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Child Support and Young Children's Development

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Abstract

This study examines the effects of nonresident fathers' provision of formal and informal cash child support on children's cognitive skills and behavior at 5 years of age. Taking advantage of the panel structure of the Fragile Families and Child Wellbeing Study, we control for child outcomes at age 3 and a rich set of child and family sociodemographic and psychosocial characteristics. We find that fathers' provision of informal cash support (but not formal support), particularly at or above the median, is associated with higher cognitive scores. We also find that provision of formal child support is associated with worse withdrawn and aggressive behaviors. We discuss potential explanations and implications of these results for policy and future research.

Keywords

Nonresident fathers; Child support; Unmarried parents; Child development; Children's behavior

Prior research has found that child support receipt is positively related to child well-being, including cognitive skills, emotional development, and educational attainment. However, most existing studies have used samples of children born to married parents and have specifically focused on child support received through formal child support agreements. Today, nearly 40 percent of children are born to unmarried parents, and never-married mothers now represent the largest proportion of single parent families in the US (Hamilton, Martin, and Ventura 2009; U.S. Census Bureau 2008). Compared to children of divorced parents, children of unmarried parents are much less likely to receive child support from their non-custodial fathers, in part because many of these men have low earnings and are only loosely connected to the labor market (U.S. Census Bureau 2007; Garfinkel, McLanahan, and Hanson 1998; Waller and Plotnick 2001). Furthermore, many unmarried parents continue to be involved in romantic relationships (with each other) and thus are less likely to become involved with the formal child support system than divorced parents (Carlson, McLanahan, and England 2004). Research on unmarried parents confirms that most of these fathers are involved with their children and contribute to them informally, either through direct cash contributions or non-cash support (Nepomnyaschy and Garfinkel 2007; Kane and Edin 2008). However, relatively little is known about the influence of formal and informal cash child support on children's well-being and development among this population.

BACKGROUND ON CHILD SUPPORT

Research on the post-industrial family has often characterized fathers' roles in families as breadwinners. Although family roles have changed over time, such that mothers and fathers

now both take on breadwinning and caregiving roles, fathers' contributions to family economic wellbeing cannot be overlooked (Carlson and Magnuson 2011). Indeed, one of the strongest explanations for why children who reside in single parent families may fare worse than other children is that their households, on average, have lower levels of economic resources (McLanahan and Sandefur 1994).

A large body of research has documented that economic hardship and poverty are likely detrimental to children's development. Economic resources may affect families in several important ways. First, higher levels of resources may enable parents to purchase important goods and services that contribute to their children's healthy development. These may include higher quality child care, better housing and schools, and enriching activities and lessons (Duncan and Brooks-Gunn 1997). Greater economic support might also reduce custodial parents' economic hardship and improve their mental health; such reductions in psychological distress may result in higher quality parenting (more nurturance and less harsh discipline) (McLoyd 1998). Finally, financial support may function to increase or improve fathers' non-pecuniary involvement with their children, as financial support is often closely related to other types of father involvement (Nepomnyaschy 2007; Seltzer, Schaeffer, and Charng 1989; Greene and Moore 2000; Peters et al. 2004; Garasky et al. 2009; Huang 2009). For these reasons, scholars have consistently pointed to economic support from nonresident fathers as an important influence on children's development. Evidence, however, is stronger for causal links between family income and children's cognitive and achievement-related outcomes, than for behavioral outcomes, at least during middle childhood (Duncan and Brooks-Gunn 1997; Magnuson and Vortuba-Drzal 2009).

Non-custodial parents' (most frequently fathers') economic support is typically categorized into formal cash support, informal cash support, and in-kind support. Formal support is provided through a formal child support agreement. Informal cash support is typically defined as any financial contribution provided by fathers outside of the formal agreement, and in-kind support is defined as any type of non-cash goods or services that fathers provide directly. Formal orders are established and modified by administrative hearing or family court, and states provide guidelines for child support obligations based on either the fathers' or both parents' income (ABA 2010). With few exceptions, child support orders require payment through wage withholding, which is now the most common form of collection. Thus, once orders are established, fathers who are regularly employed have little discretion over their payments (Bartfeld and Meyer 2003). Furthermore, according to federal regulations, custodial parents are required to sign child support rights over to the state if they receive federal means-tested public assistance (including cash benefits, food stamps, and child care subsidies).

The percentage of low-income nonresident parents (usually fathers) paying child support for their families is quite low (Berger and Langton 2011). Estimates from the Fragile Families and Child Wellbeing Study suggest that among parents with nonmarital births only 20 percent of nonresident fathers made formal child support payments by the time the focal child was 3 years old, but nearly 40 percent provided informal support (Nepomnyaschy and Garfinkel 2007). There are several explanations for the low levels of support paid by noncustodial unmarried fathers. Perhaps most important is that this population experiences high rates of joblessness and many of these fathers have few economic resources (Cancian and Meyer 2004). Paying even a little child support is difficult for fathers with low-wage jobs or irregular employment as these men may struggle to meet their own basic needs (Magnuson and Gibson-Davis 2007; Mincy and Sorensen 1998). Another possible explanation is the high prevalence of multiple partner fertility among low-income populations, particularly unmarried parents (Carlson and Furstenberg 2006). Given the context of low wages and few economic resources, it may be particularly difficult for fathers

to meet their obligations to children and families in more than one household (Magnuson and Gibson-Davis 2007; Meyer, Cancian, and Cook 2005; Sinkewicz and Garfinkel 2009). At the same time, both low-income fathers and mothers may prefer informal support to formal support since, in most states, formal child support paid to women currently or previously on Temporary Assistance to Needy Families (TANF) is kept by the state to recoup welfare costs (Roberts and Vinson 2004). Finally, fathers obligated to pay support to women who do not receive welfare may prefer informal support because it may enable them to better bargain with the mother over issues related to visitation and child rearing, as well as increase their ability to monitor how their money is spent (England and Folbre 2002; Edin et al. 2000; Waller and Plotnick 2001; Pate 2002).

LINKS BETWEEN CHILD SUPPORT AND CHILD OUTCOMES

Amato and Gilbreth's (1999) meta-analysis synthesized the research on the associations of nonresident father involvement and child outcomes. Their study identified 14 studies that examined child support and children's achievement and behavioral outcomes. The average (weighted) effect size of child support receipt on children's academic success was 0.09; for externalizing behavior the effect size was -0.08. There was no significant link between child support and children's internalizing behaviors. Several of the studies included in the meta-analysis are notable for suggesting that an additional dollar of child support had significantly larger effects on child outcomes than other sources of family income, at least for some racial or demographic groups (Knox and Bane 1994; Argys et al. 1998). Amato and Gilbreth (1999) tested some factors that might moderate associations, and found that effects did not differ by gender.

One stylized fact to arise from studies of the effects of family income on child wellbeing (regardless of family composition) is that family income during early childhood appears to be more important in affecting children's cognitive development than family income during middle childhood (Magnuson and Vortuba-Drzal 2009). Family income during adolescence, however, is also strongly linked to subsequent educational attainment, as it may be important in defraying the costs of higher education. Does this pattern of age-related effects also hold for child support payments? The evidence is unclear. Age was not considered as a moderator in Amato and Gilbreth's (1999) study. Most of the studies included in the meta-analysis were conducted with samples of children in middle childhood or adolescence, but the period of child support receipt included in the analyses was not clearly specified, so support may have been provided during the early childhood years.

Furthermore, the Amato and Gilbreth (1999) meta-analysis did not consider whether the parents were previously married. Given that most study samples primarily are comprised of previously married parents, it is unclear whether associations generalize to unmarried parents. Two recent studies shed light on the effects of child support on outcomes among young children of unmarried parents. First, Greene and Moore (2000) use data from the National Evaluation of Welfare to Work Strategies to examine associations between formal and informal support and young children's outcomes. This study is notable not only for the young age of the children studied (ages three to five), but also because the study sample was recruited from welfare recipients and applicants; as such, the sample is largely made up of African-American, low-income (predominantly unmarried) mothers. Greene and Moore (2000) found that only 16 percent of mothers received any formal support in the year before the survey. Receipt of informal support (including both cash and in-kind support) was more common, with about 42 percent of mothers receiving such support in the past year. After controlling for father visitation, formal and informal child support were associated with better behavior, and informal child support predicted higher quality home environments. Neither formal nor informal support predicted children's school readiness but, given that

welfare rules limited the amount of money passed through to mothers to \$50 a month, it is not surprising that strong associations with formal support were not detected. A considerable limitation of the Greene and Moore (2000) study, however, is that it used cross-sectional data. As such, the possibility that unobserved differences are driving their results cannot be ruled out.

In the second study, Argys and colleagues (1998) used data from the National Longitudinal Survey of Youth to consider effects of child support on five- to eight-year-old children. They looked separately at children born to married and unmarried parents, and found that neither the amount of child support, nor receipt of any child support was strongly (or significantly) associated with measures of children's receptive vocabulary or academic achievement among either the full sample or the unmarried parent sample. Among divorced parents, they found that average child support was positively associated with children's academic achievement for black, but not white, children. In contrast among the unmarried sample, they found that the average amount of child support was positively associated with children's achievement for white, but not black, children. These racial differences held up using an instrumental variables approach to address heterogeneity, though the finding for white children in unmarried families was not quite significant. Argys and colleagues described these differences across racial groups as puzzling and suggested further work was needed to better understand the patterns.

From a methodological perspective it is worth noting that most empirical studies investigate 'unidirectional effects' in which child support directly influences children's development and behavior. As with most non-experimental studies that aspire to identify causal effects, researchers must contend with ruling out other explanations for observed associations, for example, by modeling all possible confounding factors. As a result, studies often try to adjust for other facets of family life, as well as fathers' demographic characteristics, when estimating associations between child support receipt and child outcomes. Studies differ, however, in the rigor of their efforts to reduce omitted variable bias and often face the unenviable position of over- or under-controlling. In theory, only measures of child and family characteristics that are unrelated to child support payments should be included as controls. Yet, the possibility for omitted variables looms large, particularly if child effects are prevalent as is suggested by some research on adolescents (Hawkins, Amato, and King 2007; Coley and Medeiros 2007), or if economic support is strongly related to other non-pecuniary aspects of father involvement. For example, Greene and Moore (2000), control for the frequency of father visitation. However, if payment of child support induces fathers to visit their children more often, then it might not be appropriate to do so. If, however, fathers' visitation is confounded with, but not caused by child support payments, then indeed visitation should be controlled in order to isolate the 'effect' of fathers' financial support (or reduce the likelihood of overstating the importance of child support) in determining children's healthy development.

One method that several studies have used to address concerns about unobserved heterogeneity is instrumental variable (IV) models. For example, Argys et al. (1998) used state child support enforcement, welfare generosity, and demographic and employment characteristics of the children's county of residence as instruments to predict the amount of child support a mother received. This method yielded rather large point estimates of the effect of child support for children of unmarried parents, but the results were imprecise, as is often the case in IV studies. Nevertheless, the inconsistency of the Argys and colleagues' OLS results, which yielded small and non-significant point estimates, and IV findings, which yielded much larger but also non-significant point estimates, are difficult to interpret, particularly given the strong necessary assumption of IV analyses that the instruments are uncorrelated with child outcomes, except via their effect on child support payments, and

IV's estimation of local average treatment effects. In addition, while state or county policies and characteristics are useful for instrumenting formal child support receipt, researchers have yet to identify an appropriate instrument through which to predict informal receipt.

The current study builds on prior research in several important ways. First, it uses a large sample of children born to unmarried parents, with detailed information on family characteristics, relationship history, and child support receipt. Second, we focus our attention on young children between ages 3 and 5. Research suggests that in early childhood children are particularly vulnerable to their surrounding contexts, and thus might be particularly sensitive to economic investments (Shonkoff and Phillips 2000). Furthermore, by studying child support provided during this two year period, and by taking advantage of the longitudinal nature of our data, we are able to control for children's prior achievement and behavior. Third, we focus on a larger set of outcomes than prior studies of young children and consider both children's achievement and behavior. Fourth, we pay closer attention to the functional form of the associations between child support and child outcomes than has been the case in most prior studies. Specifically, we consider both linear and non-linear specifications of child support. We also consider the different types of support that fathers provide, since much prior research points to the importance of informal and in-kind support contributions for low-income families (Edin and Lein 1997; Kane and Edin 2008; Garasky et al. 2009; Nepomnyaschy and Garfinkel 2007; Waller and Plotnick 2001). Finally, we consider the robustness of these findings across subgroups defined by gender, race or ethnicity, maternal education, and nativity.

Based on prior research, we hypothesize that greater levels of support will improve children's cognitive development, although a priori expectations of the associations with behavior are less clear. We anticipate no differences by child gender, but conduct these analyses to confirm this finding from prior studies. We consider effects for children with differing levels of maternal education, which we conceive of as a proxy for household economic resources. In this case, we expect that effects will be larger among children whose mothers have lower levels of education, as child support as a source of additional income may have larger benefits for families that are in the lower end of the income distribution. On the other hand, maternal education may indicate a mother's ability to manage resources which can impact children's well-being. In this case, we might expect larger effects among children of higher educated mothers. Finally, we also conduct analyses separately across racial and ethnic groups as prior studies have done, and we extend this literature by also considering mothers' nativity status. Prior studies have found some differing effects by race, but these have not been consistent; nor have the results of studies that have looked at the effects of more general income by race. Thus, we do not have a priori hypotheses about effects differing by race. We expect that children of immigrants may benefit more from receiving child support than children of non-immigrants because their mothers may have access to fewer other sources of income, in the form of public benefits or from the labor market.

METHOD

Data

Our sample is drawn from the Fragile Families and Child Wellbeing Study (FFCWS). FFCWS is a longitudinal birth cohort study of 4,898 children born between 1998 and 2000 in 20 large U.S. cities (see Reichman et al. 2001, for a description of the study and its design). Children born to unmarried parents were oversampled relative to those born to married parents at a three-to-one ratio. As such, study children are more likely to reside in a household that does not include their birth father and are more socioeconomically disadvantaged than would be found in a nationally representative sample. However, the

sample of children born to unmarried parents is representative of all such births in U.S. cities with populations greater than 200,000 during that period.

When possible, FFCWS interviewed both biological parents in the hospital shortly after the focal child's birth; fathers who were not present in the hospital were interviewed elsewhere as soon as possible following the birth. Follow-up interviews were then conducted by telephone with both birth parents when the focal child was approximately 1, 3, and 5 years old. At each interview, extensive data on parent, child, and household characteristics, resources, and functioning were collected. Following the age 3 and age 5 telephone interviews, families were asked to participate in in-home assessments of parental behaviors, child health and development, and child and family well-being. Our outcome variables, which measure child cognitive skills and behavior problems, are drawn from the age 5 in-home assessment.

We used multiple imputation techniques to impute values for all variables with missing data for the full FFCWS sample. Specifically, we used Stata's ICE program to impute 10 datasets. After conducting the imputations, we limited our analysis sample to children born to unmarried parents, a group which has received scant attention in prior research on the influence of child support receipt on child well-being. Of the 4,898 children in the full FFCWS sample, we excluded 1,187 (24 percent) whose parents were married at the time of their birth. We then further limited our sample to children who lived with their mother (at least part time) at the time of the age 5 interview, whose biological father was alive at the time of the age 5 interview, and whose biological mother and father were neither married nor cohabiting at both the age 3 and age 5 interviews. Across the 10 imputed datasets we first excluded 3 percent (ranging from 106 to 126 across datasets) of children who were not living with their biological mother at the time of the age 5 interview. We then excluded an additional 2 percent (82 to 94) of children whose biological father was not alive at the time of the age 5 interview. Finally, we excluded an additional 46 percent (1,596 to 1,626) of children whose biological mother and father were married or cohabiting at the time of the age 3 or age 5 interview. This resulted in an analysis sample of 16,902 observations across the 10 datasets, with the number of children included in each dataset ranging from 1,674 to 1,792.

Measures

Child Development Outcomes—We used three child development outcomes from the 5-year in-home assessment as dependent variables. In all analyses, the measures have been age standardized to have a mean of 0 and a standard deviation of 1.

Our measure of children's cognitive skills is the Peabody Picture Vocabulary Test-Revised (PPVT-R), which assesses children's receptive vocabulary, verbal ability, and scholastic aptitude (Dunn and Dunn 1997). Scores from the TVIP, a Spanish-language version of the PPVT, were used for children whose primary language is Spanish. An indicator variable for whether TVIP scores were used was included in all models. These scores are treated as continuous measures, with higher scores indicating better cognitive skills.

Two subscales from the Child Behavior Checklist (CBCL) were used to measure children's behavior problems: internalizing (withdrawn, anxious, and depressed) behaviors and aggressive behaviors (Achenbach 1992). The CBCL is one of the only well-standardized instruments that assesses problematic behavior in young children. The internalizing behavior problem subscale included in the FFCWS at age 5 consists of 9 items measuring withdrawn behaviors and 14 items measuring anxious/depressed behaviors; 20 items are included in the aggressive behavior problems subscale. For each item the child's primary caregiver (the mother in this sample) is asked to report on the extent to which various statements about

children's behaviors apply to the child, with possible responses to each question including: not true (0), somewhat/sometimes true (1), often/very often true (2). Responses are summed for all items across each subscale, converted to z-scores, and treated as continuous measures, with higher scores indicating more behavior problems.

As noted above, measures from the five-year survey are used as outcomes in our analyses. In addition, the same assessments measured at the three-year survey (lagged outcome measures) are used as controls in some specifications.

Child Support Measures—We consider a comprehensive set of variables to measure child support. Our primary measure of child support encompasses the total amount of financial (cash) support that fathers contributed to their children, calculated as the sum of formal and informal support received from the father over the two years prior to the 5-year interview. For formal support, mothers were asked if they have a formal agreement and how much the father had paid in the past two years (or since the agreement was established if the agreement was set less than two years ago). For informal support, mothers were asked how much cash the father had provided outside of any formal agreement in the past two years. For both formal and informal support, mothers were asked to provide a total dollar amount and then were offered categories if they are unable or unwilling to provide a dollar amount. Mothers who offered a categorical answer were assigned the midpoint of the category.

This information was transformed into both linear (in \$1000s) and categorical measures of child support for three types of cash support: total, formal, and informal. For each type of support, three categories were constructed: those who reported \$0; those who reported more than \$0 but less than the median for those with any support in that category (\$1,500 for total, \$1,800 for formal, and \$700 for informal); and those who reported the median amount or greater.

Sociodemographic characteristics—Our analyses use a rich set of controls that capture characteristics of mothers, fathers, and children. Specifically, we use mothers' race or ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, other race or ethnicity) and education (less than high school, high school or GED, more than high school), both parents' ages at birth of child, whether either parent was employed during the year prior to birth, whether parents were cohabiting at the birth, whether the parents have other children together, and whether either parent has children with other partners (measured at the 1-year survey). We also use indicators of whether the mother is US-born, her household size (number of children and adults in the household at baseline), whether there was a grandparent in the household, whether the mother received TANF or food stamps in the year before the child's birth, and her total annual household income (entered as the natural log). Finally, we include measures of the sex of the child, the age of the child (in months) at the 5-year in-home interview, and whether he or she was born low birth weight as covariates.

Psychosocial Characteristics—We also include a rich set of parents' psychosocial characteristics: whether the mother used cigarettes, drugs, or alcohol during pregnancy, whether the mother lived with both biological parents at age 15, mother's depressive symptoms at the 1-year survey, the extent to which the mother holds traditional gender role attitudes, parents' relationship quality, the number of months that the parents knew each other prior to the pregnancy, whether either parent considered an abortion, and two variables from the 3-year survey that may be considered stable characteristics (mother's impulsivity score and mother's PPVT-R), and the child's temperament at the 1-year survey. We also include whether the father had a substance abuse problem, whether he had an activity-limiting condition, and whether he had ever been incarcerated (measured at the 1-year survey). In supplemental models, we also control for fathers' involvement with his children,

as reported by the mother. We include the number of days in the past month that the father saw the child (measured at the 5-year survey) as a continuous variable, and as a categorical variable for whether he saw the children 0 days, more than 0 but less than 8 (the median for those with any contact) or 8 or more days in the past month. All variables are based on mothers' reports; most are drawn from baseline interviews, except where noted.

Analytic Strategy

Our primary research question is whether child support receipt is associated with better cognitive and behavioral development for children. A key challenge in answering this question is overcoming social selection. Mothers who receive (and fathers who pay) child support differ in many ways from those who do not; thus it is difficult to isolate the unique effects of child support. Our primary strategy for doing so is to measure as many differences between families that receive child support and those who do not as possible. We estimate five OLS regressions with increasing levels of controls, using Stata's MIM command to analyze the imputed datasets. Our results were qualitatively similar when we used only non-missing data, although the loss of sample size reduced the significance of effects as would be expected given the loss of statistical power.

The first model we estimate includes only child support and the age of the child in months at the age 5 assessment as predictors. The second model adds the child assessment from the age 3 in-home interview. This is a particularly powerful control because it measures children's prior level of achievement or behavior and can serve as a proxy for a potentially unobserved set of family experiences from birth to age 3. If these early experiences do not exert direct (independent) effects on later outcomes, then the inclusion of the lagged dependent variable reduces the potential for differences in early experiences to bias estimates of the effects of child support. The third model includes a rich set of sociodemographic characteristics, while the fourth includes a range of psychosocial factors. The final model, which we consider to be supplemental, includes fathers' contact with children, measured as the number of days in the past month at the five-year interview.

Identifying variables for inclusion as controls is complicated by the fact that we do not want to control for characteristics that are endogenous to child support receipt (or payment) between ages 3 and 5. As a result, we focus on characteristics that are measured prior to age 3, which may be confounded with later child support payment and child outcomes, but are not jointly determined by child support. For example, because mothers' labor market participation might be influenced by her receipt of child support, we only include a measure of household income and mothers' employment prior to the birth of the child. We do, however, control for measures that might affect a fathers' ability to pay child support (or the amount he is able to pay) and also independently affect children's outcomes, such as whether the father has ever been incarcerated or has limitations that affect his ability to work. If these characteristics primarily affect children via their effects on father's child support payment, then including them as controls should have no effect on our estimate of child support. If however, they affect children independent of their effects on fathers' child support payments, as might be expected, then the inclusion of these variables will reduce bias in our estimate of the association between child support and child outcomes. Fathers' contact and involvement with children has been previously found to be endogenous with child support payments, particularly with informal support (Nepomnyaschy 2007); and therefore (given the above arguments) should not be included in these equations. However because our question focuses on the role of child support on child development (as opposed to fathers' overall involvement or commitment to children), we control for fathers' contact with children in a final supplemental model.

Regressions are estimated separately for each of the three outcomes, and separate models are estimated for two specifications of child support— one using a linear measure, the other using two dummy variables (above and below the median level of support as compared to no child support received). After estimating these models for all of the outcomes, we estimate regressions with our complete set of controls across several subgroups of interest defined by child gender, maternal education (a proxy for mothers' economic resources and ability to manage resources), race or ethnicity, and nativity.

RESULTS

Sample Description

Table 1 presents descriptive characteristics for the full sample and also stratified by whether mothers reported any cash child support receipt from fathers in the two years prior to the 5-year interview. Half of all mothers reported receiving cash support from fathers, with a mean of \$1595 in total support. Nearly a third (29 percent) received formal support and about the same proportion (30 percent) received informal support; however, mothers reported nearly three times as much formal support on average as informal support (\$1156 vs. \$440). The median amount of formal and informal support for mothers with any of each was \$1800 and \$700, respectively (not shown). Despite these relatively low rates of receipt, child support is an important resource for those who received it. Mothers who received any cash support, on average reported almost \$3,200 in total support over the prior two years.

Children who received no cash support (whether formal or informal) from fathers had lower PPVT-R scores at 5-years of age than children who received any cash support. Differences in behavior problems by whether child support was received were not evident.

Families that received support differed not only in terms of children's developmental outcomes, but also in terms of potentially important characteristics that might affect these outcomes (Table 1). Mothers reporting no cash support were less likely to have been cohabiting with fathers at the child's birth, were younger, had lower levels of education, had more people in their households, were less likely to work and more likely to receive TANF or Food Stamps in the year prior to birth than mothers who received any cash support. The fathers who did not provide any cash support were younger, were less likely to work in the year prior to birth, and were more likely to have children with other women than fathers who provided any cash support.

Mothers without cash support were more likely to have used substances during pregnancy (cigarettes, drugs, or alcohol), knew the father for a shorter period of time prior to the pregnancy (5 fewer months), were more likely to have considered abortion, had higher depression and impulsivity scores, and reported lower quality relationships with the father than mothers with cash support. Fathers who did not provide cash support were much more likely (12 percent vs. 6 percent) to have a substance problem and to have been incarcerated (51 percent vs. 36 percent) than fathers who provided cash. Finally, fathers who did not provide cash support saw their children one-third the number of days in the past month (3 vs. 9), and were much more likely to not have seen them at all (64 percent vs. 26 percent) than fathers who provided cash.

Given the many ways in which mothers who received (and fathers who paid) child support differ, it is unclear whether differences in children's outcomes can be attributed to the receipt of child support, or are instead a result of these other family characteristics. Thus, we turn to multivariate regression models.

Regression Results

Total support—Table 2 summarizes results from models that regress children's age-5 PPVT-R scores and behavior problems on the total amount of child support their mothers reported receiving in the two years prior to the age 5 survey. Model 1 includes only the amount of total child support and child's age at assessment as predictors, Model 2 adds a lagged measure of the outcome variable (from the 3-year survey), Model 3 adds family sociodemographic characteristics, Model 4 adds psychosocial characteristics, and Model 5 adds fathers' contact with children. The top panel (Panel A) for each outcome presents results for the linear specification of total cash support, scaled in \$1000 increments, while the bottom panel (Panel B) presents the categorical specification of total support, comparing the effects for those with support below the median and support at or above the median to those with no support.

Results from the bivariate model for PPVT-R (Panel 1A, Model 1) indicate a 0.038 standard deviation increase in PPVT-R scores for every \$1000 of support received. The addition of the child's PPVT-R score from the prior wave reduces the coefficient to 0.027, but it remains statistically significant. Adding sociodemographic characteristics reduces this association substantially to 0.016 and the coefficient becomes nonsignificant, while adding psychosocial factors does not change the coefficient at all. Finally, adding the number of days of father contact reduces the coefficient further to 0.013.

This linear specification imposes the assumption that each \$1000 increment in child support has the same association with child outcomes at each point in the support distribution. To use a more flexible specification, we also modeled child support as a categorical variable. Results presented in Panel 1B suggest that the association between total child support received and children's PPVT-R scores is most apparent among families receiving larger amounts of child support. As in the top panel, adding sociodemographic factors to the model reduced the association substantially, but the addition of psychosocial factors had almost no impact. In Model 4, controlling for sociodemographic and psychosocial characteristics, children whose fathers contribute at or above the median amount of support over the past two years (\$1,500 or more, with a mean and median \$5,452 and \$3,850 of total child support received for this group) score 0.142 standard deviations higher than children who receive no support, holding all else equal. In Model 5, after controlling for father contact, this coefficient falls to 0.093 and becomes statistically nonsignificant. Children who receive lower levels of support (less than \$1,500 over two years with a mean and median of \$526 and \$500) do not differ from children who receive no support (in any of the models).

In Panel 2, the linear specification of child support is not associated with internalizing behavior in any of the models. However, the categorical specification of child support receipt reveals that that higher levels (at or above the median) of child support are associated with more internalizing behavior problems compared with no support. The coefficient in Model 4 (controlling for sociodemographic and psychosocial characteristics) indicates that higher payments are associated with a 0.10 standard deviation increase in internalizing behavior and in Model 5 (controlling for father contact) this coefficient becomes stronger and marginally significant. Although the coefficients for lower level of support receipt (less than the median) are never close to statistical significance, they are also positive, indicating more behavior problems than those who receive no support.

Panel 3 presents findings for aggressive behavior problems and reveals that the linear specification of child support receipt is not associated with behavior once the lagged dependent variable is controlled. However, the categorical specification of child support reveals a different picture. The marginally significant coefficient in Model 4 indicates that cash support below the median (\$1500) is associated with 0.115 standard deviation higher

levels of aggressive behavior problems compared with children who get no support. After adding father contact to the model, the coefficient remains substantively similar (nearly 0.1 standard deviations), but is not statistically significant. Although the coefficients for receipt at or above the median are never statistically significant, they are also positive once sociodemographic controls are included. Unlike the results for children's cognitive scores, the associations of fathers' contributions with children's internalizing and aggressive behaviors become stronger (suggesting more behavior problems) as more covariates, particularly the lagged outcome measure and sociodemographics, are added to the models.

Types of support received—Next, we examine whether the associations discussed above vary across different types of support received by disaggregating total support into formal and informal cash support. Only results from Model 4 (controlling for all covariates except father contact) and Model 5 (adding father contact) for each outcome are presented in Table 3. Each column in each panel presents coefficients of interest from one regression model. Panel A of Table 3 (top panel) presents results from models using continuous measures for the total amount of formal and informal support received (in \$1000s), while Panel B presents results from models using categorical measures of formal and informal support (below the median and at or above the median compared to none for each type of support).

Estimates from Model 4 for PPVT-R indicate that \$1000 of informal support is marginally associated with a 0.04 standard deviation higher PPVT-R score; this estimate is nearly 4 times greater than the effect size for formal support. However, once father contact is added (Model 5), the coefficient is reduced by half and is no longer significant. In the categorical specification, the coefficient for receiving at or above the median level of informal support (\$700 or more, with a mean and median of \$2,566 and \$2,000 within this group) in Model 4 is significant and substantial; it is associated with nearly a 0.20 standard deviation higher PPVT-R score than for children who received no informal support. This effect size is over two times larger than that for above median formal support received, even though the average amount of formal child support received in the at or above median category (\$1800 or more, with a mean and median of \$7,432 and \$5,955 within this group) was nearly twice as much as in the at or above median category for informal support. When father contact is added in Model 5, the coefficient for at or above median level of informal support is reduced substantially and becomes statistically nonsignificant, while the coefficient for formal support remains essentially unchanged. This finding suggests that the benefit of informal support may be driven by fathers' social and physical involvement with children, and that these non-pecuniary types of involvement are more closely associated with informal rather than formal support, which is consistent with prior research which examined the associations between these different types of involvement (Nepomnyaschy 2007; Garasky et al. 2009).

The second two columns of Table 3 focus on children's internalizing behavior problems. Results from Panel A indicate that there are no associations between the linear specifications of either formal or informal support and internalizing behavior. In Panel B, results from the categorical specifications of formal and informal support reveal that receipt of below median formal support is associated with a marginally significant 0.14 standard deviations more internalizing behavior problems than is no formal support receipt. When father involvement is added in Model 5, the findings remain unchanged.

The last two columns of Table 3 explore children's aggressive behaviors. As with internalizing behavior problems, there are no associations of the linear specifications of formal and informal support (Panel A). Turning to the categorical specifications, receipt of a low level of formal support (below the median) is associated with nearly 0.2 standard deviations more aggressive behavior problems than is no formal support receipt. This

coefficient is statistically significant and remains substantial and significant after adding father involvement in Model 5. While informal support receipt is not significantly associated with aggressive behavior, the coefficient (Model 4) for at or above the median of informal support is substantial (0.10 standard deviation) and approaches significance. It is reduced by half when father involvement is included.

Why would child support receipt lead to higher levels of problem behavior in children? We explored several potential explanations. First, it is possible that these results are being driven by particular sub-groups of fathers. As prior research suggests, involvement with fathers in the presence of high parental conflict or with fathers who have propensity for violence or substance abuse may have detrimental effects on children (Ramchandani and Psychogiou 2009; Amato and Rezac 1994; Harper and Fine 2006). Second, it is possible that fathers who contribute some but very little or visit some but very little create more stress for the mother and chaos and instability in her household leading to worse behavior outcomes for children (Dumas et al. 2005; Johnson 2008). Third, these associations could be accounted for by reverse causality, whereby fathers make child support payments to help out when children are experiencing emotional or behavioral problems (though for formal support this does not seem likely given that fathers have little discretion over their formal support obligations).

We investigated all of these potential explanations. First, we estimated our full models separately by whether fathers: had a substance abuse problem, spent time in jail or prison, spanked the child, physically abused the mother, were reported by the mother as not being a good father, had low scores on co-parenting, and did not cohabit with the mother at baseline (as a proxy for low levels of father commitment at baseline). In general, while few of the coefficients were significant, due to reduced samples sizes, the positive association between child support receipt and increased problem behaviors was apparent for all groups. These results suggest that fathers' characteristics and parents' relationship quality are probably not a potential explanation for these findings. To test whether fathers' payments or visits increased maternal stress, we included a measure of mothers' stress in the models. The results remained unchanged, though higher levels of maternal stress were strongly associated with behavior problems.

Next, we tested for reverse causality by lagging measures of child support to the prior wave, but results remained unchanged. Finally, we created a categorical variable for number of days of father involvement and experimented with different cutoffs, hypothesizing that perhaps for very involved fathers (those who visited very often), the association of child support on behavior problems would be eliminated. It was not. To summarize, none of our potential explanations were useful in understanding why fathers' child support payments (particularly low levels of formal support) were associated with higher behavior problems. We address this puzzling result further in the discussion section.

Supplementary Analyses

We also examined the association of child support received and children's developmental outcomes by different characteristics of mothers and children: mothers' race or ethnicity (non-Hispanic White, non-Hispanic Black, and Hispanic), education (HS or less and more than HS), and nativity, and child gender (results not shown). In general, few of the associations were statistically significant due to reduced sample sizes for these analyses. However, there were a few interesting and sometimes unexpected differences between groups. The association of informal support and cognitive scores for children of Hispanic mothers was twice that of children of white and black mothers, but once father involvement was included, the differences disappeared. The association of low formal payments with aggressive and internalizing behaviors appeared to be stronger for black mothers than for either white or Hispanic mothers. For white mothers, there was a very strong (but not quite

significant) association of low informal support and higher scores for aggression and internalizing behaviors (0.31 and 0.36, respectively). The positive association of low formal support with increased internalizing and aggressive behaviors, and the association of high informal support with PPVT scores (nonsignificant) was strong for boys, but not at all present for girls. The positive association of low formal support with aggressive behavior was three times larger for the group of mothers with more than a high school education than those with high school or less, while the association of high informal support with PPVT scores was nearly three times as strong for mothers with a high school or lower education than for those with more than high school. Finally, associations for foreign-born mothers were generally stronger than for US-born mothers, though not significant because of the much smaller sample sizes.

DISCUSSION

This paper examined associations of fathers' financial contributions to their nonresident children with these children's cognitive skills and behavior problems at 5 years of age. Based on prior research on the influence of income on child development, we hypothesized that there would be a stronger association for cognitive skills than for behavioral outcomes. We found that fathers' provision of financial support was positively associated with children's receptive vocabulary (PPVT-R), and that this positive association was driven by provision of informal support as opposed to formal support. An additional \$1000 of informal support was associated with a 0.04 standard deviation increase in cognitive scores, while the effect size for formal support was only 0.01. Further, provision of at least \$700 of informal support in the past two years (the median for those with any) was associated with a nearly 0.2 standard deviation higher PPVT score than no provision of informal support, while provision of less than this amount did not differ from no informal support receipt. These estimates are quite comparable to estimates from other studies of the impact of family income, in general, on child cognitive skills (Magnuson and Vortuba-Drzal 2009).

We also found that much of this positive association between informal support and cognitive scores was explained by fathers' non-financial involvement with children. When adding days of fathers' contact to the models, the coefficient for informal support was reduced by half and was no longer significant, while the formal support coefficient remained the same, though it was never significant. Yet, it is not entirely clear that controlling for other measures of fathers' involvement when estimating associations between informal support and child outcomes is appropriate. If providing economic support increases the likelihood that a father visits his children, either because it makes him feel closer to them or because he wishes to monitor the mother's use of the support, then such a control is inappropriate. If, however, both economic contributions and visitation are related because they reflect more general unobserved heterogeneity, such as a father's concern for his children's wellbeing, or if increased visitation induces fathers to pay more support, then such a control is important in order to avoid attributing to child support payment what is due to other forms of father involvement. Based on findings from prior research, which suggest that informal support and fathers' involvement and presence in their children's lives are closely linked and are potentially reciprocal (Nepomnyaschy 2007; Greene and Moore 2000; Garasky et al. 2009), we lean towards the latter explanation; however, more research on the link between fathers' contributions and contact with children is necessary.

Counter to our prior expectations, we found that child support receipt is associated with more problem behaviors for children. The association was particularly robust for low levels of formal support (below the median of \$1800 compared to no support over the past two years) with aggressive behavior, though the association was also present for internalizing behavior but was only marginally significant. We tested a number of potential explanations

for this very puzzling result, such as: the role of father violence, substance abuse, and high conflict relationships with mothers; reverse causality between support and behavior problems; and whether low payments and low levels of father contact might be more problematic for children than no father involvement. The unexpected association of child support receipt on greater behavior problems remained across most models, suggesting that none of these factors explained the associations.

There are a number of other possible explanations, for which we were not able to test, but are important areas for future research. First, parents (particularly unmarried or low-income parents) prefer informal to formal support (Edin and Lein 1997; Waller and Plotnick 2001; Pate 2006), with mothers only turning to the formal child support system when fathers' informal payments cease. This switch from informal to formal support often accompanies the end of parents' romantic relationships and potentially a period of conflict between parents (Fertig, McLanahan, and Garfinkel 2006). These types of transitions, as well as conflict between parents, can create both emotional and financial stress in the household leading to increased problem behaviors for children. While we did test for the potential mediating effect of maternal stress, it is possible that this construct was not well-measured.

Finally, evidence suggests that regularity of child support payments may be more important than the amount of support received (Ha, Cancian, and Meyer 2007), though there have been few studies in this area. If this is the case, then low levels of formal (and informal) support may be a proxy for unstable and inconsistent provision of support, which may also be related to unstable and inconsistent contact with fathers. This type of instability may impact children negatively, particularly their socioemotional development, such as aggressive and internalizing behavior problems (Deater-Deckard et al. 2009; Petrill et al. 2004; Johnson 2008). A limitation of the current study is our inability to measure the regularity of child support receipt. The robust associations that we found between child support receipt (particularly formal support) and children's aggressive behavior warrants further research.

In sub-group analyses, we find a several interesting differences, though few coefficients are significant because of reduced sample sizes. Effect sizes were much weaker for girls as compared to boys, and stronger for children of foreign-born as compared to US-born mothers. Our finding of few differences by race or ethnicity (once father contact is controlled) contrasts with the findings of Argys and colleagues (1998) who found that, among unmarried parents, child support had larger effects among white families compared with black families. These inconsistencies suggest the wisdom of further attention to issues of race, ethnicity, and culture as well as caution in drawing conclusions based on the results of any one (unreplicated) study. Our finding that child support might be particularly important for non-native born mothers is consistent with our hypothesis that these mothers might have fewer alternative sources of economic support, either in terms of public benefits or employment opportunities.

The study has several other limitations. We use mothers' reports of fathers' contributions and time spent with children, as well as mothers' reports of children's behaviors. It is possible that mothers knowingly or unknowingly underreport fathers' contributions and contact in ways that are correlated with their reports of children's behavior. Notably, children's cognitive scores are assessed directly and these outcomes were positively associated with child support receipt.

Finally, though we include a rich set of sociodemographic and psychosocial factors, as well as lagged measures of the dependent variable, it is possible that we have not accounted for all unobserved differences between fathers who provide support and those who do not. As done in some prior research, we also considered an instrumental variables approach, using

child support enforcement policies and stringency as instruments to adjust for social selection in formal child support payments. We found that measures of child support enforcement did not predict mothers' receipt of formal child support, and thus could not be used as instruments in this study. One possible explanation for this finding is that child support policies may have a much stronger association with child support payment for divorced fathers than for fathers with nonmarital children. Furthermore, recent research suggests that strong child support enforcement may have no effect on total child support received because of its offsetting effects of increasing formal support and reducing informal support (Nepomnyaschy & Garfinkel, 2010).

All of the findings in this study highlight the importance of examining the entire package of contributions that fathers make to their children and to exploring non-linear effects of cash support. This study contributes to a growing body of literature confirming the importance of informal support from fathers and the possibility that these types of contributions operate in very different ways than those received through the formal system (Nepomnyaschy and Garfinkel 2010; Nepomnyaschy 2007; Kane and Edin 2008; Garasky et al. 2009), particularly for unmarried parents, which now make up the largest proportion of single-parent families in the United States (U.S. Census Bureau 2010).

To the best of our knowledge, this was the first study using panel data to look at the effects of fathers' financial contributions (formal and informal) on young children's development with a particular focus on unmarried parents. Though further research is necessary to understand whether these findings hold up as children age and to explore the unexpected associations of payments with behavior problems, a few preliminary policy implications may be suggested. The finding that child support is positively associated with children's cognitive skills suggests that programs and policies that increase fathers' financial contributions to their non-custodial children are likely to improve children's cognitive development. As discussed in this paper and in prior studies, fathers with nonmarital children in urban areas have high rates of incarceration, high rates of multiple partner fertility, and low levels of education and employment (Sinkewicz and Garfinkel 2009; Waller and Plotnick 2001; Pate 2002; Meyer, Cancian, and Cook 2005). All of these factors may impede a father's ability to financially support his children, and thus policies and programs that intercede to increase disadvantaged fathers' economic resources and their connection to their children may be important.

The particularly positive role of informal support, especially in relatively large amounts, on cognitive skills suggests the need to better understand the mechanisms by which informal child support and other related forms of fathers' investments improve children's outcomes. Although our findings indicate that informal child support may be preferable in terms of promoting children's achievement, we hasten to note that informal support is typically much smaller in amount in our data and that qualitative studies suggest it may be provided less consistently than formal support (Magnuson and Gibson-Davis 2007). Further, the relationship between the provision of formal and informal support is complicated. As mentioned above, mothers often turn to the formal child support system when fathers stop providing informal support, and many fathers (particularly those who are disadvantaged) are not able to provide both types. Though in the short term, mothers may prefer informal support, in the longer-term, most will turn to the formal child support system (Nepomnyaschy and Garfinkel 2010). Therefore, it is possible that our findings reflect a short-time span scenario and the importance of formal support for children's well-being may increase in the longer-term. This may be particularly salient for the puzzling findings regarding formal support and children's behavior problems. Future waves of Fragile Families data will be helpful to answer these questions.

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Table 1

Variable Description for Full Sample and by Receipt of Any Cash Support

	All families	No cash support	Any cash support
<i>Child support measures:</i>			
Any cash support	0.50		1.00
Any formal support	0.29		0.58
Any informal support	0.30		0.60
Total cash support	1595 (3331)		3194 (4138)
No cash support	0.50		0
Total cash < 1500	0.23		0.46
Total cash >=1500	0.27		0.54
Total formal support	1156 (3089)		2314 (4052)
No formal support	0.71		0.42
Formal support <1800	0.14		0.29
Formal support >=1800	0.14		0.29
Total informal support	440 (1310)		880 (1746)
No informal support	0.70		0.39
Informal support <700	0.15		0.30
Informal support >=700	0.15		0.31
<i>Outcomes:</i>			
Age 5 PPVT-R (z-score)*	0.00 (1.00)	-0.07 (1.02)	0.07 (0.97)
Age 5 internalizing behaviors (z-score)	0.00 (1.00)	0.01 (0.99)	-0.01 (1.00)
Age 5 aggressive behaviors	0.00 (1.00)	0.01 (1.04)	-0.01 (0.99)
<i>Lagged outcomes:</i>			
Age 3 PPVT-R (z-score)	0.00 (1.00)	-0.01 (0.98)	0.01 (1.02)
Age 3 internalizing behaviors (z-score)	0.00 (1.00)	0.05 (1.02)	-0.05 (0.97)
Age 3 aggressive behaviors	0.00 (1.00)	0.05 (1.04)	-0.05 (0.96)
<i>Sociodemographics:</i>			
Parents cohabiting at birth**	0.31	0.28	0.35
Focal child is female**	0.47	0.44	0.51
Age of child at 5-year assessment (mos)	64.6 (3.1)	64.6 (3.1)	64.6 (3.0)
Focal child born low birth weight	0.12	0.12	0.11
Mother's age*	23.6 (5.6)	23.3 (5.4)	24.0 (5.7)
Mother is White	0.13	0.13	0.12
Mother is Black*	0.65	0.62	0.68
Mother is Hispanic +	0.20	0.22	0.18
Mother is of other race or ethnicity	0.02	0.03	0.02
Mother born in US*	0.93	0.91	0.94
Mother has less than high school education**	0.39	0.44	0.35
Mother has high school education	0.34	0.35	0.35
Mother has more than high school education***	0.26	0.21	0.30
Mother's HH size**	3.6 (1.7)	3.7 (1.8)	3.4 (1.6)

	All families	No cash support	Any cash support
Grandparent in HH	0.38	0.40	0.36
LN HH income	9.64 (1.4)	9.61 (1.3)	9.67 (1.5)
Mother worked in prior year**	0.78	0.74	0.82
Mother received TANF/FS in year prior to birth +	0.48	0.50	0.45
Father's age*	26.3 (7.1)	25.8 (6.8)	26.8 (7.4)
Father worked in prior year**	0.73	0.68	0.77
Mother and father have other joint children	0.26	0.26	0.26
Mother has children with other partner	0.44	0.46	0.42
Father has children with other partner*	0.51	0.54	0.48
<i>Psychosocial factors:</i>			
Mother used substances while pregnant**	0.31	0.35	0.27
Months parents knew each other prior to pregnancy*	44.5 (48.3)	41.9 (47.3)	47.1 (49.1)
Mother or father considered abortion*	0.45	0.48	0.42
Mother lived with both parents at 15	0.31	0.31	0.31
Maternal depression (z-score) ¹ +	0.00 (1.00)	0.05 (1.04)	-0.05 (0.96)
Mother's PPVT-R at child age 3 (z-score)	0.00 (1.00)	-0.02 (1.02)	0.02 (0.98)
Mother's high impulsivity (reported at child age 1) ² *	0.00 (1.00)	0.06 (1.02)	-0.06 (0.98)
Mother's traditional gender role attitudes ³	0.00 (1.00)	0.03 (1.04)	-0.03 (0.96)
Mother-father relationship quality ⁴ ***	0.00 (1.00)	-0.10 (1.05)	0.10 (0.93)
Focal child difficult temperament at age 1 ⁵	0.00 (1.00)	0.04 (1.01)	-0.04 (0.99)
Father has substance problem***	0.09	0.12	0.06
Father has limiting condition	0.06	0.07	0.06
Father ever incarcerated***	0.44	0.51	0.36
Number of days father has seen child in past 30***	5.91 (9.2)	2.59 (6.5)	8.76 (10.1)
Father has not seen child in past month***	0.45	0.64	0.26
Father saw child < 8 days in past 30*	0.28	0.23	0.32
Father saw child ≥ 8 days in past 30***	0.28	0.12	0.42
Total observations across 10 imputed datasets	16,902	8,410	8,492
Range of observations across 10 imputed datasets	1,674 to 1792	818 to 928	840 to 864

Note: Numbers in table are means and (standard deviations) or proportions.

¹ Mothers' depressive symptoms are based on the 6-symptom version of the Comprehensive International Diagnostic Interview (CIDI) for depression. Scores are standardized to have a mean of 0 and standard deviation of 1.

² The impulsivity scale was based on the mean of mothers' replies to 6 items with possible answers from 1 for strongly disagree to 4 for strongly agree. The items are: (1) I often say what comes to my head without thinking; (2) Often, I don't think enough before I act; (3) I often say/do things without thinking of consequences; (4) I often get in trouble because I don't think before I act; (5) Plans don't work out because I don't go over them carefully; (6) I make up my mind before considering the situation from all angles. The mean score across these items was standardized (mean of 0, standard deviation of 1) with higher scores indicating more impulsivity.

³ Mothers' traditional gender role attitudes are measured as the mean of her reply of strongly disagree (1) to strongly agree (4) to whether important decisions in the family should be made by a man and to whether it is better if the man earns the living and the woman cares for family. The mean score across these items was then standardized (mean of 0, standard deviation of 1), with higher values indicating more traditional gender role attitudes.

⁴ Parents' relationship quality was measured as the mean of the mother's response on a 1 to 3 point scale of often (1), sometimes (2), or never (3) to how often father: was willing to compromise; hit you when angry; expressed affection or love; criticized you; encouraged you. Scores were standardized (mean of 0, standard deviation of 1), with higher values indicating better relationship quality

⁵ Child temperament is measured as the mean of the mothers' response on a 1 to 5 point scale ranging from "least like my child" to "most like my child" to the following 6 questions about the child: tends to be shy, often fusses and cries, is very sociable, gets upset easily, reacts strongly when upset, is very friendly with strangers. The mean score across these items was standardized (mean of 0, standard deviation of 1). Positive items were reversed so that higher scores indicate more temperamental behavior.

Table 2
Associations of total cash child support receipt with PPVT-R scores and behavior problems

	(1)	(2)	(3)	(4)	(5)
Panel 1: PPVT-R Scores					
<i>Panel 1A: Total cash support</i>					
Total cash support	0.038 ^{***} (3.94)	0.027 ^{**} (2.85)	0.016 (1.61)	0.016 (1.58)	0.013 (1.23)
<i>Panel 1B: Levels of cash support</i>					
Below median cash support	0.003 (0.04)	0.042 (0.59)	0.023 (0.33)	0.039 (0.59)	-0.001 (0.02)
At or above median support	0.266 ^{**} (3.48)	0.212 ^{**} (3.19)	0.144 [*] (2.06)	0.142 [*] (2.03)	0.093 (1.35)
Panel 2: Internalizing Behavior Problems					
<i>Panel 2A: Total cash support</i>					
Total cash support	-0.013 (1.36)	-0.006 (0.71)	-0.005 (0.55)	0 (0.03)	0 (0.04)
<i>Panel 2B: Levels of cash support</i>					
Below median cash support	-0.027 (0.38)	-0.015 (0.24)	0.023 (0.37)	0.032 (0.49)	0.038 (0.57)
At or above median support	-0.019 (0.28)	0.041 (0.67)	0.069 (1.13)	0.103 (1.61)	0.110 ⁺ (1.66)
Panel 3: Aggressive Behavior Problems					
<i>Panel 3A: Total cash support</i>					
Total cash support	-0.017 ⁺ (1.85)	-0.01 (1.22)	-0.004 (0.51)	0 (0.02)	-0.002 (0.23)
<i>Panel 3B: Levels of cash support</i>					
Below median cash support	0.035 (0.50)	0.071 (1.17)	0.099 (1.62)	0.115 ⁺ (1.89)	0.093 (1.52)
At or above median support	-0.069 (1.01)	-0.006 (0.10)	0.05 (0.78)	0.092 (1.45)	0.066 (0.95)
<i>Model includes:</i>					
Lagged dependent variable		Yes	Yes	Yes	Yes
Sociodemographics			Yes	Yes	Yes
Psychosocial factors				Yes	Yes
Father contact (days in past month)					Yes

Note: 16,902 observations across 10 imputed datasets (1,674 – 1,792 observations per dataset).

Coefficients (and t-statistics) are from OLS regressions. Covariates are listed in Table 1. All models control for child age at 5-yr assessment. All PPVT-R models control for whether the child took the TVIP (Spanish version of the PPVT-R).

The reference group in panel B is “no cash support.”

100' > d

p
10' > d
**
50' > d
*
+
p < .10

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Table 3
Associations of type of child support received with PPVT-R scores and behavior problems

	PPVT-R		Internalizing		Aggressive	
	Model 4	Model 5	Model 4	Model 5	Model 4	Model 5
<i>Panel A: Total formal and informal support</i>						
Total formal support	0.012 (1.12)	0.011 (1.06)	-0.001 (0.05)	-0.001 (0.06)	-0.002 (0.21)	-0.002 (0.24)
Total informal support	0.040 ⁺ (1.71)	0.022 (0.90)	0.001 (0.08)	0.001 (0.05)	0.013 (0.64)	-0.000 (0.01)
<i>Panel B: Levels of formal and informal support</i>						
Below median formal support	-0.029 (0.32)	-0.035 (0.38)	0.137 ⁺ (1.82)	0.138 ⁺ (1.84)	0.164 [*] (2.26)	0.160 [*] (2.20)
At or above median formal support	0.088 (0.90)	0.084 (0.85)	0.068 (0.82)	0.069 (0.83)	-0.017 (0.20)	-0.020 (0.23)
Below median informal support	0.044 (0.56)	0.001 (0.01)	-0.001 (0.01)	0.002 (0.03)	0.048 (0.75)	0.021 (0.32)
At or above median informal support	0.197 [*] (2.26)	0.119 (1.40)	0.048 (0.59)	0.054 (0.56)	0.104 (1.44)	0.054 (0.64)

Note: 16,902 observations across 10 imputed datasets (1,674 – 1,792 observations per dataset).
Coefficients (and t-statistics) are from OLS regressions.
Model 4 controls for the lagged dependent variable, sociodemographic and psychosocial characteristics.
Model 5 adds father contact.
All models control for child age at 5-yr assessment, and PPVT-R models control for whether the child took the TVIP (Spanish version of the PPVT-R).
The reference groups in panel B are “no formal support,” and “no informal support,” respectively.

*** p < .01; ** p < .05; * p < .10
+ p < .10
* p < .05