Early Childhood Paternal Absence and Later Childhood Behavior Problems: Evidence from the 1979 NLSY Mother and Child Data

Jamie L. Lynch[1]
The Ohio State University
Center for Human Resource Research

Frank L. Mott
The Ohio State University
Center for Human Resource Research

[1]This is a "conference" draft of a paper that will be improved in two important ways prior to presentation. First, we will employ a growth curve model to more accurately determine and represent the influence of timing of father absence on behavior problems in childhood. Second, we will expand both our analysis and theoretical discussion of the link between father absence and the emotional HOME score.

Abstract

Using data from the Mother and Child cohorts of the National Longitudinal Survey, this research examines the role of father absence on behavioral outcomes in late childhood. Results indicate that family disruption has a large negative effect on the emotional, but not cognitive, quality of the home environment. Important to child well-being on its own, the emotional quality of the home links father absence with an increase in externalizing and internalizing behavior problems for children at age ten. Uncontrolled estimates show a linearly increasing relationship between behavior problems and duration of father absence; however, this relationship is mediated by the emotional and cognitive home environment. Children in disrupted homes are found to maintain, and in some instances increase, high levels of behavior problems with the addition of a new father figure. Girls, but not boys, exhibit less behavior problems when a father is continuously present throughout childhood.

Introduction

The research literature that explores the consequences of a paternal absence from the home is quite extensive. Typically, it explores the consequences for a child in the years immediately subsequent to a marital breakdown, examining overt transitions in the child's home on the behavioral, and sometimes cognitive, development of the child. (Sigle-Ruston and McLanahan 2004; Amato 2000; Mott, Kowaleski-Jones and Menaghan 1997) This body of research has, over the years, considered the consequences for the child(ren) of the families suffering the economic and emotional transition associated with a divorce, or sometimes just the father's absence (Oldehinkel et al. 2008; Osborne and McLanahan 2007; Amato and Gilbreth 1999). While there are increasing numbers of papers that utilize longitudinal and in-depth data sources, for the most part, available research is limited in scope, often exploring essentially cross-sectional "before" and "after" father absence effects on selected dimensions of a child's behavior.

Our primary objectives are to explore how the quality of the emotional and cognitive environment may be sensitive to the presence or absence of a father from the home, the timing of the father's absence, and how this appears to be linked with an older child's evidence of externalizing or internalizing behavior problems in the period shortly before adolescence. There are a variety of motivations for a father not being present, including, but not limited to economic issues (Poortman and Seltzer 2007), child or parent health issues (Joung et al. 1998), a mother's earlier in life manifestations of antisocial behaviors (Cherlin 1992), and more generally, parental disaffections with each other that ultimately results in a threshold being reached that in some instances leads to relationship breakdown (Amato and Rogers 1997). We reiterate that an

overriding objective is to measure how father leaving, after controlling for several parental and family factors, may be independently associated with the actual quality of the home environment and child behavior problems. Our primary independent measures are timing of father absence and the HOME scale, which directly measures several dimensions of parental-child physical, cognitive and emotional interaction as reported on by the mother.

Research Agenda and Explanatory Variables

A wide range of explanatory variables have in recent years been considered in this body of research, reflecting the possibility that overt connections between paternal home leaving and subsequent child behavior may reflect a number of factors independently linked with both an above average likelihood of father leaving as well as subsequent child behavior. Linked with this likelihood, there remains the issue of whether or not the actual physical presence of a man in the household has an independent impact on children, and indeed whether this effect may impact differently on children who are in homes where a father leaves later in the child life course versus a home where the father was never present. Previous research efforts have included as controls demographic factors such as race and ethnicity, and at least in some instances, have found that they may be correlated with both paternal absence and child behavior (McLeod, Kruttschnitt and Dornfeld 1994; King and Sobolewski 2006; Amato 2005). Linkages between paternal absence and child gender in a variety of ways have shown differential impact on male and female behavior (Mott, Kowaleski-Jones and Menaghan 1997). While we cannot completely clarify the processes, we are also able to consider several maternal pre-childbirth behaviors as well as post-birth child attributes as predictors of subsequent behaviors independent of subsequent paternal leaving. The potential rationales for these connections are non-trivial, but include the following possibilities. First, immediate pre-birth maternal drinking or smoking is

predictive of similar post-birth behaviors that may ultimately represent a maternal behavior path not conducive to positive child behavior. Negative maternal behavior in this domain may well be linked with a lower quality of mothering, which would likely be linked with a poorer quality home cognitive and emotional environment. Indeed there is considerable evidence that the quality of the HOME environment has been found to be significantly linked in earlier research with a variety of negative maternal and family traits and additionally with lesser maternal education (Menaghan and Parcel 1991), and family poverty status that are core variables in this research**.** For this reason, the key explanatory variable we include is the well normed and validated HOME cognitive and emotional subscales developed by Caldwell and Bradley (1984) that incorporate several dimensions of parent interactions with their children. This includes measures of emotional (e.g. kissing or caressing child, as well as physical contact, including parental disciplinary modes) as well as intellectual connections (e.g. reading activities as well as the presence of various reading materials, joint activities such as museum, music and other intellectual stimuli interactions).

Additionally, evidence of an un-well child early in life, proxied for by low infant birth weight, a premature birth, and a high birth order, may be predictive of an above average likelihood of a forthcoming relationship breakdown and may well also be linked with longer term child behavior problems (Mick et al. 2002; Needham, Crosnoe, and Muller 2004), as well as a poor quality home environment (Brooks-Gunn, Klebanov, and Duncan 1996). All of these factors have been suggested by at least some other research as being predictive of “broken” families, as well as subsequent child behavior problems. As noted, we are able to explore whether they substantially reduce the independent effects of paternal absence per se and whether there are selective gender effects on these linkages.

As emphasized, a unique aspect of this data set is that the HOME scale measures are repeatedly gathered every two years for these youth—from infancy into early adolescence. Thus, we include in this research design the HOME measure every two years—from age 1 or 2 up through age 9 or 10; We measure the quality of the home environment during childhood before as well as after a father's leaving, as well as at 5 points for children who always live with two parents and for children who never live with their Father, both with and without appropriate controls. This permits us to descriptively highlight the extent to which HOME scores at different points after birth and at different points in relation to a father leaving point are linked with other family attributes or maternal behavior.

The primary objectives of this research are as follows: First, we intend to quantify the extent to which the quality of the home environment during childhood is sensitive to the temporal placement of the father-leaving event. Second, we will measure how the magnitude of the HOME factor prior to age ten, independent of paternal presence or absence, impacts on the behavioral outcome at age ten, given variations in paternal presence-absence in different family environments. Thirdly, after controlling for HOME environment as well as other background controls, we will quantify the remaining independent effect of the patterning of father presence or absence on internalizing and externalizing behavior problems at age ten. And lastly, with appropriate stratifications, we will explore the extent to which the emotional and cognitive HOME environment and the patterning of father presence or absence impact on internalizing and externalizing behaviors in different ways for boys and girls.

The Sample and Data Elements

The sample we utilize incorporates data from the National Longitudinal Survey of youth and child 1986 to 2006 interview rounds. This includes a fully representative female sample

(including over-samples of black and Hispanic women) that was 14 to 22 years of age when first interviewed in 1979. Drawing from the mother and child surveys, we observe the first ten years of life for all the children born to sampled mothers 1985 and 1996; all of whom had reached age ten by 2006, the last survey for which we have all the relevant in-depth demographic as well as social-psychological indicators. From a cohort perspective, we have a large sample of children with an observed life history from birth to age ten. The earliest born children in this sample were born to women between the ages of 20 to 26 in 1985 or 1986. The most recent children we can incorporate for an observed first ten years of life were born in 1995 or 1996 to mothers between the ages of 30 and 37 at the time of birth. Thus, the overall mother sample is between the ages of 20 and 37 as of the child's birth point. All of the children were born within the NLSY79 "window", and indeed, for all the mothers we have at least five or six annual pre- birth points. However, while we do not include children born to adolescent mothers or to women over the ages of 37 we do include children born to women covering a wide range of mainstream birthing ages[2].

In this study, we use a data set that permits us to follow a large representative sample of children from birth to their 10th birthday, exploring how a child transitioning from being in a father present to a father absent home impacts on their overall behavior profile as well as their tendency to internalize or externalize their behavior at these critical ages approaching early adolescence. The children live in homes that include a full range of father-leavers over the decade. The reference group in our multivariate analysis includes family units in which the father was never present during that period. The remaining child sample is drawn from family units where the father left the home at some point after birth but by age ten, or else was never present.

[2] Child assessment data collection was first initiated in 1986. Accordingly, it is not possible to include children born prior to the 1986 wave in our analyses.

We limit the analysis to the family units where, if the father left the home, he did not subsequently return during the ten year interval. Our overall sample 3,519 children includes 1,794 boys and 1,725 girls and is quite diverse socio-economically[3]. We also analyze the subsample of children who report a father missing at some point in their first 10 years (n=1,474) in an effort to understand the impact of step-father or father figures entering the child's life after the biological father leaves.

As noted above, the key outcomes represent the maternal report on the child's behavior on the 32 item behavior problem scale developed by (Achenbach and Edelbrock 1983; Caldwell and Bradley 1984). We use three measures of behavior problems in this study, an externalizing behavior problem scale that measures the ways in which children act out in their home environment and against others, an internalizing behavior problem scale that measures a child's emotional state focusing on feelings of sadness, happiness, and depression, and an overall measure of behavioral problems that is itemized in Appendix one. Each scale analyzed makes use of the nationally normed behavior problem percentile scores which are normed to all children in the NLSY sample. Because of the frequently established differences between behavioral reports for young boys and girls associated with paternal absence, this research examines the entire child sample as well as gender differences in the behavioral internal, external, and overall scales.

[3] In an effort to repair our sample, we impute information in two ways. First, in order to create demographic biographies of father absence, we impute data for father presence if a case is missing information on father presence at a single time point. If the time points on either side of the missing data point are consistent (for example, the biological father is consistently present or absent both before and after the missing time point) we impute the missing point to match the consistent bordering time points. Second, of the cases with no missing data on the dependent variable (behavior problems) and complete father presence life histories, 20% have missing data on at least one of the independent variables. In order to repair missing data due to item nonresponse we make use of the ICE multiple imputation programs in STATA 11 (see Royston 2005 for details of the ICE procedure). The estimates presented are the result of combining the five imputed data sets produced by the ICE procedure into a single set of coefficients and standard errors.

It is important to note that all relevant control variables were collected on an ongoing rather then retrospective basis, are relatively extensive, and were measured within the life span of the data collection. This includes a wide range of factors that often have been cited as being relevant to the family disruption process as well as the behavior of children. Mean sample characteristics for a variety of inputs, as well as estimates of standardized HOME scores-overall as well as for the cognitive and emotional measures at ages seven or eight, and the behavior problem outcome as of age 9 or 10 are shown below in Table 1. We utilize two subscales of the overall HOME scale focusing on cognitive factors in the child's home like number of books in the home, time parents spend teaching learning skills, musical instrument availability, museum or musical attendance, the physical quality of the youth's home and several other dimensions. The emotional subscale of the HOME score used is a selection of maternal punishment dimensions, chores that a child was expected to carry out in the home, time spent by child with her father (or stepfather), whether the mother hugs or kisses her child, and other emotionally focused items. As already noted, the HOME scores represent key explanatory variable, but also considered for inclusion are proxies for family economic well being variables such as poverty status, family capital such as maternal educational attainment, race/ethnicity, birth order at transition and earlier maternal variables that may be proxying for the mother's ability to effectively cope with family difficulties (see Mott 2004 for a detailed discussion of the HOME scales).

Analytic Strategy

Our analytic strategy takes place in three stages. In stage 1, we examine the relationship between father absence and changes in the overall, emotional, and cognitive HOME score. Presented in Tables 2 and 3, we estimate a series of uncontrolled and controlled repressions and

report predicted mean scores for both sets of regressions in an effort to compare the uncontrolled and controlled impact of father leaving on the home environment. Though the full matrix is not presented for the controlled emotional and cognitive HOME reports, panels B and C of Table 3 report the overall mean differences in HOME scores pre and post father absence. Using OLS regression, stage 2, presented in tables 4 and 5, examines the role of father absence on internalizing, externalizing, and overall behavior problems. Our final stage examines the role of a new father figure on behavior problems after the biological dad leaves the household. Excluded from stage 3 are all respondents whose father is always present. In all analyses with behavior problems as the dependent variable we examine gender distinctions between all predictive factors.

Home and Father Presence or Absence: Controlled and Uncontrolled Estimates

Table 2 includes uncontrolled results indicating whether or not there are any substantial connections between paternal presence-absence in age-specific standardized overall HOME scores contingent on child age and duration of paternal absence. Table 3 includes the same information for the relationships when controlled for the various explanatory variables that may be significantly related to both father absence and a child's HOME score. These tables, particularly when compared with each other clarify the extent to which the home environment and father absence connection may reflect other factors in the child's environment.

Shifting to some substantive patterns of importance; first, at all child ages, the children in homes where the father has always been present have, with one exception at the first child point, by far the highest HOME scores at all ages. In contrast, where a father has never been present up through age ten, the reported HOME scores are by far the lowest. This may reflect the father's absence as well as other family and maternal traits linked with father absence, and will be

clarified in the comparable controlled HOME results that follow in Table 3. Focusing on the age 10 outcome point, it may be noted that in almost all instances average HOME scores increase the older the child age at which the father leaves the home. As a generalization, the results suggest that when the father leaves at a relatively older child age, the average HOME score is lowest at the first father-absent point but then shows slight recovery between that point and the following point(s), suggesting that stress or trauma in the very short run handicaps the ability of families to maintain an overall positive home environment. Moreover, the negative consequence of a father absence appears to play out more quickly in homes where a child has attained school age. Having noted this, it is useful to emphasize that regardless of the age that the father leaves, on average, a family unit never re-attains the HOME quality level prior to disruption. In addition, in those homes where a Father is always present, there is a steady increase in the overall HOME quality score as the child ages, suggesting the cognitive and emotional benefit of an intact family structure increases over time. We turn to this issue in Table 3, which replicates the patterns in Table 2, but controls for the family and maternal traits that we utilize in the subsequent tables that examine the determinants of Child behavior at age 10. In addition, as we will show in our multivariate equations, father presence or absence ultimately is of major importance as a predictor of child behavior not necessarily because of his actual physical presence in or absence from the child's home, but primarily because of the father's close connection with the quality of the emotional and cognitive environment, which are important predictors of a child's subsequent behavior.

A comparison of Table 2 and Table 3 suggest several important clarifications. First, it may be seen that regardless of whether one controls for various other explanatory variables that are established to be linked with father leaving and the quality of the home environment, the

overall HOME score, particularly for those families where a father leaves at a relatively younger age, show a consistent pattern of decline after the father leaves the home. Additionally, it may be noted that if a father left the home at age four or earlier, the control variable adjusted overall HOME score prior to the father's leaving is higher then the uncontrolled estimate, suggesting that earlier father leaving is much more likely to be from less advantaged homes. In contrast, where a father doesn't leave until the child is older (ages 7 or later), or where a father never leaves, the controlled estimates are not substantially different, in some instances slightly lower, then the uncontrolled estimates. If one looks at the HOME patterns for all children at age eight, the controlled estimates for father absent at age ten or who never have left by age ten are a bit below the uncontrolled statistics. This is consistent with the reality that families where the father leaves earlier are substantially more disadvantaged—and the child faces a poorer home environment—then where a father leaves later. This does not appear to be just because of the child being in a disadvantaged home environment for a longer time, but because children where the father leaves later are indeed not apparently as disadvantaged because of poorer home characteristics.

Having noted the overall connections between home environment and father leaving, a more detailed examination of the cognitive and emotional subscales of the HOME score suggests that the overriding negative influence of father leaving takes place in the emotional quality of the home. Comparing panels B and C of Table 3, we find little of evidence of change in the cognitive HOME scores before and father absence, but significant declines in the emotional HOME score after a father leaves the household. The declining quality of the emotional home environment after father absence suggests that the emotional relationship between mother and child is an indirect link between father absence and child well-being. The lack of a significant

change in the cognitive HOME score prior to and post father absence suggests that fathers, in this sample, are of marginal importance the cognitive environment within the home. Looking across Panels A, B and C in Table 3, we find an overall negative impact of father absence, with a particularly negative effect for post-father absence on the HOME emotional scale.

Father Absence and Presence Linkages

Before exploring the net impact of a father's leaving the home, Table 4 briefly synthesizes the relevance of father leaving on Behavior Problems at age ten. In Table 4, we include ordinary least square coefficients from an uncontrolled equation specifying when the father left the child's home. It may be noted that compared to the situation where a father is never present, all of the coefficients but one for overall behavior problems as well as the external and internal dimensions are negative compared with never living with a biological father, suggesting that delayed father absence reduces behavior problems. Most importantly, the situations where a father left when the child was ten, or where the father has never left before an 11^{th} birthday, are significantly preferable when compared with the father never present categories. Comparing the fully controlled Table 5a with the uncontrolled Table 4 indicates that with the controlling for child and family background, the father always present coefficient loses all of its significance as a predictor of the overall and internal behavior outcomes, and loses much of its predictive power with respect to the externalizing behavior outcome. Additionally, the father leaves between ages 8 and 10 category, the most proximate variable to the outcome, loses much of its predictive power for all three of the outcomes. The majority coefficients for father absence, with the exception of father absence at age 8 and continuous father presence, not only lose significance when controls are added but change direction. Thus, much of the

significance of the father presence variables appears to be intimately mediated by other controls in the equation.

We now turn more generally to our exploration of the extent that a variety of family factors, particularly the HOME scores, are independently relevant predictors of child behavior at age ten. Having already highlighted the remaining predictive relevance of the father present variables, Table 5a highlights the components we find to be significant predictors of behavior problems as well as internalizing and externalizing behavior for the overall sample. Table 5b includes parallel equations for boys and girls.

It is clear that in the controlled equations for the total and external scores the father always present coefficients retain some significance, but the order of magnitude is greatly reduced. Also showing independent negative connections with all the outcomes are smoking during pregnancy, lesser maternal education, and family poverty status. Surprisingly, higher birth order for the child is linked with lesser behavior problems. In sequential mediation models (not shown), our relevant control factors dropped the measures of father absence into insignificance for all but father always present and father most recently left the home at age eight. However, introducing the cognitive and emotional HOME scores into the equation reduces the father always present measure to insignificance while father absence at age 8 maintains its significant negative influence. Though the fully controlled models presented in Table 5a report a significant drop in the independent influence of father absence on behavior problems, it should be noted that HOME scores account for a weighty portion of the reduction in both effect size and significance in Table 5a. To be sure, the HOME cognitive as well as emotional measures have a very strong independent linkage with lesser overall behavior problems as well as externalizing and internalizing behaviors. There are also gender distinctions that are important to note, and are

consistent with previous reserach (Mott, Kowaleski-Jones and Menaghan 1997). Boys show strong positive connections with a higher level of behavior problems as well as externalizing behavior, independent of all the other explanatory variables. Conversely, girls are more likely to experience internalizing issues in the fully controlled model. This is, as noted earlier, consistent with other evidence that can be partially clarified in Table 5B, to which we now turn.

We have already noted that the cognitive quality of the home is a very strong predictor for the full sample, as well as for boys and girls separately, not only of overall behavior problems but also for youth to have a propensity to internalize as well as act out inappropriate behaviors. In contrast, the HOME emotional scale is only of significance as a predictor of boys' behavior. This may be linked with the reality that boys and girls exhibit somewhat different connections between both the father always present and the HOME emotional scale and all of the behavioral outcomes. That is, girls but not boys evidence connections between behavior problems and less paternal presence whereas boys but not girls showed substantial connections between a poorer HOME emotional environment but not lesser paternal presence.

One other input that was a very strong predictor in virtually all of the equations was a measure of a mother's cigarette smoking during her pregnancy with that child. This is true for both male and female children, and for all the behavior problem outcomes. We speculate that the systematic significance of pregnant smoking is that it is a proxy for subsequent post-birth continuing negative behavior for at least some of the mothers. A proxy that may be linked with other maternal non-normative behaviors, or else viewed on its own as a license by children to follow non-normative behavior paths. Similar to previous research on health behaviors during pregnancy (Guo and Harris 2000), we find a very significant connection between maternal drinking during pregnancy and behavior, but for young girls only in the outcome year. It is

unclear why daughters but not sons experience maternal drinking as a predicate to negative behavior patterns. One possibility is that unhealthy behaviors of a mother have a greater and more direct impact on a daughter than sun; behaviors for reasons that to some extent parallel the above speculation relating to cigarettes. Additionally, family poverty status appears harmful only with respect to boys' behavior, and conversely, being of a higher birth order apparently has a positive value for girls' behavior. It may be that a likely possibly stronger connection over time between mothers, homes, and daughters has to some extent enabled girls to adjust to a poorer environment—more then is true for boys in comparable situations.

Gender Distinctions in the Impact of a "New Man" in the Home

In the final Tables 6A and 6B we tentatively explore the connections between the same set of explanatory variables and the behavioral outcomes for children at age 10 limiting the sample to children who are not living with their father and including a variable specifying whether or not a new father figure is present in the home. This new man may be a spouse, partner or any male who appears to be a designated father figure. It is useful, and perhaps important to note that the presence of a new man is only marginally predictive of behavior problems for either gender, albeit the marginal evidence that appears suggests a negative impact on externalizing behavior for boys and an overall impact on the behavior problems score for girls. Also, with the new man variable included, any remaining significance for the father leaving age variables, which was minimal at best, vanishes.

As was true for the overall sample, greater HOME cognition remains highly significantly linked with subsequent lesser behavior problem profiles for boys and girls as does the male connection between the HOME emotional score for boys and the outcome. The smoking during pregnancy measure retains its predictive power—but the coefficients are substantially larger for

girls then for boys in the father absent sample. In general, it is fair to note that the linkages between the various explanatory variables and behavior problems are similar whether one is examining the overall or father absent samples. While the introduction of a father figure into the child's household increases behavior problems, this effect is marginally significant, indicating that non-biological father figures are of marginal importance the story of father absence and late childhood behavior problems.

Some Concluding Thoughts

Our goal in this study has been to examine the timing of father absence on behavior problems in late childhood. Complementary to this goal, controlling for when a father leaves the home, we have considered the extent to which a variety of maternal and family earlier attributes and behaviors independently impact on a child's behavior patterns, and whether this differs between boys and girls as of age 9 or 10—ages that can represent incipient adolescence. We are particularly interested in whether or not parental attempts to provide supervisory activities that can enhance a child's cognitive and emotional strengths are sensitive to both overall family disruption and the timing of father absence. Furthermore, we have investigated whether or not these within-family attributes or behaviors have remaining positive effects on children as they approach adolescence after controlling for the timing of father absence and whether or not the impact of family disruption differs for boys and girls. Additionally, we examine gender distinctions in the appearance of a new man or father figure on behavioral problems, regardless of his formal connection with the mother of the child.

An investigation of the influence of father absence on child well-being utilizing this substantial contemporary longitudinal sample of American children has lead to a few primary findings. First, the HOME scale retains a quite important independent predictive linkage with

relationship transition. Unambiguously, the quality of the home environment shows a substantial decline at the first survey point following a father's leaving the home. With regard to this finding, while HOME scores do improve as time goes by, they do not reach the pre-father leaving levels. It is also useful to emphasize the lesser ability of the homes of the children whose father left at younger ages to recover. This may reflect, at least in the shorter run, the reality that relationship breakdowns sooner after birth were evidenced to a greater extent by more disadvantaged family units, as shown by the greater likelihood of these families showing less quick recovery at the youngest separation ages in the controlled HOME equations. The overall decline in the HOME score post father absence appears to be particularly weighted towards the emotional condition of the home environment. Indeed, the cognitive HOME score remains relatively unchanged after father absence, suggesting fathers have a weak connection to the learning environment within a household, while the emotional subscale shows a dramatic reduction. That the emotional component of the HOME score drops so strongly indicates fathers play a key emotional role in their child lives. A role, that when disrupted, leads to an increase in both internalizing and externalizing behavior problems.

We now highlight how father absence carries forward to the home environment of the child outcome year. First, it seems apparent that by age 10 there is some evidence of child behavioral recovery in the equations that do not include any controls. However, this positive effect is only for children who were in homes where the father left very recently. We note this for the father leaving coefficient between ages eight and ten, but not for any of the earlier leaving points—even though this is the point closest to when the father left. This may reflect a number of factors including, but not limited to, the class differences we noted above as well as the distinct possibility that the nature of the child's link with the father has matured because of their

lengthier relationship, as well as a more mature understanding of parental roles by both parents, given the lengthy connections between father, mother and child. A countering argument would be that the ending of a long festering negative parental or parent-child relationship has introduced a more relaxed emotional relationship into the home. It may also be possible, even though our data are not effective for evaluating this, that a more mature child is simply better able to handle the changing parental relationship.

When a father of a younger child leaves the home, the implications for the longer term behavioral development of the child are quite complex. At a statistical first glance, the child of a father who leaves during his childhood appears to develop less behavior problems the longer he lives with both his parents. But, when controlling for maternal an child background factors, in particular the emotional and cognitive home environment, the benefit of partial father presence vanishes, and children who lived with their fathers during part of their childhood are statistically indistinguishable from children who have never lived with their father in their likelihood of developing behavior problems at age ten.

A more intensive exploration of the independent effects of father leaving as well as an exploration of the other core inputs on the outcomes in our fully controlled equations, partially clarifies the meaning of the father's leaving the home as well as several other core results. First, while the magnitude of the father leaving coefficients are now reduced, the coefficients highlighting a father's leaving between ages eight and ten remain highly significant albeit somewhat reduced in magnitude with all the controls in the equation. Indeed, this residual positive payoff is stronger then it is for children who have lived with their father their whole life. However, it is apparent that this is largely reflective of the continued relevance of the external component of the behavior problems scale. When we shift to a separate examination of the

gender-specific equations, while the coefficients for these specific father leaving variables are largely unchanged, significance is reduced, reflecting the smaller separate gender samples and corresponding greater standard errors. The main thought that might be retained here is that even though the father leaving point is very close to the outcome point, we find no evidence of what we had expected—a short term upswing in negative behavior. Also, in this regard, there is some evidence that the Dad leaving between ages eight and ten has a somewhat stronger positive effect then is true for children who have always lived with their father. This finding also remains unexpected, given that the latter subset has a significantly higher HOME score then for the father late-leaving families.

For the overall sample, several additional points need emphasis. The quality of the home environment, both cognitive and emotional, retains very strong connections with all the behavioral outcomes. Also, as emphasized and discussed in the earlier text, early maternal smoking maintains a strong independent more negative connection with child behavior at age ten—regardless of all the other factors. This holds true for boys and girls, and is linked with both higher external and internal behaviors. This is of some interest, as other literature suggests that boys typically show more negative externalizing behavior in response to negative factors whereas girls tend to respond more negatively (Mott and Menaghan 1993). Finally, there are some important instances of gender differences in response patterns. As highlighted, girls respond to a father being present throughout their childhood by expressing less behavior problems than girls experiencing a family disruption. Furthermore, the emotional environment of the home appears to have little influence on girls' behavior problems indicating that the HOME emotional score does not represent and indirect link between father presence and behavior problems for young girls. However, given the strong patterns between father absence and

emotional decline, the insignificance of the timing of father presence and the strong significance of the HOME emotional subscale for boys indicates that a significant portion of the negative effect of paternal absence on behavior problems for young boys is indirect through the reduced emotional quality of the home environment.

In our final analysis, we explored for families where the father is absent whether or not boy and girl behaviors vary in major ways when a new father figure is introduced into the household. For the most part, when the child is age ten, there is only limited evidence of a "new man" effect. There is a marginal independent negative effect on externality for boys, whereas, conversely, the presence of a new man only has a marginally negative impact on the internal dimension. This is certainly consistent with available research that suggests different response patterns between the genders (Manning and Lamb 2003; Jenkins et al. 2005). The overriding effect of a new man in the household is negative or insignificant, indicating that the presence of a new father figure does not repair the damage done to child behavior by the absence of the biological father.

Using data from the NLSY child and mother surveys, this study extends and expands our understanding of father involvement in child well-being. Making use of the longitudinal and representative dimensions of the NLSY linking child with mother, we conclude, quite straightforwardly, that when fathers leave matters for the development of child well-being. Examining the impact of the timing of father absence during childhood, the earlier a father leaves the home the longer a child experiences a poorer quality emotional home environment as HOME scores show little evidence of recovery after a father leaves. Important to child well-being on its own, the emotional quality of the home links father absence with an increase in externalizing and internalizing behavior problems for children at age ten. Children in disrupted homes continue to

have high levels of behavior problems even with the addition of a new father figure, indicating that the negative impact of father leaving has less to do with the physical presence of a male parent and more to do with the trauma to the home environment resulting from the loss of a biological father.

References

Achenbach, Thomas M. and C.S. Edelbrock 1983. "Manual for the Child Behavior Checklist and Revised Child Behavior Profile". Burlington, Vermont; University of Vermont, Dept. of Psychology.

Amato, Paul R. 2000. "Consequences of divorce for adults and children." *Journal of Marriage and the Family* 62:1269–1287.

Amato, Paul R. 2005. "The Impact of Family Formation Change on the Cognitive, Social, and Emotional Well-Being of the Next Generation." *The Future of Children* 15:75-96.

Amato, Paul R. and Joan G. Gilbreth. 1999. "Nonresident Fathers and Children's Well-Being: A Meta-Analysis." *Journal of Marriage and Family* 61:557-573.

Amato, Paul R. and Stacy J. Rogers. 1997. "A Longitudinal Study of Marital Problems and subsequent Divorce" *Journal of Marriage and Family* 59:612-624

Bradley, Robert H. and Bettye M. Caldwell. 1980. "The relation of HOME environment, cognitive competence, and IQ among Males and Females". *Child Development* 51:1140-1148.

Bradley, Robert, Robert Flynn Corwyn, Margaret R. Burchinal, Harriet Pipes McAdoo, and Cynthia Garcia Cole. 2001. "The Home environment of children in the United States Part II:Relations with Behavioral Development through age 13" *Child Development* 72:1868-1886.

Brooks-Gunn, Jeanne, Pamela K. Klebanov and Greg J. Duncan. 1996. "Ethnic Differences in Children's Intelligence Test Scores: Role of Economic Deprivation, Home Environment, and Maternal Characteristics." *Child Development* 67:396-408.

Caldwell, Bettye M. and Robert H. Bradley, 1984. "Home Observation for Measurement of the Environment". Little Rock: University of Arkansas at Little Rock, Center for Child development and Education.

Center for Human Resource Research, 2009. NLSY79 Child and Young Adult Data User's Guide. Columbus, Ohio: The Ohio State University.

Cherlin, Andrew J. 1992. *Marriage, divorce, remarriage*. Cambridge, MA: Harvard University Press.

Guo, Guang and Kathleen Mullan Harris. 2000. "The Mechanisms Mediating the Effects of Poverty on Children's Intellectual Development" *Demography* 37:431-447.

Jenkins, Jennifer, Anna Simpson, Judy Dunn, Jon Rasbash and Thomas G. O'Connor. 2005. "Mutual Influence of Marital Conflict and Children's Behavior Problems: Shared and Nonshared Family Risks." *Child Development* 76:24-39.

Joung, Inez M. A., H. Dike van de Mheen, Karien Stronks, Frans W. A. van Poppel and Johan P. Mackenbach. 1998. "A longitudinal study of health selection in marital transitions" *Social Science and Medicine* 46:425-435.

King, Valarie and Juliana M. Sobolewski. 2006. "Nonresident Fathers' Contributions to Adolescent Well-Being." *Journal of Marriage and Family* 68:537-557.

Manning, Wendy and Kathleen A. Lamb. 2003. "Adolescent Well-Being in Cohabiting, Married, and Single-Parent Families" *Journal of Marriage and Family* 65:876-893.

McLeod, Jane D., Candace Kruttschnitt, Maude Dornfeld. 1994. "Does Parenting Explain the Effects of Structural Conditions on Children's Antisocial Behavior? A Comparison of Blacks and Whites." *Social Forces* 63:575-604.

Mick, Eric, Joseph Biederman, Jefferson Prince, Marianna Fischer, and Stephen Faraone. 2002. "Impact of Low Birth Weight on Attention-Deficit Hyperactivity Disorder." *Journal of Developmental & Behavioral Pediatrics* 23:16-22.

Menaghan, Elizabeth G. and Toby L. Parcel.1991. "Determining Children's Home Environments: The Impact of Maternal Characteristics and Current Occupational and Family Conditions." *Journal of Marriage and Family* 53:417-431.

Mott, Frank L. 2004. "The Utility of the HOME-SF Scale for Child Development Research in a Large National Longitudinal Survey: The National Longitudinal Survey of Youth 1979 Cohort"*Parenting Science and Practice*, 4(2-3), April and September, 259-70.

Mott, Frank L., Lori Kowaleski-Jones and Elizabeth G. Menaghan. 1997. "Paternal Absence and Child Behavior: Does a Child's Gender Make a Difference?" *Journal of Marriage and Family* 59:103-118.

Mott, Frank L. and Elizabeth G. Menaghan. 1993. "Linkages between early childhood family structure, socio-economic well-being and middle-childhood socio-emotional development." Presented at the Annual Meeting of the Population Association of America, Cincinnati, Ohio,

April 1-3.

Needham, Belinda, Robert Crosnoe, and Chandra Muller. 2004. “Academic Failure in Secondary School: The Inter-Related Role of Health Problems and Educational Context.” *Social Problems* 51:569-586.

Oldehinkel, Albertine J., Johan Ormel, René Veenstra, Andrea F. De Winter, and Frank C. Verhulst. 2008. “Parental Divorce and Offspring Depressive Symptoms: Dutch Developmental Trends During Early Adolescence” *Journal of Marriage and Family* 70:284-293.

Osborne, Cynthia and Sara McLanahan. 2007. “Partnership Instability and Child Well-Being” *Journal of Marriage and Family* 69:1065-1083.

Poortman, Anne-Rigt and Judith Seltzer. 2007. “Parents' Expectations About Childrearing After Divorce: Does Anticipating Difficulty Deter Divorce?” *Journal of Marriage and Family* 69:254-269

Royston, Patrick. 2005. “Multiple imputation of missing values: Update.” *Stata Journal* 5:88–102.

Sigle-Ruston, Wendy and Sara McLanahan. 2004. “Father Absence and Child Well-being: A Critical Review.” Pp.116-155 in The Future of the Family, D. Moynihan, L. Rainwater, and T. Smeeding (Eds.). New York: Russell Sage Foundation.

Table 1. Descriptive statistics for the unweighted sample (N=3,519).

Variable name	Description	Mean	SD
Father always absent n=694	Father absent variables are a series of binary variables indicating when the father of the respondent child leaves the home. Father never present is the reference category in all analyses.	0.197	
Father leaves at age 2 n=195		0.055	
Father leaves at age 4 n=189		0.054	
Father leaves at age 6 n=141		0.040	
Father leaves at age 8 n=115		0.033	
Father leaves at age 10 n=140		0.040	
Father always present n=2,045		0.581	
Hispanic	Mother-reported racial identity of child	0.199	
Black	Mother-reported racial identity of child	0.269	
White	Mother-reported racial identity of child	0.532	
Male	Child gender	0.510	
Smoking while pregnant	A binary variable where 1 indicates smoking while pregnant with respondent child	0.223	
Drinking while pregnant	A binary variable where 1 indicates drinking while pregnant with respondent child	0.298	
Low birthweight	A binary variable where 1 indicates the respondent child was born less than or equal to 5 pounds 8 ounces.	0.075	
Premature birth	A binary variable where 1 indicates the respondent child was born prior to 37 weeks of gestation	0.117	
Mom education at birth	Mother's education at the time of respondent child's birth	12.948	2.425
Urban residence age 8	A binary variable where 1 indicates the child was living in an urban residence at age eight.	0.746	
In poverty age 8	A binary variable where 1 indicates the respondent child's family was living in poverty at age eight.	0.205	
Birth order	Birth order of respondent child	2.183	1.176
HOME percentile age 8	A multi-item measure of the child's home environment	46.646	29.067
HOME Cognitive percentile age 8	A subscale of the HOME scale focusing on cognitive factors in the child's home like number of books in the home or time parents spend teaching learning skills	46.381	29.718
HOME Emotional percentile age 8	A subscale of the HOME scale focusing on cognitive factors in the child's home like number of books in the home or time parents spend teaching learning skills	47.999	29.504
BPI percentile age 10	See text and appendix 1 for details	56.563	28.421
BPI External percentile age 10	See text and appendix 1 for details	51.005	26.949
BPI Internal percentile age 10	See text and appendix 1 for details	49.859	25.751
Father figure present (only for absent father sample; N=1,474)	A binary variable where 1 indicates the child reports a step-father or father figure living in the household	0.309	

Table 2. A comparison of the uncontrolled overall HOME scores relating to the timing of father absence (N=3,519).

Timing of father absence	HOME percentage age 0 point 1	HOME percentage age 2 point 2	HOME percentage age 4 point 3	HOME percentage age 6 point 4	HOME percentage age 8 point 5	HOME percentage age 10 point 6
Father absent at birth (1st point) n=694	**32.064**	28.205	28.984	26.882	26.757	30.167
Father absent at age 2 (2nd point) n=195	43.176	**29.183**	34.236	33.713	30.629	36.176
Father absent at age 4 (3rd point) n=189	48.138	42.625	**35.513**	31.882	31.747	34.926
Father absent at age 6 (4th point) n=141	45.806	47.979	45.880	**33.147**	39.401	39.686
Father absent at age 8 (5th point) n=115	51.272	45.951	46.946	47.653	**34.627**	42.611
Father absent at age 10 (6th point) n=140	57.802	48.370	51.788	53.560	49.548	**45.118**
Father never absent n=2,045	51.707	54.552	54.325	56.273	57.276	59.497
Mean prior to father absence	---	43.176	45.382	46.555	47.956	52.214
Mean post father absence	28.843	32.787	33.517	37.411	38.619	45.118

The highlighted diagonal point identifies the time point in which the father leaves the home. Means below the diagonal are HOME scores prior to father absence, and means along and above the diagonal represent HOME scores after a father leaves the household.

Table 3. A comparison of the controlled overall, emotional, and cognitive HOME scores relating to the timing of father absence (N=3,519).

Panel A: Adjusted Mean Overall HOME Percentage Scores

Timing of father absence	HOME percentage age 0 point 1	HOME percentage age 2 point 2	HOME percentage age 4 point 3	HOME percentage age 6 point 4	HOME percentage age 8 point 5	HOME percentage age 10 point 6
Dad absent at birth (1st point) n=694	**38.434**	38.594	42.308	38.045	35.826	40.009
Dad absent at age 2 (2nd point) n=195	46.286	**35.069**	41.746	40.008	35.984	42.053
Dad absent at age 4 (3rd point) n=189	49.532	45.157	**41.178**	35.631	34.679	38.183
Dad absent at age 6 (4th point) n=141	46.331	48.670	46.944	**36.586**	41.393	41.394
Dad absent at age 8 (5th point) n=115	50.646	44.561	45.317	46.794	**35.062**	42.471
Dad absent at age 10 (6th point) n=140	56.394	46.207	48.200	50.479	47.039	**43.294**
Dad never absent n=2,045	49.223	50.496	48.993	51.705	53.374	55.063
Mean prior to father absence	---	46.286	47.345	47.315	46.830	49.664
Mean post father absence	38.869	38.972	37.418	39.791	38.767	43.294

Panel B: Adjusted Mean Emotional HOME Percentage Scores

Mean prior to father absence	---	49.409	47.501	46.841	50.320	50.758
Mean post father absence	40.191	38.966	41.579	41.442	45.167	45.537

Panel C: Adjusted Mean Cognitive HOME Percentage Scores

Mean prior to father absence	---	44.210	49.120	46.454	45.333	46.604
Mean post father absence	43.583	43.811	41.646	46.578	44.480	44.957

The highlighted diagonal cell identifies the time point in which the father leaves the home. Means below the diagonal are HOME scores prior to father absence, and means along and above the diagonal represent HOME scores after a father leaves the household. All of the means reported control for race, gender, mother smoking or drinking while pregnant, low birth weight, prematurity, mother's education, urban environment, poverty status, and respondent birth order.

Table 4. Uncontrolled OLS coefficients for influence of father absence for different durations of absence on behavior problem percentile scores at age ten (N=3,519).

	Total Behavior Problems		Externalizing Problems		Internalizing Problems	
	B	se	B	se	B	se
Father leaves at age 2 (Ref=Father always absent)	-2.434	2.33	-3.128	2.156	-1.274	2.059
Father leaves at age 4 (Ref=Father always absent)	-0.969	2.325	-1.568	2.183	-0.472	2.084
Father leaves at age 6 (Ref=Father always absent)	-2.618	2.548	-4.153†	2.457	-2.433	2.346
Father leaves at age 8 (Ref=Father always absent)	-1.978	3.04	-2.485	2.678	0.678	2.557
Father leaves at age 10 (Ref=Father always absent)	-13.024***	2.794	-11.797***	2.464	-8.215***	2.353
Father always present (Ref=Father always absent)	-10.094***	1.239	-10.181***	1.169	-9.473***	1.116

† $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Table 5a. OLS determinants of behavior problem percentile scores at age ten (N=3,519).

	Total Behavior Problems		Externalizing Problems		Internalizing Problems	
	B	se	B	se	B	se
Father leaves at age 2 (Ref=Father always absent)	-0.930	2.300	-1.293	2.127	0.472	2.058
Father leaves at age 4 (Ref=Father always absent)	0.939	2.255	0.376	2.159	1.400	2.088
Father leaves at age 6 (Ref=Father always absent)	0.720	2.601	-0.601	2.451	0.988	2.371
Father leaves at age 8 (Ref=Father always absent)	1.286	2.981	1.125	2.664	3.850	2.577
Father leaves at age 10 (Ref=Father always absent)	-6.521***	2.852	-5.699***	2.514	-2.015	2.432
Father always present (Ref=Father always absent)	-2.449	1.512	-2.905***	1.425	-2.247	1.378
Hispanic (Ref=White)	-1.751	1.346	-2.066	1.268	-0.246	1.227
Black (Ref=White)	-1.44	1.311	-1.756	1.23	-0.236	1.19
Male (ref=female)	3.525***	0.933	5.096***	0.875	-1.733*	0.846
Smoking while pregnant	5.191***	1.176	5.995***	1.133	3.931***	1.096
Drinking while pregnant	2.316	1.043	2.756**	0.977	1.606†	0.945
Low birthweight	3.064	1.937	2.764	1.863	1.706	1.802
Premature birth	-2.178	1.636	-1.930	1.517	0.332	1.468
Mom education at birth	-0.955***	0.227	-0.825***	0.216	-0.475*	0.209
Urban residence age 8	-0.263	1.078	0.157	1.027	0.094	0.994
In poverty age 8	3.399**	1.355	2.381†	1.267	3.788**	1.226
Birth order	-1.065**	0.433	-0.922*	0.404	-0.872*	0.391
HOME Cognitive % age 8	-0.110***	0.018	-0.113***	0.018	-0.093***	0.017
HOME Emotional % age 8	-0.069***	0.019	-0.068***	0.017	-0.076***	0.017
Constant	77.917	3.744	69.696	3.558	65.611	3.442
R^2	0.078		.089		.066	

† p < .1; * p < .05; ** p < .01; *** p < .001 (two-tailed tests)

Table 5b. OLS determinants of behavior problem percentile scores at age 10 for the total sample.

	Behavior Problems (Male Sample)			Behavior Problems (Female Sample)		
	Total	External	Internal	Total	External	Internal
Father leaves at age 2 (Ref=Father always absent)	-0.812	-1.437	-0.471	-0.925	-1.53	0.531
Father leaves at age 4 (Ref=Father always absent)	1.681	1.029	3.552	0.387	-0.05	-0.742
Father leaves at age 6 (Ref=Father always absent)	-2.238	-3.467	-1.726	3.892	1.793	2.783
Father leaves at age 8 (Ref=Father always absent)	-1.405	-2.284	1.264	3.279	2.986	4.734
Father leaves at age 10 (Ref=Father always absent)	-6.346	-4.398	-2.197	-5.521	-6.14†	-1.467
Father always present (Ref=Father always absent)	-0.902	-1.859	-1.125	-3.928†	-4.208*	-4.374*
Hispanic (Ref=White)	-2.123	-2.472	-0.835	-0.991	-1.203	1.041
Black (Ref=White)	-2.771	-3.136†	-1.878	-0.100	-0.02	2.047
Smoking while pregnant	5.606***	5.476***	3.389*	4.693**	4.435**	3.303*
Drinking while pregnant	0.58	0.849	-1.019	4.014**	4.845***	4.287**
Low birthweight	1.739	0.781	-1.108	3.974	3.235	3.214
Premature birth	-1.851	-0.737	1.053	-2.153	-2.087	-0.135
Mom education at birth	-1.342***	-1.186***	-0.928***	-0.567†	-0.576†	-0.229
Urban residence age 8	-2.558†	-2.212	-2.026	1.896	1.888	1.679
In poverty age 8	4.923**	5.366**	4.943**	1.851	1.727	2.271
Birth order	-0.697	-0.644	-0.497	-1.447*	-1.357*	-1.228*
HOME Cognitive % age 8	-0.109***	-0.108***	-0.084***	-0.102***	-0.102***	-0.084***
HOME Emotional % age 8	-0.102***	-0.092***	-0.102***	-0.037	-0.02	-0.025
Constant	88.75	81.684	72.277	70.165	63.112	59.067
R^2	.098	.097	.083	.060	.066	.059
N	1,794	1,794	1,794	1,725	1,725	1,725

$\dagger$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Table 6a. Internal, External, and Total BPI percentage scores at age 10 for father missing and male sample (n=748).

	Internalizing Problems		Externalizing Problems		Total Behavior Problems	
	B	se	B	se	B	se
Father leaves at age 2 (Ref=Father always absent)	-0.348	3.109	0.049	3.21	0.377	3.299
Father leaves at age 4 (Ref=Father always absent)	3.689	3.275	2.634	3.249	3.047	3.189
Father leaves at age 6 (Ref=Father always absent)	-0.786	3.450	-1.274	3.701	-0.603	3.882
Father leaves at age 8 (Ref=Father always absent)	2.132	3.977	0.235	4.218	0.539	4.384
Father leaves at age 10 (Ref=Father always absent)	-0.851	3.731	-1.667	3.929	-4.433	4.346
Hispanic (Ref=White)	-3.522	2.893	-5.201†	3.041	-4.136	3.162
Black (Ref=White)	-3.682	2.67	-3.584	2.706	-3.539	2.787
Smoking while pregnant	3.086	2.263	7.092**	2.316	6.414***	2.263
Drinking while pregnant	-0.020	2.154	2.699	2.21	2.499	2.224
Low birthweight	-4.651	4.041	-2.994	3.924	-2.392	3.928
Premature birth	5.135	3.651	5.983†	3.502	4.89	3.472
Mom education at birth	-1.571**	0.572	-1.948***	0.571	-1.692**	0.573
Urban residence age 8	-1.866	2.448	-2.557	2.422	-3.021	2.39
In poverty age 8	5.945*	2.458	6.292**	2.422	7.378**	2.417
Birth order	-1.032	0.828	-0.977	0.909	-0.811	0.889
HOME Cognitive % age 8	-0.148***	0.039	-0.142***	0.04	-0.142***	0.041
HOME Emotional % age 8	-0.098**	0.038	-0.075†	0.04	-0.072†	0.04
Father figure present (Ref= no father figure present)	0.671	2.152	4.086†	2.23	2.939	2.274
Constant	83.271	8.804	89.045	8.701	90.462	8.578
R^2	.105		.133		.129	

$\dagger$ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Table 6b. Internal, External, and Total BPI percentage scores at age 10 for father missing and female sample (n=726)

	Internalizing Problems		Externalizing Problems		Total Behavior Problems	
	B	se	B	se	B	se
Father leaves at age 2 (Ref=Father always absent)	0.933	3.177	-1.366	3.107	-0.74	3.199
Father leaves at age 4 (Ref=Father always absent)	-1.116	3.104	-0.456	3.163	-0.173	3.26
Father leaves at age 6 (Ref=Father always absent)	2.819	3.717	1.366	3.372	3.72	3.626
Father leaves at age 8 (Ref=Father always absent)	4.792	3.956	2.754	3.979	3.073	4.137
Father leaves at age 10 (Ref=Father always absent)	-0.679	3.831	-6.062	3.478	-5.252	3.984
Hispanic (Ref=White)	0.179	3.173	-4.089	3.098	-3.308	3.282
Black (Ref=White)	0.939	2.513	-1.655	2.462	-2.064	2.615
Smoking while pregnant	6.773***	2.359	8.580***	2.33	9.586***	2.284
Drinking while pregnant	4.525*	2.312	4.585*	2.304	3.578	2.342
Low birthweight	1.48	3.843	-1.442	3.614	-0.345	3.601
Premature birth	-0.866	3.809	-0.409	3.543	1.17	3.562
Mom education at birth	-0.342	0.556	-0.976†	0.556	-0.909	0.6
Urban residence age 8	2.942	2.446	3.077	2.39	4.421†	2.54
In poverty age 8	2.057	2.312	3.785†	2.28	3.029	2.336
Birth order	-1.441†	0.846	-2.52**	0.872	-2.31**	0.883
HOME Cognitive % age 8	-0.135***	0.036	-0.153***	0.037	-0.156***	0.04
HOME Emotional % age 8	-0.014	0.039	0.056	0.037	0.028	0.039
Father figure present (Ref= no father figure present)	3.036	2.22	2.849	2.197	3.751†	2.274
Constant	60.551	8.387	68.405	8.394	73.149	8.65
R^2	.062		.100		.094	

† p < .1; * p < .05; ** p < .01; *** p < .001 (two-tailed tests)

Appendix 1. Listing of measures included in the three BPI dependent variables (internal, external and total).

Behavior Problem Item (BPI) Description	(I)nternal/(E)xternal
Argues Too Much	E
Behavior Problems Index: Has Trouble Getting Along With Teachers (> 5 Yrs Old)	E
Breaks Things Deliberately (< 12 Yrs Old)	E
Bullies Or Is Cruel/Mean To Others	E
Cheats Or Tells Lies	E
Has Strong Temper And Loses It Easily	E
Has Sudden Changes In Mood Or Feeling	E
Has Trouble Getting Along With Other Children	E
Has Trouble Getting Mind Off Certain Thoughts	E
Is Disobedient At Home	E
Is Disobedient At School (> 5 Yrs Old)	E
Is Impulsive Or Acts Without Thinking	E
Is Not Liked By Other Children	E
Is Rather High Strung, Tense, And Nervous	E
Is Restless, Overly Active, Cannot Sit Still	E
Is Stubborn, Sullen, Or Irritable	E
Is Easily Confused, Seems In A Fog	E/I
Is Too Fearful Or Anxious	E/I
Is Unhappy, Sad, Or Depressed	E/I
Clings To Adults (< 12 Yrs Old)	I
Cries Too Much (< 12 Yrs Old)	I
Demands A Lot Of Attention (< 12 Yrs Old)	I
Feels Worthless Or Inferior	I
Feels/Complains No One Loves Him/Her	I
Has Difficulty Concentrating/Paying Attention	I
Is Too Dependent On Others (< 12 Yrs Old)	I
Is Withdrawn, Does Not Get Involved With Others	I
Does Not Seem To Feel Sorry After Misbehaving	Total only
Feels Others Are Out To Get Him/Her	Total only
Hangs Around With Kids Who Get Into Trouble	Total only
Is Secretive, Keeps Things To Self	Total only
Worries Too Much	Total only

Each BPI measure asks the mother of the respondent child if this behavior is "often true," "sometimes true," or "not true."