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## The Impact of Parental Stressors on the Intergenerational Transmission of Antisocial Behavior

Terence P. Thornberry<sup>1</sup>, Adrienne Freeman-Gallant<sup>2</sup>, and Peter J. Lovegrove<sup>3</sup>

Terence P. Thornberry: [terence.thornberry@colorado.edu](mailto:terence.thornberry@colorado.edu)

<sup>1</sup>Institute of Behavioral Science, University of Colorado, 1877 Broadway, Suite 601, Boulder, CO, 80302; phone: 303-735-3065; fax: 303-449-8479

<sup>2</sup>Hindelang Criminal Justice Research Center, University at Albany, 135 Western Ave., Albany, NY, 12222

<sup>3</sup>Department of Sociology, University of Colorado, Boulder, CO, 80309

### Abstract

We examine the extent to which parental antisocial behavior is related to child antisocial behavior and, if it is, the extent to which it is mediated by parental stressors and by parenting behaviors. In particular, we examine two sources of stress -- depressive symptoms and exposure to negative life events. The study is based on data from the Rochester Intergenerational Study, a prospective multi-generation panel study. The parent sample is 75% male and 25% female and predominantly African American (69%); the child sample consists of each parent's oldest biological child. We find significant levels of intergenerational continuity in antisocial behavior for mothers and for fathers who live with or supervise their child, but not for fathers who have low levels of contact with their child. Results of structural equation models of mediating pathways are similar for mothers and for supervisory fathers. Of the two stressors we examine, depressive symptoms appears to be the more consistent mediator. It, both directly and indirectly via its impact on parenting behavior, influences the child's early onset of antisocial behavior. The results imply that childhood antisocial behavior has deep roots, extending back to the parent's adolescent development.

### Keywords

intergenerational continuity; antisocial behavior; mediating pathways; parenting; parental stressors

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There is growing evidence in the scientific literature that "...across successive generations, problems beget problems" (Caspi & Elder, 1988:220). For example, a parent's involvement in delinquency, drug use, and related problem behaviors significantly increases the likelihood that his or her children will also become involved in these behaviors (Costello et al., 1999; Farrington et al., 2001; Huesmann et al., 1984; Pears & Capaldi, 2001). Similarly, parents who avoid involvement in problem behaviors are more likely to have children who also avoid them.

While there is now ample evidence that problems, indeed, beget problems, results from recent multi-generation studies (e.g., Capaldi et al., 2003a; Serbin & Stack, 1998) suggest that a full understanding of the manner in which parents and offspring are behaviorally linked is far more complex than the notion that children will simply follow in the footsteps of their parents. First, there are substantial levels of intergenerational *discontinuity*, or intergenerational resilience, that also require investigation and explanation (Rutter, 1998). Second, we are only now beginning to explore the factors that moderate behavioral

continuity between parent and child, such as the parent's gender and the impact of different levels of contact between the generations (Jaffee et al., 2003; Thornberry, 2005). Third, even if the level of intergenerational continuity in antisocial behavior were firmly identified, we are still left with the central question of intergenerational study: What are the mediating processes that link parents and their children in this fashion? The present article contributes to our understanding of these topics by examining two key issues: the extent to which a parent's history of antisocial behavior is related to his or her child's antisocial behavior and, second, the extent to which intergenerational continuity is mediated by key variables derived from a life-course theory of development. This study contributes to our understanding of intergenerational relationships by examining multiple sources of parental stress and by investigating these issues separately for mothers and for fathers and, for the fathers, examining the moderating effect of ongoing contact with the child.

## Conceptual model

There are several mediating processes that could account for intergenerational continuity in antisocial behavior. Perhaps the most parsimonious is a purely genetic model and there is substantial evidence of heritability for antisocial behavior (Jacobson et al., 2001; Simonoff, 2001). However, heritability estimates only average about 40% (Rhee & Waldman, 2002), indicating that there are also substantial environmental influences at play. The present analysis focuses on these environmental influences, adopting a life-course orientation to account for intergenerational continuity.

Thornberry (2005) recently developed an intergenerational model of antisocial behavior that is rooted in interactional theory (Thornberry, 1987) and, more generally, the life-course perspective (Elder, 1997). It hypothesizes that parental involvement in antisocial behavior during adolescence has cascading developmental consequences for the individual that ultimately compromise the life chances of his or her children. Among the consequences are the disruption of the formation of social bonds during adolescence, for example, an increased level of school disengagement. In turn, higher levels of adolescent antisocial behavior and lower levels of prosocial bonds increase the chances of disorderly transitions from adolescence to adulthood. In combination these factors increase the probability that as a young adult the person will experience higher levels of structural adversity, stress, and continued antisocial behavior, all of which have been shown to compromise effective parenting strategies, perhaps the strongest influence on childhood antisocial behavior. If correct, this model suggests that one pathway by which parental antisocial behavior leads to child antisocial behavior is via the life-course disruption generated as a consequence of the parent's involvement in antisocial behavior during adolescence.

Our intergenerational theory also hypothesizes that the level of intergenerational continuity and the mediating pathways will differ for mothers and for fathers. In American culture, mothers are cast as the primary parent, and "norms are stricter on the centrality and endurance of the mother-child dyad" (Doherty, Kouneski, & Erickson, 1998). Fathers are more likely to play a secondary role; the father-child relationship is less enduring and more strongly shaped by contextual influences, especially relations with the child's mother (Doherty, Kouneski, & Erickson, 1998; Furstenberg & Cherlin, 1991). Given the centrality of the parenting role for women, the association between parental antisocial behavior during adolescence and the child's antisocial behavior is expected to be stronger and more universal for mothers as compared to fathers. For fathers the level of intergenerational similarity will be conditioned by their contact and involvement with the child. Also, given the centrality of the parenting role for women, we expect that family processes such as parenting styles will more fully mediate the impact of adolescent antisocial behavior for mothers as compared to

fathers. For fathers other aspects of their adjustment to adult roles, for example, employment and financial stress, will be influential as well.

As is the case with most general developmental models (e.g., Conger et al., 2003; Patterson, Reid, & Dishion, 1992; Sampson & Laub, 1993) we will test this one by examining significant portions of it in a set of incremental analyses. In the present case we focus on mediators from three domains included in our intergenerational theory: disorderly transitions, stressors, and parenting behaviors.

## Previous studies

Previous prospective studies of multiple generations have examined intergenerational continuity in antisocial behavior, generally observing a direct link in antisocial behavior between parents and children. Studies have also examined mediators, consistently finding that parenting behavior is an important link in the pathway between parent and child externalizing behaviors. Still open to question, however, is the identification of the determinants of parenting behaviors that are related to the intergenerational transmission of risk.

The first issue is to establish the level of intergenerational continuity in antisocial behavior. Some studies find a strong and consistent intergenerational link for antisocial behavior, while others do not. Huesmann et al. (1984) found a significant direct link between parents' and children's aggression at age 8 in a model that also incorporated parents' aggression at age 30. Using data in three successive generations, Thornberry, Krohn, and Freeman-Gallant (2006) found that drug use for grandparents and parents is significantly related to the early onset of drug use by the child, but only for parents who have frequent, ongoing contact with the child. Similarly, Bailey et al. (2006) found that grandparents' substance use was significantly related to parents' substance use and that parents' problem behavior at age 13-14 was significantly related to their children's early problem behavior.

In contrast, intergenerational continuity was more consistently observed by Cairns et al. (1998) for cognitive development than for aggressive development. Smith and Farrington (2004) found that parents with early conduct problems were no more likely to have children with conduct problems than those parents who did not display early behavioral issues, although the parents' adult antisocial behavior was related to early conduct problems in their children. Hops et al. (2003) showed that parents' adolescent externalizing behavior was not significantly correlated with externalizing behavior in their children, and Conger et al. (2003) found that parents' aggression towards a sibling at 14-16 years old was not a statistically significant predictor of their children's aggression towards a parent at very young ages (2 to 4 years of age).

Contrary evidence should not be used to assert that intergenerational continuity does not exist, however, due to several methodological issues. Comparisons are often made between different outcomes for parents and children and at non-comparable ages. Also, studies typically consider just one or two of a broad array of potential antisocial behaviors. Further investigation into intergenerational continuity, as well as its potential mechanisms, is still warranted.

Of the mediating mechanisms considered, parenting behavior is perhaps the most common. Parenting is consistently found to be related to antisocial behavior in both generations, helping to explain the effect of one generation's behavior on that of another. For example, Kaplan and Liu (1999) tested continuity of antisocial behavior, finding a strong intergenerational link in antisocial behavior that was mediated by parents' childrearing style at ages 35-39. Hops et al. (2003) tested links in parents' and children's externalizing

behavior, along with grandparents' and parents' aggressive behavior, during an observed task. In this case, parents' externalizing behavior was indirectly related to children's externalizing behavior through aggressive parenting. Capaldi et al. (2003b) showed that while parents' adolescent antisocial behavior is directly related to their children's difficult temperament during toddlerhood, they are also linked indirectly through poor parenting.

While parenting is certainly an important mechanism for the process of intergenerational continuity, we also need to consider the factors that determine parenting behaviors. Belsky (1984) theorized that disruptions in parental psychological functioning, such as depression, reduce a parent's ability to nurture positive development in children. Downey and Coyne (1993) report that depressed mothers respond to children less positively, less promptly, and less frequently when compared to non-depressed mothers. Interactions between depressed mothers and children are more likely to be characterized by hostility and irritability, and to be coercive in nature. Depressed mothers, in general, exhibit less effective parenting behaviors than non-depressed mothers (Belsky, 1993; Ghodsian, Zajicek, & Wolkind, 1984; Hops et al., 1987; Pears & Capaldi, 2001). Further, parents with mental health problems are more likely to be perpetrators of child maltreatment (Kotch et al., 1999; Tolan, Gorman-Smith, & Henry, 2006).

Belsky (1984), as well as Patterson, DeBaryshe, and Ramsey (1989), theorize that negative life events and stressors such as poor marital relations, unemployment, economic hardship, and the lack of supportive social networks also impede the parenting skills needed for successful child development, and empirical evidence shows that these stressors indeed have a deleterious effect on parenting. For example, Snyder (1991) found that days of higher parental stress covaried significantly with days where discipline practices were disrupted. Whitbeck et al. (1997) found that financial stress increased harsh or aggressive parenting, while decreasing authoritative parenting, for both mothers and fathers. Mothers currently experiencing life transitions are less likely to properly discipline their children, and both maternal discipline and monitoring were disrupted after transitions occurred (Capaldi & Patterson, 1991).

Only a few studies have considered links between depression and stressful life events as potential contributors to parenting behaviors in an intergenerational context. Kaplan and Liu (1999) looked at the role of psychological distress and childrearing in the process of intergenerational continuity. They found that depression mediated the effect of parents' antisocial behavior on children's behavior to a greater extent than positive childrearing. Thornberry, Freeman-Gallant, and Lovegrove (in press) looked at the role of parenting stress in processes of intergenerational continuity of delinquency. They found that, for both mothers and fathers, parenting stress significantly reduced effective parenting, and ineffective parenting in turn significantly increased externalizing behavior in their children. Thornberry et al. (2003) demonstrated that, for both mothers and fathers, financial distress significantly reduced positive parenting and this reduction then increased early antisocial behavior in children.

Consistent with our life-course theory, these studies show that parental depression and stressful life events are significant factors in the process of intergenerational continuity. In the vast majority of cases, parental depression and stressful life events are either directly associated with children's antisocial behavior or indirectly related to the children's antisocial behavior via parenting skills. Moreover, the importance of depression and stressful life events seems to be just as high for fathers as for mothers. These findings, however, come from a very limited number of studies; so, very little can be said currently across studies using different samples about the effect of parental depression and stressful life events on

processes of intergenerational continuity. The purpose of this study is to continue the investigation of these issues in an intergenerational context.

## Hypotheses

The model to be assessed empirically is described in Figure 1. To assess intergenerational continuity this model examines the impact of the parent's adolescent drug use and delinquency on the child's externalizing problems during childhood. The model also examines one type of precocious transition to adult roles that is likely to mediate part of this relationship: the parent's age at first birth. Adolescent involvement in drug use and delinquency is predicted to decrease the parent's age at first birth. We also examine two major stressors, depressive symptoms and the number of negative life events experienced by the parent. Given the available sample size for this analysis, however, it is not possible to include both stressors in the same model. We therefore estimate them in separate, parallel models. Both adolescent involvement in antisocial behavior and a younger age at first birth are expected to increase levels of stress as younger, more antisocial parents are developmentally less well prepared to assume the responsibilities of parenthood. In turn, both of these stressors are risk factors for the child's antisocial behavior and both are expected to lead to ineffective parenting behaviors, characterized here by weak attachment to the child. Attachment, the emotional component of the parent-child bond (Hirschi, 1969), refers to the strength of the affective ties between the parent and child. Finally, in this model, parental attachment has the most proximal and powerful impact on the child's early manifestation of antisocial behavior and is expected to be an important mediator of the impact of the earlier variables.

## Methods

To test this model we use data from both the Rochester Youth Development Study (RYDS) and the Rochester Intergenerational Study (RIGS). We provide brief descriptions of both designs.

## Sample

The original RYDS project, which began in 1988, was designed to investigate the development of antisocial behavior in adolescents. The sample consists of 1,000 seventh and eighth graders selected from the Rochester, New York, public schools in 1988. Subjects were selected to overrepresent high-risk youth in an urban community by stratifying the sample on two dimensions. First, males were oversampled (75% vs. 25%) because they are more likely than females to engage in problem behaviors (Moffitt et al., 2001). Second, students residing in areas of the city with a high resident arrest rate were oversampled since they are at greater risk for involvement in a variety of problem behaviors. The final sample is 68% African American, 17% Hispanic, and 15% White. While it represents the full socioeconomic spectrum found in an urban population (Farnworth et al., 1994), it overrepresents poor families; at Wave 1, 33% of the heads of households were unemployed and 40% were receiving welfare.

Phase 1 of the study, which is used in the present analysis, covered the adolescent years, from ages 14 to 18. The adolescents were interviewed every 6 months between spring 1988 and spring 1992 (Waves 1 to 9) and at Wave 9, 88% were re-interviewed. There is no indication of selective subject loss and detailed descriptions of the sample and of the attrition analysis are presented in Krohn and Thornberry (1999) and Thornberry et al. (2003).

The Rochester Intergenerational Study (RIGS) started in 1999 and added a third generation to the overall design. The sample includes the first biological child, two years of age or older at the initiation of the study, of each of the original adolescent participants. In addition, each year we continue to add first-born children who turn two as we move toward the sampling goal of all first-born children.

Of the 1,000 original participants, 591 (186 mothers and 405 fathers) had a child who was eligible to participate in the intergenerational study as of Year 9, currently the most recent year of data collection that has been completed. Mothers are almost always the children's primary caregivers, and 97% (180 of 186) agreed to participate in the RIGS. Only 25% to 30% of the RYDS fathers live with the child, and many of the non-resident fathers have little if any contact with the child. Despite this, 79% (321 of 405) of the original male subjects with biological children are included in the study. The primary reasons for non-inclusion of RYDS fathers are: the other caretaker refused participation (35.5% of non-participants), the father lost contact with the child and his or her mother (22.6%), or the father refused to participate (33.9%). The fathers who enrolled in the study are not statistically different ( $p < .05$ ) from those who did not with regard to race/ethnicity, age at the birth of the child, high school dropout status, history of maltreatment, number of caretaker changes during adolescence, adolescent drug use, or adolescent delinquency.

Attrition has been exceptionally low. Focusing on the sample that entered the study in Year 1 ( $n = 371$ ), 94% (347 of 371) participated in the study at Year 9. Of the 490 who entered the study between Years 1 and 8, 94% ( $n = 459$ ) were retained at Year 9. These retention rates far exceed the target rates that Hansen, Tobler, and Graham (1990) recommend for longitudinal studies of three or more years.

Data collection in the RIGS is conducted in annual assessments near the child's birthday. There are three key participants: the child, the parent, and the child's other primary caregiver. For the children of fathers, the other caregiver is almost always (96%) the child's biological mother. In the case of the mothers, however, the other caregiver varies and includes grandmothers (40%), biological fathers (35%), other partners (13%), and other relatives (12%).

The present analysis is limited to data from the first 7 years of the RIGS, 1999 to 2005. As is true for all intergenerational studies there is a substantial age range for the third generation; at Year 1 they ranged from 2 to 13 with a mean of 6. Because we expect the child's age to be important in any analysis, we conduct analyses by age, gathering together the participants of a given age across data collection years. In the present case we include only families that were assessed at least once when the child was between the ages of 7 and 9. Although the number of assessments varies, 85% were assessed at least 2 of these 3 times.

All mothers with a child in this age range are included ( $n = 137$ ). The fathers are more complex. As mentioned earlier, only 25% to 30% of the fathers live with the child and those who do not have widely varying degrees of contact with the child (Smith et al., 2005). Some fathers have not seen the child in several years while others care for the child on a daily basis. Previous analyses (e.g., Thornberry, 2005; Thornberry, Krohn, & Freeman-Gallant, 2006) indicate that there are substantive differences, both in the level of intergenerational continuity and in the mediating processes, between fathers who live with or are in frequent contact with the child and those who are not. We therefore divide the father sample into two groups. The first, called supervisory fathers, either lived with the child or, on average, supervised the child at least once a month between the ages of 6 and 9 ( $n = 155$ ). The remainder, low-contact fathers ( $n = 68$ ), reported less frequent contact with the child. As described below, most of the subsequent analyses are restricted to supervisory fathers.

To address the issue of missing data we created 100 imputed data sets using the MCMC method in SAS PROC MI (SAS Institute, Inc., 2004). We then combined results across imputations to provide parameter estimates for the model in Figure 1, appropriately adjusting standard errors and p-values for the additional uncertainty due to missing data (Little & Rubin, 2002). Because directional hypotheses are presented, one-sided tests are used throughout.

## Measures

Table 1 presents basic information about the measures used in this analysis. The prospective, longitudinal design allows us to establish proper temporal order among the variables. The parent's adolescent antisocial behavior and age at first birth precede the family process variables which are themselves ordered. Parent stressors were measured when the child was 7 years old and parenting behaviors when the child was 8 years old. Finally, externalizing problems were assessed when the child was 9 years old. Also, to reduce bias associated with using the same reporter for independent and dependent variables, we use different reporters whenever possible. The parent reports their own adolescent involvement in antisocial behavior, age at first birth, depressive symptoms, negative life events, and attachment to the child. The biological mother reports the father's level of contact with the child and the child's externalizing behavior.

**Parent Antisocial Behavior**—The measure of the parent's adolescent antisocial behavior is based on self-report data collected in their adolescent interviews. Every six months the participants responded to a self-reported delinquency index containing 32 items and a self-reported drug use index containing 8 items covering substances from marijuana to crack or heroin. They were asked if they engaged in the behavior since the last interview and, if they had, how frequently. The measure used here is the cumulative frequency of involvement in delinquency and drug use from age 14 to 18. These measures have strong reliability and validity (Thornberry & Krohn, 2003).

**Supervisory Fathers**—To identify fathers who have continuing contact with the child and who contribute to the child's parenting and supervision, we rely on maternal reports of father involvement. Fathers are considered to be supervisory only if the mother reports that the father either lives with the child or, if he does not, that he supervises the child at least once a month during one (or more) of the years in the 3-year period covered in this analysis. Although they must have this level of involvement for at least one year, in fact, most of them do so for multiple years -- 70% had this level of contact and supervision for 2 or more years and 40% did so in all 3 years. Fathers who have less than this level of contact are considered non-supervisory. The criterion of supervising the child at least once a month was selected since previous literature demonstrates that seeing a child monthly is a threshold at which contact with nonresident fathers affects child behavior (Furstenberg, Morgan, & Allison, 1987; King & Heard, 1999; Lowenstein & Koopman, 1978; McClanahan & Carlson, 2004). We rely on maternal reports to reduce reliance on a single reporter although related analyses using the father's own report result in similar findings (Thornberry, 2005; Thornberry, Freeman-Gallant, & Lovegrove, in press).

**Age at First Birth**—The parent's age at first birth is also based on their self-reports, either in the RYDS or the RIGS, depending on how old they were at the time of the birth. Rather than including a dichotomous variable, e.g., teenage parent, we use a continuous variable of the actual age. For the fathers, the age range at which they had their first child is 16 to 25; for the mothers, it is 15 to 25.

**Depressive Symptoms**—The 16-item measure of depressive symptoms is based on the CES-D scale (Radloff, 1977). Cronbach's alpha is .90 and the items for this measure, as well as the other mediators, are presented in the Appendix.

**Negative Life Events**—The measure of negative life events is an index variable of the number of 14 life stressors -- e.g., the death of a relative or close friend, a serious illness, or financial problems -- the person experienced in the past year (Stern & Smith, 1995).

**Attachment to Child**—Parenting behavior is measured by a central aspect of good parenting -- high levels of attachment. Our measure of attachment to the child is based on a 10-item scale adapted from the Hudson Index of Parenting Attitudes (Hudson, 1996). Cronbach's alpha is .77.

**Child Antisocial Behavior**—The final variable, the child's externalizing behavior, is based on the Child Behavior Checklist (CBCL), a well-known assessment of child problem behaviors with solid psychometric properties (Achenbach, 1991). We use the CBCL data from the interviews with the child's biological mothers because they are the children's primary caregivers and most knowledgeable about the children's behavior.

## Results

We begin by examining the level of intergenerational continuity in antisocial behavior between parent and child. For the mothers there is a significant correlation,  $r = .33$ ,  $p < .001$ . The more frequently the mother engaged in drug use and delinquency during adolescence the higher the rate of her child's externalizing problems at age 9.

For the fathers, however, the relationship is dependent upon the level of contact with the child. For the supervisory fathers adolescent drug use and delinquency is significantly associated with their child's behavior,  $r = .14$ ,  $p < .05$ . But, for the non-supervisory fathers the correlation is not statistically significant,  $r = -.02$ . Because of this null finding, the following analysis is restricted to mothers and supervisory fathers.

Given the available sample size it is not possible to include both depressive symptoms and negative life events in the same model. Therefore, we present separate models for these two stressors. The models including depressive symptoms are presented in Figures 2a and 2b, for the mothers and the supervisory fathers, respectively. Both models have acceptable fit, GFI = .97 in both cases.

For the mothers (Figure 2a), adolescent antisocial behavior and a younger age at first birth significantly increase the level of depressive symptoms they experience during young adulthood. In turn, depressive symptoms increases the child's externalizing behavior and reduces maternal attachment to the child. Level of attachment has the largest impact on the child's behavior.

For the supervisory fathers (Figure 2b), there is only one indirect path from adolescent drug use and delinquency to the child's externalizing behavior. Adolescent antisocial behavior increases depressive symptoms which, in turn, significantly reduces the father's attachment to the child and that has a large impact on the child's externalizing behavior.

Figure 3 presents the models when we incorporate negative life events instead of depressive symptoms. Again the models have acceptable fit statistics, GFI = .96 for the mothers and .97 for the supervisory fathers. For the mothers (Figure 3a), their adolescent antisocial behavior is not significantly related to any of the subsequent variables. A younger age at first birth



increases exposure to negative life events which, in turn, increases the child's externalizing behavior. The largest impact on the child's behavior is again seen for level of attachment.

For the supervisory fathers (Figure 3b), adolescent antisocial behavior increases exposure to negative life events and reduces level of attachment to the child. Only the latter variable, attachment, has a direct impact on the child's externalizing behavior.

## Discussion

This article examined the issue of intergenerational continuity in antisocial behavior from a life-course perspective. For parents who have frequent, ongoing contact with their oldest biological child, their involvement in adolescent drug use and delinquency creates subsequent risk for their children. This was observed for the mothers, virtually all of whom live with the child, and for the supervisory fathers who live with or regularly supervise the child. Interestingly, this association is not observed for absent fathers who only see the child sporadically. These results are consistent with others from the Rochester study that examined intergenerational continuity in antisocial behavior (e.g., Thornberry, Freeman-Gallant & Lovegrove, in press; Thornberry, Krohn, & Freeman-Gallant, 2006), and together they strongly suggest that continuing contact with the child is almost essential for an intergenerational transfer of risk (see also, Jaffee et al., 2003). If this pattern is maintained as the children age and enter the peak ages of offending, and especially if it is replicated in other studies, it focuses attention on social and environmental factors as likely mediators.

Accordingly, we examined some key mediating processes expected from a life-course perspective. In particular we examined age at first birth (an indicator of precocious transitions to adult roles), two major stressors for young adults (depressive symptoms and negative life events), and one of the most basic aspects of effective parenting -- the level of attachment to the child.

The results were more similar than dissimilar for mothers and supervisory fathers. In both cases (except in the model for mothers that includes negative life events), adolescent involvement in antisocial behavior had an indirect effect on child antisocial behavior, and the primary pathway was their parenting style, as indicated by their level of attachment to the child, which always had the largest impact on the child's behavior. Attachment emerges as a central influence on the child's behavior and a key mediator of intergenerational continuity. For the mothers attachment is most strongly influenced by depressive symptoms and prior variables are either unrelated to attachment or indirectly relate to it via depressive symptoms. For the supervisory fathers, however, attachment is influenced by depressive symptoms and, either directly or indirectly by their adolescent antisocial behavior. In the interest of parsimony we did not include a path from age at first birth to attachment, although we did experiment with its inclusion; it was never significant and the other paths in the model did not change when it was included.

With respect to the stressors we examined, depressive symptoms appears to be a more central influence as compared to negative life events, especially for the mothers. Adolescent antisocial behavior led to depressive symptoms which had both direct and indirect effects on the child's antisocial behavior for the mothers and an indirect effect, via parenting, for the fathers. In contrast, negative life events did not impact parenting behaviors as was expected by our theoretical model for either the mothers or fathers. The correlation between these two stressors is .31 for the mothers and .41 for the supervisory fathers. It is possible that the impact of negative life events is mediated through depressive symptoms but the available sample size precludes the inclusion of both measures in the same model.

Interestingly, experiencing depressive symptoms has a sizeable impact on parenting and the child's behavior for both mothers and fathers. While depression is often thought of as having a greater impact on women than men, the present results are consistent with those of other studies which highlight the general negative consequences of depressive symptoms on parenting and, indirectly, on child behavior (e.g., Conger & Elder, 1994; Conger et al., 2002; Kim, Capaldi, & Stoolmiller, 2003).

Although the present results contribute to our understanding of intergenerational continuity in antisocial behavior, they are not without their limitations. We were only able to test part of our intergenerational model; other mediating pathways as well as behavioral genetic effects will need to be incorporated before a full understanding of intergenerational continuity is gained. The absence of these effects is also related to the level of fit observed for these models. As we continue to follow the sample prospectively, the available sample size will increase, enabling more complete analyses. Relatedly, we only examined the child's early onset of antisocial behavior, measured at age 9. Although early onset is indicative of longer, more serious careers (Glantz & Pickens, 1992; Krohn et al., 2001), it will be important to investigate intergenerational patterns of behaviors as the children in the sample age and enter adolescence.

Overall, these results combined with others from the Rochester Intergenerational Study begin to identify key mediating pathways to help account for intergenerational patterns in antisocial behavior. A series of papers (Thornberry, 2005; Thornberry et al., 2003; Thornberry, Freeman-Gallant, & Lovegrove, in press), as well as this one, has examined different sources of stress for young adults including financial stress, parenting stress, negative life events, and depressive symptoms. Other analyses have examined different aspects of parenting behaviors including attachment, monitoring, discipline, warm/nurturing parenting, and hostile/harsh parenting. Additional studies have also examined different aspects of the parent's adolescent antisocial behavior and different aspects of the child's antisocial behavior. Across these analyses it appears that parental antisocial behavior during adolescence increases the chances that the child will also be involved in antisocial behavior, especially for mothers and fathers who have frequent, ongoing contact with the child. It also appears that this effect is mediated, at least in part, by high levels of stress and by their parenting behaviors. Both of these major pathways are expected by intergenerational theories based on a life-course perspective.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## Appendix

### Depressive Symptoms

Response Set: Always, Often, Sometimes, Seldom, Never

During the past week, how often did you ...

- a. Feel bothered by things that don't usually bother you?
- b. Not feel like eating or have a poor appetite?
- c. Feel you had trouble keeping your mind on what you were doing?
- d. Feel depressed?
- e. Think your life has been a failure?
- f. Feel fearful?
- g. Sleep restlessly?
- h. Feel happy?
- i. Feel that you talked less than usual?
- j. Feel lonely?
- k. Feel that people were unfriendly?
- l. Feel you enjoyed life?
- m. Have crying spells?
- n. Feel sad?
- o. Feel people disliked you?
- p. Feel that you could not "get going?"

### Negative Life Events

Response Set: Yes, No

Since your last interview, did ...

- a. Your parents separate or get divorced?
- b. One of your parents remarry?

Since your last interview, did you ...

- a. Have a serious injury or serious illness?
- b. And your (boyfriend/girlfriend) or partner break up?
- c. Have a big fight or problem with a close friend or family member?
- d. Have serious financial problems?

Since your last interview, did you or anyone in your household ...

- a. Lose their job?
- b. Have serious trouble with their job that caused stress for anyone in the household?
- c. Lose their financial benefits such as welfare or food stamps?

Since your last interview, did a close friend or family member ...

- a. Die or become seriously ill?
- b. Have serious emotional problems?

- c. Abuse alcohol? (used alcohol so much that it became a serious problem)
- d. Abuse other drugs?
- e. Get in trouble with the law?

### Attachment to Child

Response Set: Always, Often, Sometimes, Seldom, Never

Thinking about (CHILD), how often would you say that ...

- a. (CHILD) is too demanding
- b. (CHILD) interferes with your activities
- c. You think (CHILD) is terrific.
- d. You feel violent toward (CHILD)
- e. You feel very angry toward (CHILD)
- f. You feel proud of (CHILD)
- g. You wish (CHILD) was more like other children that you know
- h. (CHILD) is well behaved
- i. You get along well with (CHILD)
- j. You just do not understand (CHILD)

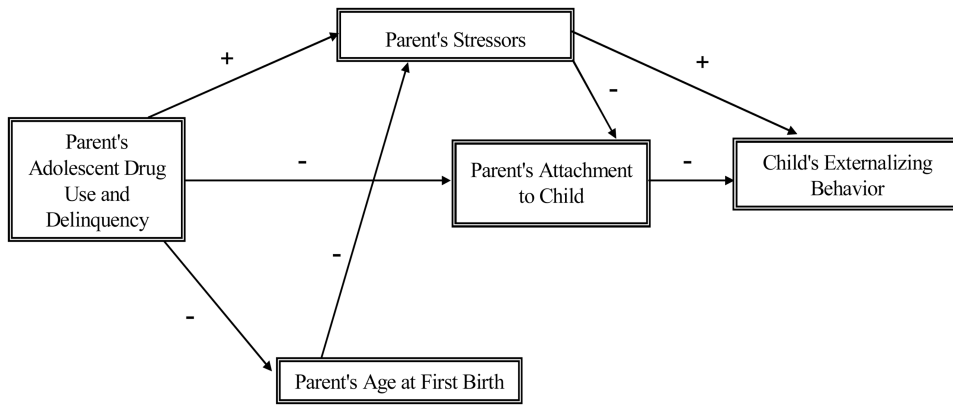
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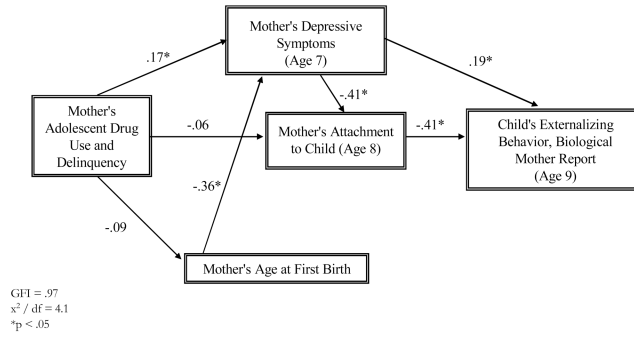
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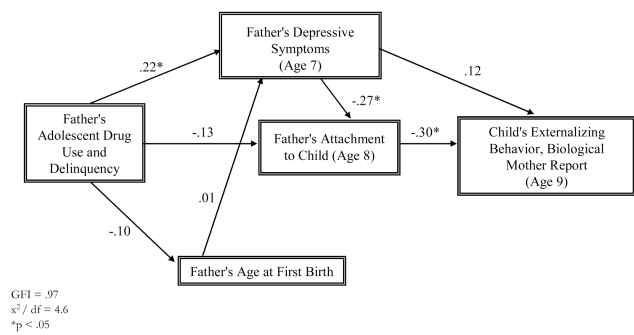
**Fig. 1. Empirically assessed model of intergenerational continuity in antisocial behavior**



a. Mothers (standardized coefficients)

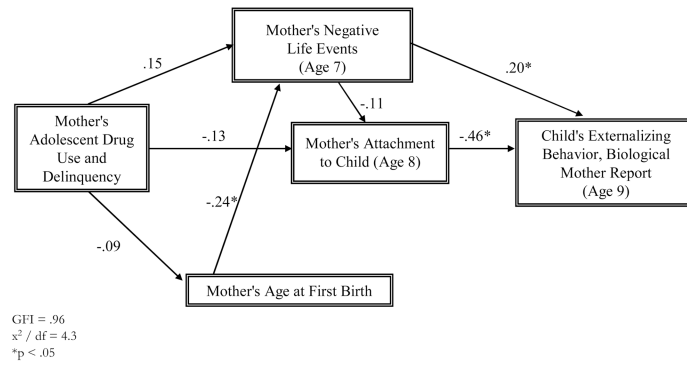


b. Supervisory fathers (standardized coefficients)

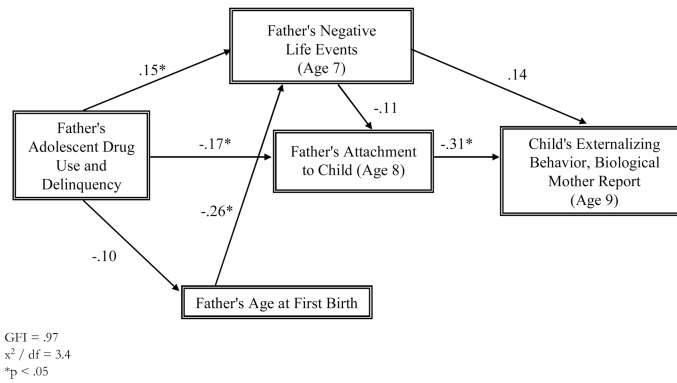


**Fig. 2. Mediation models for intergenerational continuity in antisocial behavior including depressive symptoms**

a. Mothers (standardized coefficients)



b. Supervisory fathers (standardized coefficients)



**Fig. 3. Mediation models for intergenerational continuity in antisocial behavior including negative life events**

**Table 1**  
**Source of measures used in analysis**

|  | Parent ages | Child ages | Reporter          |
|--|-------------|------------|-------------------|
| Parent's adolescent drug use and delinquency | 14-18       |            | parent            |
| Father's level of contact with child         |             | 7-9        | Biological mother |
| Parent's age at first birth                  |             |            | Parent            |
| Fathers                                      | 16-25       |            |                   |
| Mothers                                      | 15-25       |            |                   |
| Parent's depressive symptoms                 |             | 7          | Parent            |
| Parent's negative life events                |             | 7          | Parent            |
| Parent's attachment to child                 |             | 8          | Parent            |
| Child's externalizing behavior, CBCL         |             | 9          | Biological mother |