolescent Mothers in Later Life*. New York: Cambridge Univ. Press.
- Gottfredson, Michael R., & Travis Hirschi (1990) *A General Theory of Crime*. Stanford, CA: Stanford Univ. Press.
- Grogger, Jeff (1997) "Estimating the Incarceration-Related Costs of Early Childbearing," in Maynard 1997.
- Grogger, Jeff, & Stephen Bronars (1993) "The Socioeconomic Consequences of Teenage Childbearing: Findings from a Natural Experiment," 25 *Family Planning Perspectives* 156–61, 174.
- Hagan, John, & Alberto Palloni (1990) "The Social Reproduction of a Criminal Class in Working-Class London, circa 1950–1980," 96 *American J. of Sociology* 265–99.
- Higgins, Barbara S., Gary L. Schilmoeller, Marc D. Baranowski, & Theodore T. Coladarci (1993) "Support Systems and Caretaking Behaviors of Adolescent and Older Mothers: The First Year after Delivery," 6 *J. of Child & Pediatric Nursing* 5–14.
- Hoffman, Saul D., E. Michael Foster, & Frank F. Furstenberg, Jr. (1993) "Reevaluating the Costs of Teenage Childbearing," 30 *Demography* 1–13.
- Leadbeater, Bonnie J., & Sandra J. Bishop (1994) "Predictors of Behavior Problems in Preschool Children of Inner-City Afro-American and Puerto Rican Adolescent Mothers," 65 *Child Development* 638–48.
- Levine, Lauren, Cynthia T. Garcia Coll, & William Oh (1985) "Determinants of Mother-Infant Interaction in Adolescent Mothers," 75 *Pediatrics* 23–29.
- Loeber, Rolf, & Magda Stouthamer-Loeber (1986) "Family Factors as Correlates and Predictors of Juvenile Conduct Problems and Delinquency," in Tonry & Morris 1986.
- Maynard, Rebecca, ed. (1997) *Kids Having Kids*. Washington: Urban Institute Press.
- McElroy, Susan Williams, & Kristin Anderson Moore (1997) "Trends: National and International Trends in Early Pregnancy and Childbearing," in Maynard 1997.
- McLanahan, Sara, & Gary D. Sandefur (1994) *Growing up with a Single Parent*. Cambridge: Harvard Univ. Press.
- McLoyd, Vonnie C. (1990) "The Impact of Economic Hardship on Black Families and Children: Psychological Distress, Parenting, and Socioemotional Development," 61 *Child Development* 311–46.
- Moffitt, Terrie E. (1993) "Adolescence-Limited and Life-Course-Persistent Antisocial Behavior: A Developmental Taxonomy," 100 *Psychological Rev.* 674–701.
- Moore, Kristin A. (1986) *Children of Teen Parents: Heterogeneity of Outcomes*. Final Report to the Center for Population Research, National Institute of Child

- Health & Human Development, Department of Health & Human Services, grant #HD18427-02.
- Morash, Merry, & Lila Rucker (1989) "An Exploratory Study of the Connection of Mother's Age at Childbearing to Her Children's Delinquency in Four Data Sets," 35 *Crime & Delinquency* 45-93.
- Nagin, Daniel S., & Kenneth C. Land (1993) "Age, Criminal Careers, and Population Heterogeneity: Specification and Estimation of a Nonparametric, Mixed Poisson Model," 31 *Criminology* 327-62.
- Passino, Ann Wurtz, Thomas L. Whitman, John G. Borkowski, Cynthia J. Schellenbach, Scott E. Maxwell, Deborah Keogh, & Elizabeth Rellinger (1993) "Personal Adjustment during Pregnancy and Adolescent Parenting," 28 *Adolescence* 97-122.
- Sampson, Robert J., & John H. Laub (1994) "Urban Poverty and the Family Context of Delinquency: A New Look at Structure and Process in a Classic Study," 65 *Child Development* 523-40.
- Seitz, Victoria, & Nancy H. Apfel (1994) "Effects of a School for Pregnant Students on the Incidence of Low-Birthweight Deliveries," 65 *Child Development* 666-76.
- Tonry, Michael, & Norval Morris, eds. (1986) *Crime and Justice: An Annual Review*, vol. 7. Chicago: Univ. of Chicago Press.
- West, D. J., & David P. Farrington (1973) *Who Becomes Delinquent?* Second Report of the Cambridge Study in Delinquent Development. London: Heinemann Educational Books.
- (1977) *The Delinquent Way of Life*. Third Report of the Cambridge Study in Delinquent Development. London: Heinemann Educational Books.
- Wilson, James Q., & Richard Herrnstein (1985) *Crime and Human Nature*. New York: Simon & Schuster.