

Crime and the Family: Lessons from Teenage Childbearing

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Abstract

This paper reviews the literature that links classic issues in demography to crime. Specifically we review literature that links the wantedness of children, the age of a mother at the birth of her first child and the probability that a child grows up without two parents to the child's criminal outcomes as a young adult. We discuss the literature in economics that largely utilizes what we label "macro-level variation;" that is variation in policy at the state level that shifts the propensity of having wanted children, having children as a teen and becoming a mother raising a child alone as the result of divorce. We also review the literature in psychology and family therapy. This literature uses variation at the individual level which gives clearer statistical results at the potential cost of weaker statements of causality. This literature however benefits from being decidedly more theoretical which aids interpretation and also shows promise of allowing causality to be established using clinical trial methods. A central argument of the paper is that much is to be gained by considering literature on teenage childbearing for girls to gain insight on the origins of criminal activity which almost always applies to boys. Three lessons emerge: (1) Both theoretically and empirically it is useful to think about teenage childbearing for girls as "female crime;" (2) That the best established cohort explanation for the time series pattern in crime is the link between having a mother who was a teen at her first birth and subsequent criminality of boys in early adulthood; and (3) the macro level evidence is unlikely to be successful at sorting out various cohort explanations for the time series pattern of crime because, just as in the case of teenage childbearing, the variation in potential explanations occur approximately at the same time with limited spatial variation. Randomized trials of specific interventions may help a great deal in establishing and understanding this link.

Section 1: Introduction

Gary Becker is responsible for both the most prominent theory of crime and the most prominent theory of childbearing in modern economic thought. When focusing on the Supply of Crime in his 1968 paper “Crime and Punishment: An Economic Approach,” Becker focuses solely on the costs and benefits to a rational actor. He writes:

“Theories about the determinants of the number of offenses differ greatly, from emphasis on skull types and biological inheritance to family upbringing and disenchantment with society. Practically all the diverse theories agree, however, that when other variables are held constant, and increase in a person’s probability of conviction or punishment if convicted would generally decrease, perhaps substantially, perhaps negligibly the number of offences he commits.”

Since his work is silent on theories of how “skull types, biological inheritance, family upbringing and disenchantment with society” are linked to criminal propensity, Becker emphasizes the role that changes in the cost of crime has on the rate of crime over time. Public policies such as the level public expenditures on police, prosecution, courts, and corrections affect the rate of detection of criminal activity and the size of sanctions that criminals receive when convicted. To Becker, the principle mechanism through which crime rates vary is through contemporaneous policies that affect the cost (or benefit) of crime. Demographers would classify this as a “period effects” model of crime.

Becker’s theory of the demand for children is contained in his book A Treatise on the Family first published in 1981. Like other social scientists, Becker was observing a profound shift in the American family. Starting in the early 1960s, the birth rate fell sharply, the fraction of children born outside of marriage increased precipitously the divorce rate rose steeply and cohabitation outside of marriage went from rare to common¹. His theory in Treatise was an

¹ Much of the modern work on the rise in out-of-wedlock childbearing follows the Moynihan report (1965) that highlighted statistics on Black out-of-wedlock births and argued “At the heart of the deterioration of the fabric of Negro society is the deterioration of the Negro family.” Bumpas and Sweet (1989) document that the rate at which individuals ever cohabited rose from 14% for the 1929-1938 birth cohort to 45% for the 1955-1959 birth cohort.

attempt to unify these empirical facts, extending his theory of household production to address the gains to marriage, the demand for children and the related topic of investment in children. Becker views the rise in the wage rate that women can obtain on the labor market as the root cause of the changes in marriage and childbearing patterns and as such his theory centers on the effect of the changes in the value of women's time on the traditional activities of "home production." While to a limited degree, Becker specializes the "production function" for the production of children and "child quality" the purpose of the model is not to understand the micro-level foundations of childrearing. Instead it is to understand the macro-level changes in society that could stem from increased economic opportunities for women. For this reason "home production" is a general concept where individuals gain utility from goods produced in the home and these goods are produced by purchasing inputs on the market and combining these with time from household members. The process for raising children is different in only one substantive way from cooking, cleaning or raising garden flowers.

Theories in developmental psychology link the "production of children" to the development of criminal behavior. These theories were developed not as a byproduct of explaining broad social trends but instead to explain regularities between early childhood conditions, childhood aggression, conduct disorder, juvenile delinquency and finally criminal behavior in adolescents and beyond. Unlike the production function in Becker, developmental psychology has strong theory about the micro-foundations of both pro-social and antisocial personalities. To starkly contrast this with Becker, developmental psychology makes "skull types, biological inheritance, family upbringing and disenchantment with society" central.

While there are many theories that make a link between biology, childhood conditions and personality outcomes, Moffitt (1993) lays out an elegant one that has had a major impact on

psychology and criminology. Moffitt classifies individuals into two groups. These groups differ in the continuity of antisocial behavior across age and in their responsiveness to life events in adolescence. Life-course-persistent (LCP) individuals display antisocial behavior at a young age and antisocial behavior remains a stable personality trait over the life course and over all kinds of conditions and situations. According to Moffitt, the source of this personality type may originate as biological; then in childhood it is enforced or dampened by interactions between the parents and the child. Adolescence-limited individuals (AL) are involved in crime only through their adolescent years and display low levels of antisocial behavior both before and after adolescence. Moffitt speculates that in modern society, where adult responsibilities begin well after physical maturation, adolescents display this form of antisocial behavior as rebellion. During adolescents the two groups are indistinguishable, both displaying serious delinquency. But ALs have well developed empathy, are generally of higher IQ, and are able to weigh the costs and benefits of criminal activity especially after adolescence.

To a demographer, this theory is attractive as it is a natural way to think about changes in the annual crime rate stemming from both “period effects” and “cohort effects.” Just as in Becker, ALs are responsive to incentives, lowering criminal activity with social investment in detection, conviction and punishment. In any year the level of this investment will affect the crime rate. LCPs also contribute to the annual crime rate but LCPs are insensitive to these factors. Instead their level in the population will be important to the annual crime rate especially because LCPs are thought to commit many more crimes per person. While their origin may initially be biological, which would not vary by cohort, their level in the population would vary by cohort if the quality of early childhood parent-child interactions varies. And a reasonable conjecture is that the difficulty that parents have making ends meet, the presence of two parents

to raise the child and how wanted the child was to begin with could all affect the interactions between a difficult children and his or her parents. These could clearly vary across cohorts for many reasons including policies that have changed across cohort such as the level of financial support available to families through the welfare system, the laws governing divorce and the laws governing contraceptive availability and access to abortion.

Another underappreciated advantage of the developmental perspective is that by concentrating on the origins of antisocial behavior in general rather than crime specifically it is a theory that applies equally to males as it does to females. According to Moffitt, while adolescent antisocial behavior may express itself differently in teenage boys and girls, the basic taxonomy and the origins of groups remains the same. This is different than other gendered theories especially in sociology that, for example, emphasize the absence of a male role model affecting boys more than girls (Anderson, 2000, Parker and Reckdenwald, 2008). This paper begins by drawing the link between the annual rate of teenage childbearing and the annual rate of crime (Section 2). We argue that this pattern is consistent with developmental theory in that age-inappropriate sexualized behavior is “female crime.” This does not shed light on whether the origins of this correlation are through cohort effects or period effects, although some period effects such as economic opportunities are more plausibly linked to both than contemporaneous policies that effect crime specifically (e.g. policing). We then review the empirical evidence in economics of the link between two family policies and the rise of crime in the late 1980s and then its subsequent decline – abortion laws and divorce laws (Section 3) and touch on the role of changing welfare policy. We conclude that the evidence here is fragile and the fragility stems from extremely limited time series and spatial variation in policy. We draw the reader’s attention to an earlier debate on the origin of the rise of teenage out-of-wedlock childbearing and note that

some progress was made eliminating explanations that had spatial variation but distinguishing hypotheses with nearly coincident timing remains a vexing problem.

We then move on to one link between family behavior and boyhood aggression and crime as an adult that has been found to be robust in both the economics and psychology literature – the age of a child’s mother was when she first gave birth (Section 4). A causal interpretation of this relationship remains unclear; specifically whether young mothers are more susceptible to poor child interactions especially with difficult children and whether these poor interactions lead to persistent aggression and criminality. We conclude that there is insufficient evidence to evaluate this mechanism in full but there is causal evidence on pieces of this hypothesis. Specifically, there is evidence from randomized clinical trials on the efficacy of lowering aggression in children and criminal behavior in adolescents through interventions with parents when their children are young to help improve parenting practices (Section 5).

In a discussion section (Section 6) we fall short of exact policy prescriptions but we do comment on what we know that should affect family policy geared to reduce crime. We note that while we do not fully understand the causal mechanism, a mother being a teenage at first birth as well as having low education are markers for her children having increased risk for aggression and criminality. As such, these factors could act as a targeting mechanism for policy. Second, the clinical evidence suggests some benefit of parenting interventions on aggression but what the optimal content of such intervention should be is not well understood. Finally, whether these small RTCs can be expanded to the population level is unknown as is their cost effectiveness.

Section 2: Time-series Pattern of Teenage Childbearing and Crime

Figure 1 presents a five-year moving average of the annual percentage change in teenage childbearing. We begin the time series in 1975. Teenage childbearing was substantially higher in

the 1950s and 1960s but it was largely within marriage. Theoretically, it is teenage

childbearing outside of marriage that does not accord with social norms and is potentially the result of the same process that expresses itself

in males as crime. Figure 1 also presents a five-year moving average of the annual

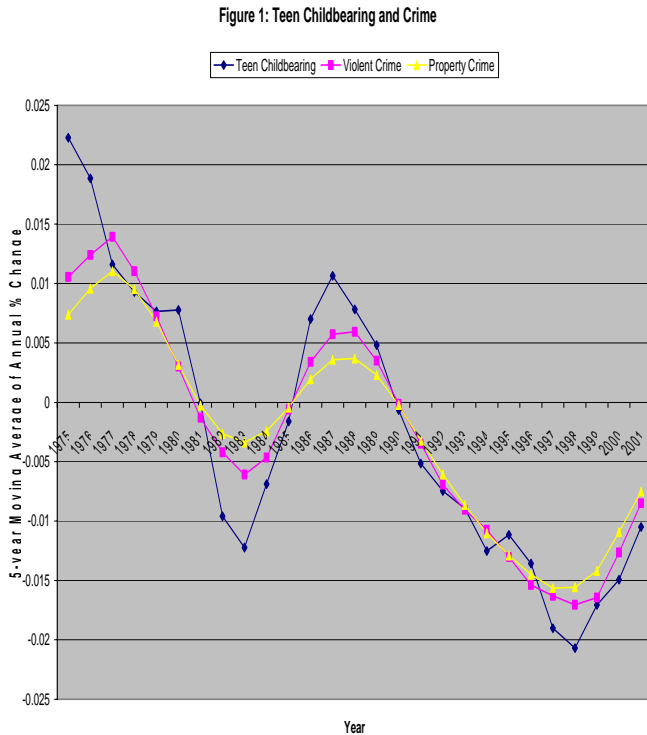
percentage change in violent crime and property crime. What is clear from Figure 1 is that these two patterns are remarkably

coincident. All three series fall through the 1970s reaching a trough in 1983, rise steeply

between 1983 and 1988 and then fall until 1998 and rise again thereafter.

There are many explanations of this coincidence in patterns. A cohort effect explanation as discussed would be consistent with developmental theory. A worsening situation for children with regard to their upbringing in the early to mid 1970s would 20 years later lead to increased antisocial behavior. During this time period, there were at least three large social changes affecting the family: changes in abortion laws, divorce laws and the size of the Welfare System.

In January 1973 *Roe v. Wade* established that the right to privacy allowed women to seek abortions up until the point when the fetus became viable which the court defined as 24 weeks.



In the companion case, *Doe v. Boulton* it also allowed abortion at later gestational ages when needed to protect a women's health. These decisions effected abortion laws in 45 States.

California, New York, Washington, Hawaii and Alaska had liberalized abortion in 1970.

There is considerably more variation in divorce laws across states than abortion laws. There are many state laws governing various aspects of divorce including whether one party can unilaterally seek it, the needed length of time separated before seeking divorce, laws governing division of property, and whether fault is used as a criterion for the division of property. The right to seek a divorce unilaterally has been the focus of much of the literature on divorce and its effects. The erarly to mid-1970s was a time of enormous change in divorce laws just as it was for abortion. Between 1970 and 1975, twenty-eight states moved from divorce requiring mutual consent to divorce being available unilaterally. California, Washington and Hawaii all adopted unilateral divorce during this period; Alaska has had the longest history of unilateral divorce (1935) and New York has still not adopted unilateral divorce.

Finally, beginning in the late 1960s, there was a considerable expansion in cash and in-kind transfers to poor families. Prior to the Food Stamp Act of 1964, transfers to the poor through federal programs was largely limited to cash transfers the Aid to Families with Dependent program. Beginning in the late 1960 there was a great expansion of both the Food Stamp program and Medicaid, the primary program that provides medical care to poor families under age 65. The Food Stamp program expanded by about 1 million people per year from 1965 to 1970 reaching 6 million recipients in May of 1970. Then by February 1971 the program reached 10 million recipients and by October 1975 reached 15 million recipients. Geographic expansion accounts for a large part of the growth. Similarly, Medicaid was established in 1965 through title XIX of the Social Security Act and expanded geographically through 1982. With

health care costs rising faster than other prices, Medicare comprises a rising fraction of transfers

to poor families.

Figure 2 Welfare Benefits for Family of 4, New York

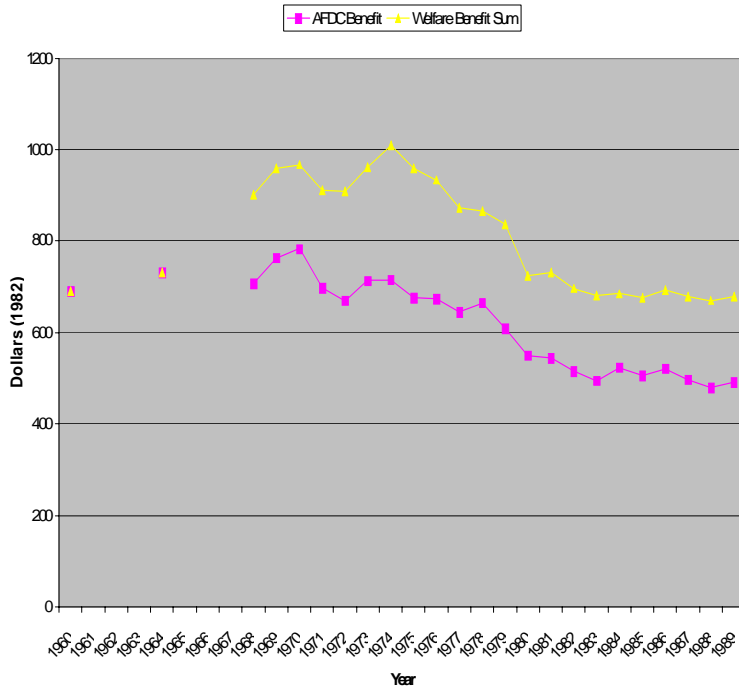


Figure 2 graphs welfare transfer to a family of four in New York. Figure 2 graphs both the dollar value of AFDC Benefit (in 1982 \$s) and an estimate of the total dollar value of transfers that include AFDC, Food Stamps and the value of Medicaid. The early 1970s saw an expansion in the real value of cash transfers. But the big expansion in welfare benefits came from benefits from the

newer Food Stamp and Medicare program. Support to poor families expanded precipitously between the late 1960s and mid 1970s and have been in a long term decline since. Policy changes in the Regan administration (OBRA) account for the first steep fall in welfare benefits; an even more important policy change during the Clinton administration (PRWORA) fundamentally changed the cash transfer system instituting work requirements and importantly time limits on the receipt of benefits (not picture).

All of these policy changes may have affected parent-child interactions. Abortion gave women greater choice on the timing of birth. This may have caused a change in the composition of births with women not in a position to raise children terminating pregnancy. It also may have reduced the number of unwanted births in other ways. With the expansion of unilateral divorce there was rapid rise in the number of divorces and the number of children being raised without

two parents in their home. And the rapid rise in welfare benefits, while potentially mitigating poverty for children, often occurred in a context of these benefits being directed to unmarried mothers. As emphasized by Becker (2000) it also may have instituted a devaluation of work and a rise in the “welfare culture.”

While all of these factors may be potential “cohort” explanations for the coincident rise in teen childbearing and crime, what is also clear is that sorting across these will be difficult. The early to mid-1970s was a time of great change in family policy and these policies tended to move together both over time and within States. We review the literature below on the link between abortion policy and crime and divorce policy and crime. We note here that no work to date attempts to simultaneously distinguish the effect of these multiple policy changes; it is an empirical issue whether there is enough independent variation to do so.

The coincidence of teen childbearing and crime could also be due to “period effects.” The crime literature has stressed the crack epidemic of the mid to late 1980s and the related violence of contestable markets. If this is true for crime, it is an incomplete explanation with regards to teen childbearing. While we know that women who were crack addicts exchanged sex for drugs, the spatial pattern of the rise in teen childbearing would suggest that this could not be a full explanation. Crack entered large cities and was especially prevalent among blacks in the Northeast and South Atlantic states. Almost all states experienced rises in teen childbearing over the mid to late 1980s; the rise occurred in both rural and urban areas and occurred among whites and blacks.

But there are of course many other “period” explanations for the coincident trends in teen childbearing in crime. While the 1980s saw falling wages for unskilled workers (Juhn, Murphy and Pierce, 1993), this decline largely ceased over the 1990s. Changes in the opportunity cost of

time could clearly change both the cost of crime and the demand for children. There is also some evidence that the rise in incarceration directly affected the rate of teen childbearing for low income whites and blacks by removing from the population potential fathers (Kandar, 2007).

What should be clear from this discussion is testing for cohort explanation faces severe challenges. First, some explanations have limited variation outside of time series variation making coincident cohort events or period events occurring 20 years later indistinguishable. Second, the period in which any single candidate family policy occurred is likely to have happened in combination with other family policies. Therefore, it is difficult to evaluate the affect of any particular family policy without considering a full set of family policies. Third, the outcome of interest lags the cohort event by 20 years making the link more difficult to establish without more contemporaneous changes in outcomes and a clear theory of how earlier outcomes (e.g. childhood aggression) are related to crime and teen childbearing. We next review the crime literature on the effects of abortion policy and divorce policy and comment on welfare policy. We then turn to the literature that links criminal behavior to the age his mother when he was born. Finally we turn to intervention studies that, at least in part, increased parental knowledge about childrearing and examine the measured effects on aggression in children and criminality in adolescents.

Section 3: Literature on Family Policy and Crime

As discussed above, two large changes in family policy in the early 1970s might explain the changing patterns of crime over the 1980s and 1990s. In an influential paper, Donohue and Levitt (2001) investigate the effects of abortion liberalization on crime. They offer evidence that legalized abortion has contributed significantly to crime reductions in the 1990s. The evidence that is most compellingly exogenous is that crime rates began to fall roughly eighteen years after

abortion legalization. The very states that allowed abortion in 1970 experienced declines earlier than the rest of the nation. They also offer evidence that States with high abortion rates in the 1970s and 1980s experienced greater crime reductions in the 1990s. Their controversial claim is that legalized accounted for as much as 50 percent of the drop in crime over the 1990s.

Donohue and Levitt (2001) has been criticized on a number of grounds and a full critique is beyond the scope of this paper (see Joyce (2004), Foote and Goetz (2005), Ananat, Gruber, Levine and Stager (2009), and Joyce (2009)). The one critique relevant here raised both by Joyce (2004) and Foote and Goetz (2005) is that results are substantially weaker if we adopt the practice of clustering residuals at the State level (rather than the State by year-of-birth level as in DL original paper). The difference is important if, for example, there is a correlation between the error for, say, 17-year-olds in one year and other age groups (besides 18-year-olds) in the following year within a State.² The essential issue is that since only 5 states liberalized abortion prior to 1973 so, at its core, evidence revolves around patterns of crime in these five states relative to other states. No matter how many people are observed across states, it may be that most of the information is contained in the average crime level in these 5 States vs. the other 45 States.³ The lack of power for detecting effects is endemic to the empirical design because there is very little independent variation in the policy of interest. That DL are able to make progress at all is that their measure of historic abortion rates combines whether or not abortion was legal in a state when a young adult was *in utero* with the abortion level in that state in that year. This part of the variation is more easily criticized as states vary a good deal in the level of abortion even after legalization in predictable ways (for example, abortion rates per capita are low in Utah and

² This point became much more appreciated in the empirical microeconomics literature after (Bertrand, Duflo, and Mullainathan [2004]) showed its numerical importance in a number of applications.

³ This statement is more precisely true the more correlated are observations within States. It is somewhat unclear in DL exactly what variation is empirically important, variation in effective abortion rates driven by the adoption of abortion reforms or the growth in the number of abortions within a state post-reforms.

high in California, New York and Washington, DC). Adding fixed effects to the model takes out fixed state-level characteristics which are helpful but they do not account for changes such as in the composition of the population over time. However, it is notable that a recent paper by Donohue, Grogger and Levitt (2009) find that historic abortion rates are negative correlated with contemporaneous teen childbearing rates.

Criminologists and increasingly some economists dismiss the DL results because simple plots of age-specific crime rates are inconsistent with a large cohort affect following the legalization of abortion. Because DLs analysis does not use age-specific crime rates this time-series pattern was not assessed in their work. In *Roe v. Wade* states, it should be crime rates for 16 year-olds should peak in 1989, 16 years after the 1973 legislation; for 17 year-olds it should beak in 1990; for 18-year olds in 1991 etc. Similarly for the 5 states that liberalized in 1970, the peak for 16 year-olds should occur in 1986; for 17 year-olds in 1987 etc. Joyce (2009) displays these simple plots and there is no evidence of this pattern. For the states that liberalized in 1970, the peak for all ages is between 16 and 20 is 1992 suggesting no presence of a cohort pattern. DL criticizes this evidence as they believe that the crack epidemic clouds the cohort effect they uncover. But Joyce argues that the same cohort argument should hold at older ages if DL are correct and the crack epidemic largely did not effect older men and women. If DL are right, 27 year-olds in the early liberalizing states should show peak crime rates in 1997, 28 year olds in 1998 etc. Time series plots show no discontinuity at any age between 27 and 30 in either *Roe v Wade* states or early liberalizing states.

The bottom line is that it is asking a great deal of aggregate data to reveal a pattern where cause and effect are separated by 16 or more years, especially when the main variable of interest has limited temporal variation across states. It is little wonder that the relationship between

abortion and crime remains controversial. Having said this, the link between the “wantedness” of children or how parents treat children and criminality is entirely justified on theoretical grounds. For this reason it may be fruitful to examine other aspects that affect how children were raised that displays more variation across time and space.

Divorce laws display substantially more variation across time and States. Unilateral divorce states allow either the husband or wife to sue for divorce without the consent of the other party. Friedberg (1998) classifies states into unilateral vs. mutual consent states. Unlike legal abortion which became the law in all States in 1973, there are still 5 States where divorce is by mutual consent; in addition, while a great number of states changed from mutual consent to unilateral divorce between 1968 and 1973, 9 States adopted unilateral divorce prior to 1968 and 10 States adopted unilateral divorce after 1973. This gives considerable more variation over time in when state policy may have affected families relative to abortion policy.⁴

Many studies have established bivariate correlation between being raised in a single parent home and increased risk of involvement in crime as boys become young adults (Rebellon, (2002) among others). Similarly the bivariate relationship between being raised in a single parent home and increased risk of teenage childbearing in girls is also well established (Manlove, (1997) among others). In many of these studies this relationship holds after controlling for a number of observed factors, What is more controversial is whether single parenthood per se is responsible for these outcomes or if other omitted factors contribute to both single parenthood and antisocial behavior.

Changes in divorce laws possibly could help us answer this question as it is now generally agreed that these changes in divorce laws did in fact lead to a short term increase in

⁴ However, in both cases, no state has reverted back to its original policy of mutual consent after adopting unilateral divorce. In this sense, the experimental design is similar to abortion laws in that we have not had the opportunity of observing the effects of removing the policy as would be done in a “cross-over” design.

divorce (Wolfers, 2006). Caceres-Delpiano and Giolito (2009)) (CG09) use these changes in divorce laws to investigate the effects of family structure on crime. Specifically, they investigate whether it is true that there is consistently a rise in crime 13-16 years following the liberalization of divorce laws. They find an impact of around a 15% increase in the murder rate and the rate of aggravated assault 13 to 16 years after unilateral divorce laws were passed. Two other patterns are notable. First, there is little evidence that divorce laws affect crime in the first 10 years after the laws are enacted; second, in companion work they find that the probability of living in an institution increase 35% 15 years or more after the divorce reform was (Caceres-Delpiano and Giolito (2008)). This paper also established that the reform decreased family income and increased the fraction of mothers below the poverty line. For children, they find that just after the reform, the probability that a child goes to a private school decreased and the likelihood that a child was held back in school increased and Gruber (2001) confirms that their completed level of schooling is reduced.⁵

Finally, changing resources available through the welfare system might affect the rate of crime and teen childbearing when children become young adults. Lack of financial resources available to young children have been implicated in many studies as a source leading to antisocial development. Importantly, there is a great deal of both time series and spatial variation in AFDC payments even prior to the 1996 welfare reform act PRWORA. Both DL and CG include measures of historic resources available through the AFDC system. DL and CG09 find that these are largely uncorrelated with the rate of crime 18 years later.⁶ This lack of correlation

⁵ A second indication that the lack of variation in abortion laws limit their usefulness in understanding crime patterns is that any negative correlation between abortion laws and crime rates are eliminated when divorce laws are also included in the analysis.

⁶ DL find that the state AFDC maximum payment 15 years prior to crime in the current year is uncorrelated with any crime category. CD09 estimate the effect of being in a state that historically had an AFDC-UP program (results not reported in paper but reported in personal communication December 25, 2009). AFDC UP states had considerably higher welfare benefit levels. For example, in 1975

between State historic AFDC payments and crime is itself interesting; many studies suggest that material deprivation of individuals as children raise the rate of physical aggression in children and crime in young adults. But parental income involves parental choice (unlike State AFDC payments). One interpretation that parental resources are correlated with aggression and crime of children where State AFDC payments are not correlated is that unobserved factors that lead to bad parental choices in the labor market are correlated with bad parental choices in child rearing.

It is worth drawing attention to a previous debate on cause of the rise in out-of-wedlock childbearing over the 1970s and 1980s. There are three main hypotheses have been put forward: (1) the decline in the manufacturing sector that provided good jobs to low-skilled men making low-skilled men less “marriageable” (Neckerman and Wilson, 1987); (2) the rise in the welfare state and the “return” to single motherhood (Murray, 1984); and (3) the spread of the pill and abortion and its equilibrium effect on out of wedlock sexual behavior (Akerlof and Yellen, 1996). All three of these events began in the mid 1960s and continued into the early 1970s and the spread of the pill had little spatial variation. But an area’s reliance on the manufacturing industry and state welfare policy have a good degree of variation. Careful work by Brien (1997) shows that the decline in the number of marriageable men did affect out-of-wedlock childbearing but only a modest amount; and it does not explain the black-white difference in out-of-wedlock childbearing. And careful work by Robert Moffitt (1990) suggests only a modest effect of increased welfare payments on out-of-wedlock childbearing. While the Akerlof and Yellen model remains difficult to test, we have made progress in this debate by at least eliminating (1) and (2) as major causes. I suspect we may be in much the same situation in explaining the rise and fall in crime rates over the 1980s and 1990s.

In my view, the CG09 paper is the most compelling to date to link family policy to crime, but it, as well as DL fail in one important way – they do little to elucidate the mechanism. As they show, changes in divorce laws raised the rate of single parent households and also changed a host of other circumstances for children including their access to resources and their level of human capital. In general, it remains difficult to separate the many factors that link childhood conditions and antisocial behavior but some intervention studies (discussed below) are beginning to do this.

Section 4: Teen Childbearing and Crime

One factor that has been found to be robust in both the economics and psychology literature is the link between the age of a mother when she first gave birth and the criminal propensity of all of her children. This literature draws an interesting distinction between the age of the mother when the study child was born and her age when she first gave birth. Two excellent studies, one by Nagin, Pogarsky, and Farrington (1997) (NPF) and another by Grogger (1997) find similar results using data from different sources. NPF use data from the Cambridge Study in Delinquent Development, a prospective longitudinal study of 411 males from working class London born in 1952 or 1953. Grogger uses data from the NLSY79, a prospective longitudinal nationally representative sample of more than 6000 men in the U.S. born in 1958-1965. Despite differences in the focus, in country, and in time period, both studies find strong evidence that the age of a woman when she first gives birth is strongly correlated with criminality of all of her children.

One difference between the two studies is whether there is any role for the age of the mother at the study child's birth; NPF find no role at all; Grogger presents mixed results. When a categorical variable reflecting a study child's mother being less than 18 when the study child was

born is entered into the regression model, this variable is uncorrelated with the study child's criminal outcome. However, when the age of the mother at the study child's birth is entered linearly and regressed against the study child's criminal outcome, there does appear to be evidence that being born when your mother is older reduces criminal propensity. Much of the variation that identifies the linear effect of the age of the mother at the study child's birth comes from comparing outcomes of women having children in the early 20s vs. later 20s since most childbearing in the sample occurs when women are in their twenties. Grogger uses this linear effect to predict the effects of delaying teenage childbearing from age 16 to older adult ages; but it is clear that this prediction relies on a strong functional form assumption.

One enormous advantage of NPF is the rich data that allows them to begin studying the *mechanism* behind the correlation between age of a child's mother when the child is born and criminality. They lay out three potential mechanisms: (1) Life Course-Immaturity; (2) Persistent Poor Parenting/Poor Parental Role Models; and (3) Diminished Resources. The Life Course-Immaturity mechanism is that teenagers lack the development and maturity to raise a child properly. One version of the Persistent Poor Parenting mechanism is that women become teenage mothers because they lack self-control, are impulsive, self-centered, quick-tempered, inconsistent, and avoid difficult tasks with delayed benefits. These same factors make them poor parents and lead to the intergenerational transmission of antisocial behavior (See for example, Gottfredson and Hirschi, 1990). The Diminished Resources mechanism focuses on the classic mechanism emphasized in sociology between impoverishment and antisocial behavior.

NPF find bivariate evidence that both being born to a mother whose first child was born when she was a teenager and being born to young mother per se increases criminality; however once they control for family size only the former effect remains. Having more children clearly

means resources are spread across more family members and this they take as evidence against (1) because there is no direct effect mother's age at the study child's birth and for (3) because larger family size entirely explains the direct effect of mother's age at the study child's birth. In order to explain the effect of being born to a mother whose first child was born when she was a teenager, NPF use the extremely detailed data that documents persistent poor parenting and other measures of diminished resources. Once controlling for these factors the mothers age at her first child's birth also no longer effects criminal outcomes of her children. Besides family size which remains strongly significant, the most significant factors that mediate the effect of mothers age at first birth on her children's criminality are the child's father's criminality and whether the father separated from the mother by age 10. NPF conclude then that it is most likely a combination of persistent poor parenting and diminished resources that explain the link between teenage childbearing and the criminal outcomes of those children.

One issue worth discussing is how to interpret the strong role that family size plays on explaining all of the effect of being born to a teenage mother and half of the effect of being born to a mother whose first birth was as a teen. NPF prefer the interpretation of larger families being more resource constrained which is clearly true. But from a host of work, we believe that the timing of fertility is closely linked to a number of person specific factors. And it is likely that teen mothers that end up having very large families are different in these factors than teen mothers who are able to better space the interval between children and perhaps even to have the next child within marriage. This raises the possibility that "family size" might also be picking up the kinds of unobserved factors described by Gottfredson and Hirschi that make teen mothers poor parents. While not interpreted in this way, NPF present evidence that family size is not likely to be just reflecting "diminished resources." If a teenage mother with a child has a second

child her family size goes from 2 people to 3 people. If we put aside for a moment any correlation between family size and economic resources, resources per person would be reduced by 33% by this one child increase. If a teenage mother with four children has a fifth child her family size goes from 5 people to 6 people. Resources per person are reduced by 17%. If increased family size was only affecting “diminished resources” then we would expect the criminality of children to rise much more when a mother with one child had an additional child than when a mother with four children had an additional child. In fact, among teenage mothers, criminality of children is the same when a woman has one or two children; but the criminality of children from families with five children is 50% higher than families with four children. One interpretation for this pattern is that teenage mothers who have no more children or one more child are both displaying a large degree of “self-control.” But very large family sizes might also be correlated with very low levels of self control.⁷

Pogarsky, Lizotte and Thornberry (2003) (PLT) contribute additional evidence using the same basic strategy of NPF but using contemporary data from the U.S. – the Rochester Youth Development Study (RYDS). The RYDS sampled 1,000 seventh-grade and eighth-grade students enrolled in public school in Rochester, NY in the 1987-88 school year. Students and their parents were re-interviewed semi-annually 1988-92 and annually from 1994-97. In 1997 the average age of the respondent was 22. Like NPF, PLT find no role for the age of the mother at the study child’s birth and they also find a strong role for the age of the child’s mother at her first birth. Unfortunately, because the RYDS does not include completed family size, which was found to play a major mediating role in NPF, PLT can not control for it. PLT do find that one variable does mediate the effect of being born to a mom whose first birth was as a teen – the number of

⁷ Another plausible interpretation is that women total resources might fall with the number of children. If so, women with five or more children may be especially poor lending credence to the “diminished resource” interpretation.

changes in family structure during the first 2 ½ years of the survey. Because children almost always live with their biological mothers this variable measures the short-term changes in the mother's relationships with the child's father, step-fathers and boyfriends. While PLT find that changing family structure mediates the effect of being born to a mom whose first birth was as a teen, the effect remains strong and significant even after controlling for measures of parenting and diminished resources.

In summary, there is strong evidence of a link between age at a mother's first birth and criminality of sons; there is weaker evidence of link between mother's age at the study child's birth and criminality of sons her sons. NPF suggests that early childbearing is correlated with poor parenting and role modeling and with reduced access to resources and these are the principal mechanisms through which the association between early childbearing and criminality of sons operates. If one believes that a series of short-term relationships could detract from parenting then the poor parent/role model mechanism is also suggested by PLT. Confirmation of reduced access to resources is not as consistently confirmed as it plays a limited role in PLT and no role in the studies which model current criminality against state welfare benefits when the young adult was a child. Of course, the findings that unilateral divorce increased crime of children are consistent with both the poor parenting/role model mechanism and the reduced resource mechanism. We now turn to evidence from intervention studies including one that is targeted to the children of teenage mothers.

Section 5: Evidence from Intervention Studies

There are now a number of intervention studies that look to see how various interventions affect antisocial behavior of children and adolescents and criminal outcomes as adolescents become adults. While there have been many programs implemented to curb antisocial behavior

and young adult crime, there has been a shortage of rigorous evaluation of programs. In 2001, the surgeon general issued a report *Youth violence: A report of the Surgeon General* that suggested 4 criteria for what constitutes evidence of a model program. According to this report, a “model” program met the following criteria:

- Rigorous experimental design (experimental or quasi-experimental)
- Significant deterrent effects on:
 - Violence or serious delinquency
 - Any risk factor for violence with a large effect (.30 or greater)
- Replication with demonstrated effects
- Sustainability of effects

When looking across multiple interventions only five programs met these criteria. This include (1) Functional Family Therapy (FFT), (2) Multidimensional Treatment Foster Care (MTFC), (3) Multisystemic Therapy (MST), (4) Seattle Social Development Project (SSDP), and (5) Prenatal and Infancy Home Visitation by Nurses also known as the Nurse Family Partnership (NFP).

What is particularly interesting about this list is that 4 of the 5 programs had a strong home-based family interventions component (all except SSDP). When the surgeon general reviewed programs that were “promising” but not conclusive or were shown not to work, many more of these programs did not have family intervention as a major component (including Perry Preschool and other school based programs). The five programs above varied in important ways including the target population, the length of treatment, the intensity of treatment and sample size. But these differences should be discussed in the context of all five programs having a component of parental training, especially parental management of difficult child behavior.

The largest study and the study which has received the most critical evaluation and replication is the NFP. The NFP was first implemented in 1977 and now serves 20,000 families in 20 states in the U.S. Besides extensive research on the impacts of the NFP, there have also been excellent studies documenting its cost effectiveness. In addition, President Obama has

pledged that the highly successful Nurse-Family Partnership and similar home visiting programs will be expanded to reach all low-income first-time mothers and funding for expanding this program is included in the 2010 budget. We begin by discussing the NFP in considerable detail and then turn to other interventions.

The Nurse Family Partnership program's first evaluation began in Elmira, NY in 1977. The original study enrolled 400 mostly disadvantaged first-time mothers and their children families; half were assigned to receive home visitation by nurses (HVN) and the rest assigned to a control group that receive transportation for prenatal and well-child care but no nurse visits. Elmira, NY was predominantly white, rural and poor in 1977. The practical affect of recruiting disadvantage first-time mothers is that a large fraction (47%) were teenage mothers (age 18 or below) and 62% were single-parents. Visits began during pregnancy and continued until the child's second birthday. Olds felt that each of these four elements were essential. Targeting *first-time parents* provided the best chance of promoting positive behavior in mothers before negative behaviors had become habituated; having the program *in the home* was essential because this is where most parenting occurs (and because it did not rely on parents to travel to a site); having *nurses* deliver the program was essential because mothers would trust them to know about pregnancy and the care of infants;⁸ and having *visits begin during pregnancy* would mitigate damaging effects in the prenatal environment and would build trust between mother and nurse making mothers more receptive to parenting advice.

Nurse visits had three goals: healthier prenatal care; more sensitive child care; and a better maternal life course. To help mothers, nurses helped women return to school, find work

⁸ This was tested in the 1994 Denver experimental implementation of the NFP. Here both nurses and paraprofessionals delivered the NFP curriculum; Olds finds that nurse home visitors are more effective than paraprofessionals in delivering the NFP curriculum and that the positive effects of the program are larger with nurse home visits (Olds et al. 2004b).

and practice family planning. Nurses helped women improve their health related behaviors, improve the quality of their infant care, and improve their personal development by setting achievable goals and to use problem-solving methods to gain control over the difficulties they encounter (Olds et. al 1994). The NFP is a moderately intense intervention with about 30 visit of up to 90 minutes in length or 45 hours over 2½ years.

The NFP experiment was repeated in Memphis in 1987 and Denver in 1994. Because the Elmira experimental positive results (discussed below) proved stronger for disadvantaged first-time mothers the recruitment in these studies was limited to *disadvantaged* first-time mothers. Across studies the NFP has been shown to be statistically significantly related to a host of positive outcomes for women and children. For example, by two years after the birth of their first child Olds finds:

- Among low-income unmarried teen mothers the rate of child abuse or neglect was 4% for mothers receiving HNV; it was 19% in the control group (Elmira, NY).
- Women receiving HNV smoked 25% fewer cigarettes over the course of their pregnancy than the control group (Elmira, NY).
- Women receiving HNV had 23% fewer pregnancies and when pregnancies occurred there was longer spacing (Memphis, TN; similar for Elmira, NY).
- Children whose mothers received HNV had 80% fewer days of hospitalization for injuries than the control group (Memphis, TN).

A host of other positive outcomes have been observed in the two years following the mother's first birth including higher rates of work and completing school for mothers and better language and executive functioning scores for children.

The central question for us is "Could the NFP prevent crime?" Certainly the NFP lowers the factors that have been consistently shown to be correlated with crime including family size, child abuse and neglect, and arrested neurological development due to *in utero* insults such as smoking. A 1997 study of mothers 13 years after the Elmira intervention ended suggests that all of these benefits were sustained over time. In a 1998 study in *JAMA*, Olds and his collaborators

follow-up the children of the Elmira, NY sample when the child was 15 years old. They find that children born to women who were unmarried and from households of low socioeconomic status (risk factors for antisocial behavior) and who received HNV reported that their adolescent child had fewer instances (incidence) of running away (0.24 vs 0.60; $P = .003$), fewer arrests (0.20 vs. 0.45; $P = .03$), fewer convictions and violations of probation (0.09 vs. 0.47; $P = .001$), fewer lifetime sex partners (0.92 vs. 2.48; $P = .003$), fewer cigarettes smoked per day (1.50 vs. 2.50; $P = .10$), and fewer days having consumed alcohol in the last 6 months (1.09 vs. 2.49; $P = .03$). They also reported that their children had fewer behavioral problems related to use of alcohol and other drugs (0.15 vs. 0.34; $P = .08$). Because of the high correlation between early onset of antisocial behavior and adult criminality these results bode well for the chances of the NFP to reduce adult crime but the analysis has not been done to date.

In a recent working paper, Bartick (2009) estimates the average benefits of the NFP. He considers the reduced cost of emergency room visits, the savings for the child abuse and neglect system, the increased state and local tax payments of the mom due to increased employment and earnings, reduced welfare payments to the mom, decreased costs to the criminal justice system due to fewer arrests, less court time, and less jail and prison time, principally due to less criminal activity as the child ages, and state and local tax payments of the child due to increased employment and earnings when the child becomes an adult. Table 1 presents these estimates. What is clear is that the NFP potentially has great benefits to society. Of the benefits, the decreased cost to the criminal justice system for the children when they become adults comprises almost 40% of the total benefit. Bartick argues that given that the cost of each case is on average \$8,000 - \$10,000 (2007 \$s) it is likely that the NFP is a cost effective program. He further argues that from a localities perspective, part of the costs are often paid by the Medicaid system and in

additional federal funds will be available if President Obama’s expansion of the NFP is funded. While this is true Bartik warns “These NFP fiscal benefits are not immediate. Many of the most important fiscal benefits accrue over time, and may occur 5, 10, or more years after the NFP program begins delivering services in the prenatal period to a low-income first-time mother. However, the present value of these gross fiscal benefits does appear to significantly outweigh the costs of the program. How this affects state and local policy depends upon whether policymakers adopt a long-term perspective.”

Table 1: Breakdown of Present Value of Fiscal Benefits from the Nurse Family Partnership Program Per NFP Case	
Category of fiscal benefit	Present value of fiscal benefits per case, in year 2007 dollars
Reduced emergency room visits	156
Reduced child welfare system costs due to reduced child abuse and neglect	1,322
Increased state and local taxes from mom’s added employment	1,898
Decrease in welfare system payments to mom	4,771
Decrease in criminal justice system costs (principally costs of child’s adult criminal career)	5,894
Increased state and local taxes from increase in child’s earnings as an adult	1,231
Total fiscal benefit	15,273
SOURCE: From Bartik (2009). See Bartik (2009) for assumptions and methods. NOTE: Dollar figures are rounded to nearest dollar. Present value is calculated using 3% real discount rate.	

While the program does appear cost effective it is important to recognize that the calculation of the cost savings through the criminal justice system is based on an important projection. There is empirical evidence on the NFP’s effect on reduced arrests and jail time for the mother and on reduced arrests of the child up to age 15. The third and largest effect in this calculation however is the reduced arrest and jail time of NFP children in their adult years. Since

this has not yet been observed, Bartik forecasts this based on the relationship between reduced arrests of the child prior to age 15 on the odds of the child having an adult criminal career. It will be some time before we know whether this relationship will hold for the NFP children.

Other Model Programs. Of the four remaining model programs, three share many common elements. The Functional Family Therapy (FFT), The Multidimensional Treatment Foster Care (MTFC) and the Multisystemic Therapy (MST) are all programs that are targeted at juvenile offenders referred from the court system for treatment. All three programs have a family therapy approach where services are offered to the adolescents' parent or guardian as a way to reduce the antisocial behavior of the child. In some variation of each of the programs, all have home visits of therapists although the MTFC visits the home of foster parents. All three of these programs are typically four months in duration. A major component of all three programs is also to promote behavioral change in adolescents by increasing parenting skills especially to help parents effectively set limits for adolescents. MST and FFT explicitly have a phase that helps reinforce improvements and maintain them. There are some differences across these programs as well. For example, MTFC and especially MST emphasize peer influences and work to removed adolescents from networks that promote antisocial behavior. And the programs differ as to how much emphasis they give to organizations outside of the family such as schools.

One clear drawback of evaluations of these programs is that their evaluations are relatively small; the largest evaluation was the 2002 implementation of FFT. More typically the evaluations have less than 100 subjects randomized to the treatment program and a control program.⁹ Except for Study 6 of the MST, estimated effects are relatively short run, typically 1-5 years after treatment. Having said this, as a whole, all of these programs show remarkably large

⁹ One issue is that often multiple treatments are tried with relatively small samples. As a result, studies often form ad hoc control groups, comparing subjects that got the "full treatment" to those that got either less than the full treatment or no treatment.

effects on crime related behavior. On the one measure used across studies, the reduction in recidivism is between 30% and 70%. Study 6 of the MFT which measured criminal outcomes more than 13 years after treatment (when subjects were in their mid 20s) found a 54% decline in recidivism and a 57% decline in the number of days incarcerated.

The only program that made the list of “model” programs that did not have a large family therapy component was the Seattle Social Development Project (SSDP). This program was largely a school based program training teachers to be more effective in the classroom with problem students. SSDP did offer limited training targeting parents particularly child behavior management skills and skills to reduce their children’s risks for alcohol and drug use. But the training was limited 4-7 sessions and was not conducted as part of a therapeutic setting. Importantly, participation by parents was voluntary; as a result, less than half of parents availed themselves of any of the training. One nice feature of SSDP is that it is a panel survey that contains within it respondents assigned to the SSDP treatment or to a control group. However, because the design was school based, assignment was at the classrooms rather than the individual level and with 18 classrooms assignment was not done randomly. The panel nature of the data however does give the analyst a great deal of information to adjust for selective differences in SSDP treatment and control groups.

The surgeon general considered SSDP a model program because it had demonstrated substantial reductions at the end of grade 2 in aggression, antisocial and externalizing behaviors, and self-destructive behaviors in children who participated in the program during the 1st and 2nd grades. Other benefits of the program included lower rates of alcohol and delinquency initiation, improvements in family management practices and parent-child relationships, greater attachment and commitment to school, and less involvement with antisocial peers. Follow-up at age 18

showed that the SSDP significantly improves long-term attachment and commitment to school and school achievement and reduces rates of self-reported violent acts and heavy alcohol use. At follow-up, students who received the full intervention were also less likely than controls to be sexually active, to have had multiple sex partners, and to have been or have gotten someone pregnant (this difference was only marginally significant, at $p = .057$). However, a 2005 follow-up study extends the analysis until program participants were age 21 and importantly looks at criminal outcomes. Here the evidence is more mixed. None of the measured impacts of crime over the previous year were large or statistically significant. There is some evidence that there may be a modest cumulative effect – 53% of the control group had been charged with at least one crime over their lifetime while 42% of the group receiving the full SSDP treatment had been charged. This included any self-reported charge across 15 items assessing vandalism, breaking and entering, theft, possession of stolen goods, assault, robbery, sale of illegal drugs, and white-collar crimes and it is not clear which of these categories of crime were deterred. While comparing across studies is difficult, the SSDP and the NFP both measured longer term impacts on crime (at age 21 and 15 respectively), both intervened at young ages (age 6 and newborns respectively) and both were conducted on populations that largely had not been involved with the criminal justice system. As a general statement the effects of NFP seem more consistently positive both in terms of magnitude of measured effects and in terms of consistency of statistically significant effects.

What is notable is that the one program that the surgeon general thought to be a model program for deterring youth violence that in fact has subsequently been shown to only weakly effect crime is the one program that was not home based family therapy. Several of the programs that the surgeon general suggests have shown unproven effects or have been shown not to work

also did not have a strong family therapy component. While it may turn out that school based or community based programs will also be effective at preventing crime, the efficacy of in home family therapy or support is increasingly clear.

Section 6: Discussion

Overall there several lessons that we can draw from the literature linking the family to criminal outcomes. First, the evidence on the link between a women being a teen mother and the subsequent criminal behavior of all of her children seems strong. These children are typically raised without two parents and no doubt in frustrating circumstances for their mothers. That increased easy of divorce increase the criminal behavior of children is also consistent with a link between family structure and crime. Interestingly, the NFP which directly intervenes to aid teenage mothers has shown powerful effects at reducing criminal outcomes when their children become young adults. The effects on crime seem powerful enough on their own to almost single-handedly justify the cost of this intervention; when combined with the other socially beneficial impacts there is good evidence that this program is cost effective. Three other programs, all with a major component of family therapy, show impacts of reducing crime among adolescents and young adults.

Second, the more “dysfunctional” the family situation, the more this type of intervention works. The effects of the NFP were so much larger among disadvantaged first time mothers than more advantaged first time mothers in the Elmira, NY experiment that subsequent experiments focused only on disadvantaged first-time mothers. The programs that targeted juvenile offenders also seemed to have efficacy; one expects that if poorly functioning family life partly contributed to the first offense then aiding these adolescents’ families would reduce recidivism which

appears to be the case. The SSDP, perhaps the least specifically targeted to disadvantaged families also shows the most modest effects (but the treatment was also different).

Third, parallel studies of crime in boys and teenage childbearing in girls tend to reinforce our understanding of the mechanism behind both. Much of the work in developmental psychology has recognized this and at least two of the clinical trials (NFP and SSDP) study changes in both outcomes that stem from the intervention. In most cases, interventions that reduce crime also reduce teenage childbearing. While we do not entirely understand the exact mechanisms, largely because the trials to date operate on many mechanisms, it is plausible the mechanisms that reduce crime in boys are also operating to reduce teenage childbearing in girls. For example, in the NFP, at age 15 the children that received treatment had 0.92 sexual partners on average; the children in the control group had 2.48 sexual partners on average. That is the NFP treatment reduced the number of sexual partners at age 15 by 150% a result that is highly statistically significant! Age 15 is too early to know the effect on teenage childbearing but an educated guess is that teenage childbearing will also be reduced.

Fourth, while the intervention studies are encouraging, they remain small and have several limitations. The largest of the studies has less than 1,200 subjects and often multiple treatments are tried. By contrast, more than 20,000 adults and out-of-school youths who applied for Job Training Partnership Act (JTPA) were randomly assigned to a "treatment group" or to a "control" group that was ineligible for JTPA-funded services. In addition, all family intervention evaluations were carried out in specific locations largely chosen for convenience (often close to the location of the PIs University). Again by contrast the RTC for the JTPA trial was conducted in 16 areas across the country that was chosen in a systematic fashion. Finally, with the exception of the SSDP (which was not randomized) consistent interviewing of study subjects as

they develop is not conducted making it difficult to understand the exact pathways through which these interventions work.

Finally, there is much we don't know. If in fact large scale adoption of the NFP does occur as the Obama administration hopes, a research agenda that borrows from the experience of the JTPA is likely to be useful. Specifically, we could make a great deal of progress if both experimental and non-experimental data were collected on subjects. Non-experimental data that follows very large samples that take programs selectively can make an extremely valuable addition to RTCs especially if pre-treatment outcome factors are measured. Having said this, the goals of JTPA were more short term than the goals of family interventions and it will almost certainly be important to do longer follow-up than was done in JTPA. A second less is that JTPA analyses were seen as more legitimate because there was some separation between that data collection organization and the analysts. While there is no reason to be suspicious of the current intervention studies, it is notable that in all cases the design of the intervention, the implementation the intervention and analysis of the intervention are done by a single research team. The work on JTPA also achieved one other goal that is likely useful here – it brought together researchers from many disciplines and economists played a major role. Economists clearly have a major role to play in further understanding the link between family life and criminal outcomes of children as they age but unlike job training, exceptionally well developed models and years of work in other fields are already established in this area and far exceed the current thinking in economics. The challenge will be to integrate the considerable skills that economists can bring to this area but to be open to models that are quite foreign to economists as a rule. These include serious models on the development of what economists label “preferences,”

an area that economists have been reluctant to tackle until recently. Tackling this issue is highly relevant for public policy but is equally relevant for theory, economic and otherwise.

**Table 2:
Five Model Youth Antiviolence Programs Identified in Surgeon General Report (2001)**

	Nurse Family Partnership (NFP)	Functional Family Therapy (FFT)	Multidimensional Treatment Foster Care (MTFC)	Multisystemic Therapy (MST)	Seattle Social Development Project (SSDP)
Investigator/Organization	David L. Olds / University of Colorado	James F Alexander / University of Utah	Patricia Chamberlain / Oregon Social Learning Center	Scott W. Henggeler / Medical University of South Carolina	J. David Hawkins / University of Washington
Target Population	First-time Mothers (Elmira, NY); African-American Disadvantaged First-time Mothers (Memphis, TN); Disadvantaged First-time Mothers (Denver, CO)	At-risk (often offending) Youth 11-18 and their younger siblings	Adolescent youth with severe criminal behaviors	Violent and chronic juvenile offenders	1st Graders and 5th graders 18 public elementary schools (Seattle, WA)
Sample Size	354, 189 NHV & 165 C (Elmira, NY); 1139, 230 HNV (prenatal only), 228 HNV, 681 C (Memphis, TN); 735, 245 paraprofessional HV, 235 NHV, 255 C (Denver, CO)	40, 20T, 20C (1973 Study); 86, 40 T, 46 C (1977 Study); 750, 323 T, 427 C (2002 Study)	79, 37 T 42 C (1997 Study)	84 (1992, Study 5); 176 (1995, Study 6); 155 (1997, Study 7); 93 (2006, Study 14)	643, 144 Full T, 256 Late T, 205 C
Method of Recruitment/Assignment	Ante partum clinics	Random Court Referrals, Random Assignment	Random assignment from Court Referrals	Random assignment from Court Referrals	Nonrandom Assignment by Classroom
Length of Treatment	6 months prenatal; 2 years postnatal; 45 hours	8-12 Sessions over 3 months; up to 30 hours	Until restoration of parental custody (typically 3-6 months)	approximately 4 months; approximately 50 hours	Teachers: 5 days of in-service training' Parents: 4-7 sessions (Voluntary-53% of T fail to take up)
Place of Treatment	In Home	Conducted both in clinic settings as an outpatient therapy and as a home-based model	Foster Care Homes	Part In home, part in schools and community	Schools

	Nurse Family Partnership (NFP)	Functional Family Therapy (FFT)	Multidimensional Treatment Foster Care (MTFC)	Multisystemic Therapy (MST)	Seattle Social Development Project (SSDP)
Description of Treatment	A nurse home visitor is assigned to the family and works with that family for the duration of the program. Nurses help parents address three areas: improvement of the mother's development, the care the parents provide their child, and the family's pregnancy planning, educational achievement, and participation in the workforce. Nurses provide a comprehensive educational program designed to help parents provide better care for their child. Nurses also help parents clarify goals, develop problem-solving skills, and develop support systems of family and friends who may be able to help them care for their child.	Engagement Phase: alliance building, negativity reduction, blame reduction, developing shared family focus to present problem. <i>Behavioral Change</i> : Change skills of family members, increasing competency to perform tasks (e.g. communication, parental supervision, problem solving); <i>Generalization Phase</i> : Generalize, maintain and support changes family has made. Focus turns from within family change to how family will respond to similar future struggles and how family interacts with community (e.g. schools, extended family).	An individualized plan created by case manager and foster family. Emphasizes behavioral management techniques and the foster home environment. The home environment to provide youth with structure, limits, and rules. Also behavioral skills training, such as interpersonal skills and prosocial behaviors, discipline techniques, role modeling, establishing rules and consequences for youth, eliminating exposure to negative peer influences, and providing youth with positive and productive relationships. Monitor and reward behavior and provide youth with daily feedback and structure.	MST interventions improve caregiver discipline practices, enhance family affective relations, decrease youth association with deviant peers, increase youth association with prosocial peers, improve youth school or vocational performance, engage youth in prosocial recreational outlets, and develop an indigenous support network of extended family, neighbors, and friends to help caregivers achieve and maintain such changes. Family-based approach but also emphasizes social networks (removing child from deviant peers)	Teachers: proactive classroom management (e.g. consistent classroom expectations and routines, explicit instructions for behavior) interactive teaching (eg monitor student comprehension, re-teach material when necessary), and cooperative learning (e.g. teams of students of different ability and background as learning partners). Parents: offered child behavior management skills and skills to reduce their children's risks for alcohol and drug use.
Length of Follow-up	At Age 15	Up to 5 years	1 year	Study 5 - 5 years; Study 6 - 4 years, 13.7 years; Study 7 - 1.7 years; Study 14 - 1.5 years	At age 21
Effects on Crime Outcomes	At age 15: fewer arrests (0.20 vs. 0.45); fewer convictions and probation violations (0.09 vs. 0.47)	18 Months after study: Approximately 30% reduction in recidivism (2002 study); Diffusion effects on siblings	MTFC boys had significantly fewer arrests, incarceration, were more likely to report no further arrests post-treatment. MTFC boys reported significantly less criminal and delinquent behaviors.	Study 5 - 43% decline in recidivism; Study 6 - 69% decline in recidivism (@ 4 years), 54% decline in re-arrest & 57% decline in days incarcerated (@13,7 years); Study 7 - No significant decline in recidivism; Study 14 - 37% decline in re-arrests	No Significant effects on arrests in last year or court charge in last year; Significant 20% reduction in probability of every charged (0.53 C vs. 0.42 T)

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