**Head Start and Father Involvement**

Since its inception, Head Start has emphasized the importance of parents' involvement in their children's lives (Zigler and Styfco 2010). While originally designed as a comprehensive anti-poverty program, Head Start now primarily aims to improve literacy and school readiness among children from low-income families (Kalifeh, Cohen-Vogel, & Grass, 2011). As policy goals have narrowed, Head Start has increasingly sought to enhance parenting behaviors and parental supports that are beneficial to children's learning and development. Research has long held that differential home learning environments and language learning opportunities contribute to socioeconomic disparities in educational outcomes, which emerge during early childhood and persist throughout children's academic careers (Hart and Risley 1995, Smith, Brooks-Gunn, and Klebanov 1997, Brooks-Gunn and Duncan 1997, Hoff 2003, Guo and Harris 2000). As such, Head Start's parent and family engagement framework asserts that academic disadvantages experienced by low-income children can be ameliorated by enriching relationships and interactions with their parents. This model has been supported by studies that show parental involvement in Head Start programs is associated with children's school readiness, mediated by positive changes in the home learning environment and parent-child relationships (Hindman et al. 2010, Parker et al. 1999, Taylor and Machida 1994).

Historically, researchers and policymakers have focused on mothers' parenting and their involvement with children as a key to improving learning, often to the neglect of the "other parent" – fathers (Downer et al. 2008). However, due to changes in labor markets and cultural norms over the past forty years, fathers today are less likely to assume the primary "breadwinner" role, and are more likely to care for and nurture their children, coordinate and supervise activities, and connect children with extended family, community members, and other

resources (Cabrera et al, 2000; Marsiglio et al, 2000). Several decades of theory and empirical research suggest that these forms of father involvement contribute to their children's learning and positive development, including among low-income children (Carlson and Magnuson 2011, McWayne et al. 2013, Lamb et al. 1987).

Influenced by such research, Head Start policy has made explicit commitments to enhancing father involvement in their children's lives. The Office of Head Start under the Administration for Children and Families states clearly: "To achieve the highest possible outcomes for children, Head Start programs must make every effort to involve fathers in the lives of their children" (U.S. Department of Health and Human Services 2004). However, father involvement initiatives within Head Start programs confront the challenges associated with rapidly transforming living arrangements of children. Fathers are increasingly likely to be unmarried to their children's mothers and reside outside their children's home, and these demographic changes have been especially apparent among low-income families. One of four children in the US today do not live with their biological father, compared with more than half of children who participate in Head Start (Hulssey et al, 2011). Additionally, more than 40% of births in the U.S. today are to unmarried mothers, compared with 60% among mothers without a high school degree (Martin et al. 2015, Solomon-Fears 2014).

Fathers who do not live with their children face unique barriers to involvement (Carlson & McLanahan, 2010). However, contrary to earlier stereotypes, recent studies indicate that low-income nonresident fathers are generally not absent from their children's lives. These fathers are frequently engaged in the lives of their children, particularly at young ages, though engagement often declines as children grow older (Cabrera et al. 2004, Carlson and McLanahan 2010). Moreover, a growing body of work suggests that multiple forms of involvement of nonresident

fathers (especially financial support) promote child learning and development, therefore mitigating some of the disadvantages associated with poverty and single parenthood (Amato & Gilbreth, 1999; Carlson & Magnuson, 2011; Garasky & Stewart, 2007; Nepomnyaschy, Magnuson & Berger, 2012). Together, these studies suggest that nonresident fathers are a vital target for engagement by Head Start programs, and that gains in nonresident father involvement are likely to improve child outcomes. If the Head Start parental engagement model is effective, children who participate in the program, including children who do not live with their fathers, are expected to benefit from sustained or enhanced paternal involvement over time. In this study, we examine whether children's participation in Head Start is associated with changes in several domains of nonresident fathers' involvement in their lives. We use longitudinal data from a nationally representative sample of US children and include a rich set of child, parent, and family characteristics.

**Conceptual Framework**

There are several ways in which children's participation in Head Start may affect nonresident father involvement. First, fathers may have direct contact with Head Start programs, which have been explicitly charged with increasing their involvement. Second, mothers' participation in Head Start may indirectly facilitate father involvement through improved parental relations or by motivating mothers to involve fathers in the lives of their children. Finally, children's Head Start participation may increase maternal employment, which may increase need for fathers' help with child care.

Head Start program providers are required to actively recruit and encourage children's fathers – whether resident or nonresident – to participate in Head Start programs (PL100-134, U.S. Department of Health and Human Services 2004). Father participation in early childhood

programs like Head Start have been characterized as both direct and indirect connections, which include selecting programs, assuming responsibility for children's health and wellbeing, communicating with teachers, dropping off and picking up their children, volunteering in the classroom, attending family events, and participating in parenting education and home visitations (Palm and Fagan 2008, Fagan 2007). In addition to the time spent with their children, fathers are encouraged by providers to involve themselves more fully in the lives of their children and benefit from positive reinforcement and modeling behaviors from other participating fathers. The experiences are expected to strengthen fathers' connections with their children, motivating future involvement and long-term child well-being (Raikes, Summers, and Roggman 2005, Palm and Fagan 2008, Turbiville and Marquis 2001).

The 2007 reauthorization of Head Start strongly emphasized father participation in program activities and requires Head Start programs to "extend outreach to fathers… in the education of young children, and in the Head Start program, by working directly with fathers through activities" (PL100-134). The Head Start Bureau's *Building Blocks for Father Involvement* (U.S. Department of Health and Human Services 2004) was developed to promote father participation in Head Start and their involvement in their children's lives. Providers are expected to develop policies that actively recruit fathers and create an environment where fathers feel welcomed and valued. While separate recommendations are not proposed for nonresident fathers, policy guidelines explicitly address the importance of engaging fathers who may live outside the children's home and encourage programs to make a "concerted effect to reach out creatively" to nonresident fathers through mail, phone, and home visits, inviting them to participate in program activities and holding special group meetings that address issues unique to nonresident fathers (U.S. Department of Health and Human Services 2004).

National estimates of the extent to which resident and nonresident fathers actually participate in Head Start programs are not available. An early study of African-American fathers' participation in Head Start programs suggested that most fathers rarely or never participated in the program (Gary, Beatty, and Weaver 1987). More recent case studies; however, suggest modest levels of participation, although significantly lower levels for nonresident fathers (Gorvine 2010).

Even if fathers never participate in Head Start programs, mothers' participation in these programs may also indirectly bolster fathers' involvement in the lives of their children. Mothers who participate are expected to receive services that emphasize the importance of father involvement (U.S. Department of Health and Human Services 2004). For some families, maternal gate-keeping, or mothers' lack of encouragement or resistance to father involvement, may restrict fathers' full potential for involvement, especially among nonresident fathers (Schoppe-Sullivan et al. 2008, Allen and Hawkins 1999). Mothers frequently serve as the arbiters of when and how nonresident fathers spend time with their young children (Walker and McGraw 2000). Acknowledging that some mothers or families may not actively encourage nonresident father involvement, Head Start programs are encouraged to "overcome such barriers creatively and successfully by working with the entire family and helping both mother and father appreciate the important role the father plays in his children's lives" (U.S. Department of Health and Human Services 2004). Therefore, to the extent that Head Start programs serve to enhance mothers' appreciation of and willingness to facilitate involvement between nonresident fathers and their children, fathers are expected to become more involved even when they do not directly participate in the program. Through counseling services and service referrals, Head Start programs are also expected to enhance the quality of parental relationships, including non-

cohabiting and non-romantic parental relationships. Because one of the strongest determinants of fathers' involvement with their children is the quality of the parents' relationship (Carlson et al. 2011, Carlson, McLanahan, and Brooks-Gunn 2008), Head Start programs that are successful in improving parental relations are also very likely to succeed in enhancing father involvement.

Finally, Head Start participation may increase nonresident father involvement by increasing mothers' opportunities for training and employment. Research shows that fathers, both resident and nonresident, tend to take on additional childcare responsibilities when mothers enter the workforce. As a subsidized child care program, mothers whose children participate in Head Start are more likely to have time to secure employment and seek out and participate in the education and training programs. Moreover, Head Start programs often include or link parents to employment services and informal social networks intended to expand employment opportunity. Maternal employment has been shown to increase as child care costs decrease and access to preschool increases (see Ruhm 2011 for review). Head Start programs are also associated with increased maternal employment (Herbst 2010).

**Prior Literature**

Prior studies suggest that direct programmatic efforts to involve fathers are related to enhanced participation of both resident and nonresident fathers in Head Start and Early Head Start programs (Fagan 2007, Fagan and Iglesias 1999, Raikes et al. 2002, Raikes, Summers, and Roggman 2005, Raikes and Bellotti 2006, Turbiville and Marquis 2001). Programs with stronger fatherhood components tend to make concerted efforts to involve fathers, think holistically about fatherhood, and view fathers as co-parents (McAllister, Wilson, and Burton 2004). These programs often assign daily responsibility for father involvement to a specific individual, hire male staff, rely on men for outreach, and use a wider variety of strategies to involve nonresident

fathers (Raikes et al. 2002, Fagan and Iglesias 1999). Evaluation data from Early Head Start Fatherhood Demonstrations programs showed that these efforts were related to significantly higher levels of nonresident father participation than national figures (Raikes and Bellotti 2006).

When fathers do participate in early child programs with fatherhood components, evaluation of intervention programs suggest they are likely to become more involved in their children's lives (see review by Magill-Evans et al. 2006). Cross-sectional studies also show that program participation is highly associated with levels of father involvement with their children (Roggman et al. 2002, Gorvine 2010). On the other hand, with respect to nonresident fathers' participation in Head Start programs, studies are limited and findings are inconclusive. The quasi-experimental study by Fagan and Iglesias (1999) compared father involvement in four Head Start programs with fatherhood components against similar sites with no fatherhood components. Results indicated that treatment groups were associated with increases in father involvement and improved child academic outcomes for both resident and nonresident fathers. Later, an experimental study of an empowerment intervention for African-American Head Start fathers showed significant gains in parenting self-esteem and satisfaction among resident fathers but not among nonresident fathers (Fagan and Stevenson 2002).

However, little is known about nonresident father involvement over time among a national sample of families who participated in Head Start, nor how these levels of involvement compare to a comparable sample of families who did not participate in Head Start. Past observational and experimental studies have examined the impact of Head Start on multiple forms of parental involvement and investments in their children's education and development. However, samples in these studies are generally limited to mothers and fathers who live with their children. For example, the two most recent reports from the experimental Head Start Impact

Study (U.S. Department of Health and Human Services 2010, 2012) focus on parental involvement outcomes only among primary caregivers (those living with and responsible for raising the child), approximately 96% of whom were biological mothers. Only one prior study has examined the impact of Head Start on nonresident father involvement. Analyzing data from the Head Start Impact Study, Gelber and Isen (2013) evaluated the short- and long-term impact of Head Start on a variety of parental involvement measures, including days of father-child contact in the past month among families with a non-residential father. Analyses showed that children in the experimental group benefited from an additional 1.4 days of contact per month from their non-residential father several years following Head Start participation. However, the impact on father-child contact during or immediately following Head Start participation was smaller and not statistically significant.[1]

The current study makes several contributions to the literature. First, analyses are based on longitudinal data from a nationally representative population-based sample of all children born in the US in 2001. Second, associations between children's Head Start participation and multiple dimensions of nonresident father involvement are examined, including father-child contact, fathers' influence in decision-making about child's well-being, fathers' provision of child support, and his informal material contributions to the household.

[1] The effect of Head Start participation during or immediately following program participation was estimated at 0.91 days, with a standard error of 0.85 days.

## Methods

### *Data*

The sample for this study is drawn from the Fragile Families and Child Well-Being Study, a longitudinal birth cohort study with baseline data collected between 1998 and 2000. The study recruited mothers in urban hospitals, immediately following the birth of a child, and oversampled non-marital births at a ratio of three to one. Subsequently using information obtained during the mother interview, 76% of fathers were interviewed in the hospital or at their home. The sample is nationally representative of births at that time in large (populations greater than 200,000) US cities (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Fragile Families includes baseline data on 4,898 families. Follow-ups with both mother and father occurred at 1, 3, 5, and 9 years. At year 15, follow-up surveys were conducted with the child's primary caregiver, most (89%) of whom were the child's mother, as well as with the adolescent. This study uses data from the mother interview (through year 5).

### *Sample*

For this study, the sample is restricted to 4,139 families (85%) with a mother interviewed at year 5. Additionally, 150 families in which the child was not living with his/her biological mother and/or where the biological father was no longer living are excluded. As this study is interested in the association between Head Start participation and non-resident father involvement, the sample is further limited to 1,549 families, where the father was non-resident before (age 3) and after (age 5) Head Start.

Case wise deletion is used to exclude families missing on key analysis variables. This includes two families excluded due to missing data on the main predictor (Head Start) and 52 families excluded for missing data on at least one of the control variables. Among these, whether

the mother lived with both of her biological parents at age 15 (n=12) was the most common source of missing data. To prevent further data loss, missing categories are added to covariates with more than 20 missing cases, specifically: the number of waves of father residence, father education, father work, father drug/alcohol use, mother work, and child's low birth weight. The final analytic sample includes 1,495 families (97% of the 1,549 families previously identified).

*Measures*

*Head Start*. – Head Start participation is the main predictor. At year 5, mothers were asked if their child attended an early childhood education program during the year before kindergarten and what that program was. Children were identified as Head Start participants, if their mother reported their child attended Head Start. Children were classified as non-Head Start participants if they did not attend a program or if they attended a program other than Head Start.

*Father Involvement.* – This study examines five outcomes related to father involvement, as reported by the mother, when the child was approximately 5 years old. Socially, we examine engagement and cooperative parenting. Materially, we include formal child support, informal child support, and in-kind support provided by the father for his child.

*Standardized index of father engagement:* The standardized index includes four measures of father engagement with the child, all reported by the mother at year 5. First, the mother reported the number of days the child had seen the father in the past month. Second, the mother was asked, "how often inthe past month, the father has spent one or more hours per day with child." Answer choices included: never (1); one-two times per month (2); several times per month (3); several times per week (4); or every day (5). Third, mothers reported the number of days per week (ranging from 0 to 7) the father engaged in different age appropriate activities with the child (e.g. read stories, watch TV). The responses from the 7 activities are averaged.

Finally, mothers reported how often (1- never to 4-often) the father looks after child when mom needs to do things and takes child places he/she needs to go. Because mothers who reported that fathers had not seen the child in the past two years were skipped out of these questions, a value of zero is assigned for all four measures for this group. To create the index, each of the measures was standardized on the sample individually. Then, the measures were averaged to create an index ($\alpha$=0.91), which was again standardized, with a mean of zero and standard deviation of one.

*Cooperative parenting:* The cooperative parenting measure includes the mother's response to eight survey questions about her view of the father and their relationship. Mothers are asked to rate how often she feels statements – such as: "you and the father talk about problems that come up with raising child," and "you can trust father to take good care of child" – are true. The items are averaged to create the measure. Here again, we assign mothers who had no contact with the father a cooperative parenting score of zero.

*Material contributions.* We examine mothers' reports of fathers' formal cash child support, informal cash support, and provision of in-kind support at the 5-year survey. Mothers who have an established child support order report on the amount of formal child support the father has provided over the past year. Those who do not have a child support are recoded to $0 of formal support. All mothers also report on how much cash the father has provided directly to her outside of or in addition to formal child support. Finally, the mother is asked about the frequency with which the father provides various in-kind or non-cash items for the child, including clothes, toys, food, medicine, or other items. For each item responses range from never to often and we construct a dichotomous variable indicating whether father provided any in-kind support.

*Controls*. – Our analyses control for a rich set of father, mother, child, and household characteristics that may confound the relationship between children's Head Start participation and father involvement. We measure most control variables at the baseline interview (conducted at the child's birth), except for a few which are only assessed at subsequent waves. We include baseline measures of parent's relationship status at birth, income, and Medicaid receipt as controls. Parent's relationships are classified as married, cohabitating, friends/visiting, or parents not involved. Household income is measured as the ratio of the mother's household income to the federal poverty line, including imputed values. Additionally, the mother reported how she was paying for the child's birth. Mothers are classified as Medicaid recipients if they responded Medicaid, other government assistance, or a combination of Medicaid and private insurance.

Father characteristics are based on baseline data, except for the number of waves a father resided in the home with the child. This uses data through year 5. Categories for father race/ethnicity include white, non-Hispanic Black, Hispanic, and other. Age is based on mother report in years. Father's education is recoded from the survey item, combining the "some college" and "college degree" groups. This is appropriate, as a small proportion (<5%) of the analytic sample earned a college degree. The total number of waves the mother reported the father was resident is calculated, using data from 4 survey waves (birth, years 1, 3, and 5). To minimize the amount of missing data, we calculate a total if up to 1 wave of data is missing. Therefore, these values may be underestimated. Father employment and drug and/or alcohol problem are based on questions asked of the mother. Specifically, fathers are classified as employed if the mother reports them working in the week prior to the interview. Fathers are identified as having a drug or alcohol problem if the mother reported either of these substances interfering with work or relationships in the year prior to the birth of their child. Commitment to

the child is an average of five yes/no survey items asked of the mother about the father, including whether the father contributed during the pregnancy, visited her in the hospital, and intends to be involved.

We include mother characteristics measured at baseline as controls, except for employment which was measured when the child was approximately 1. Mother's race/ethnicity and age are compared to the father's characteristics to create a dichotomous (race) and continuous (age) variable indicating any difference between the mothers' and fathers characteristics. Mother's education is recoded, consistent with the coding for father's education previously described. Mother's residence with both biological parents at age 15 – a common indicator of socioeconomic status, and nativity are both based on yes/no survey items. Additionally, mothers are also coded as being born in the United States if they indicated they were born in Puerto Rico in a follow-up question. Finally, employment and drug/alcohol use are based on similar survey questions described above, asked of the mother about herself.

As with mother and father characteristics, child characteristics are taken from baseline, with exception of the child's age (in months) at the time of the outcome (mother's year 5 survey). The age is calculated by comparing the interview date and child's birth date. Mothers reported child's gender, parity (first-born status), and birthweight. Low birthweight is classified as weighing less than 2500 grams at birth.

Prior research has established that these covariates are associated with non-resident father involvement (see review in Berger & Langton, 2011). Specifically, father involvement is higher among more educated mothers (McLanahan, 2004; McLanahan & Jacobsen, 2015); white, older, and/or more educated fathers (Cabrera, Ryan, Mitchell, Shannon, & Tamis-LeMonda, 2008; King, Harris, & Heard, 2004); and healthy, male, and/or firstborn children (Lamb, 2010;

Lundberg, McLanahan, & Rose, 2007; Pleck, 1997). Finally, the city where the mother gave birth is included as a control. In addition to being a part of the sample design (Reichman et al., 2001), the city may be related to the availability of Head Start or alternative pre-Kindergarten programs.

*Analytic Strategy*

The primary research question in this study is whether Head Start participation is associated with nonresident father involvement. First, descriptive statistics are presented by Head Start participation. Next, ordinary least squares (OLS) regression models are used to estimate the association between Head Start participation and the various measures of father involvement. Three models are estimated for each of the five outcomes. The first model presents the bivariate relationship, the second model adds the full set of household, father, mother, and child control variables, and indicators for mothers' baseline city of residence, and the third adds a lagged dependent variable, measured when the child was approximately three years old. By controlling for pre-treatment (before Head Start participation) levels of father involvement, we account for the possibility that families with more involved fathers may be more likely to enroll in Head Start. Analyses are performed with STATA 15.

Results

*Sample Description*

Tables 1 presents descriptive statistics of the analytic variables for the full study sample and stratified by Head Start participation. In this sample of 1,495 families with a non-resident father and a focal child approximately 5 years of age living with his/her biological mother, 230 of the mothers (15%) reported their child had participated in Head Start in the year before Kindergarten.

Offering preliminary support for our study's hypothesis, the standardized father engagement index – which includes all four measures of fathers' social involvement – is higher among Head Start

participants than non-Head Start participants at age 5. On average, mothers report high levels of cooperative parenting (mean=2.49, SD=1.12). Additionally, it is important to note that the distribution of formal and informal cash support are skewed, due to the number of fathers providing no financial support.

Consistent with the study design (Reichman et al., 2001), a large majority of families (94%) were not married at the time of the child's birth. Accordingly, this is a disadvantaged sample; the average household income at baseline was 1.6 times the federal poverty line and 74 percent of the births were covered by Medicaid. Three quarters of the fathers reported a low level of education (high school degree or less) at their child's birth. A large majority (87%) of fathers were of a racial/ethnic minority background (non-Hispanic Black or Hispanic). Although all fathers in this sample were no longer resident at year 3, slightly more than a quarter of couples had previously cohabitated. On average, mothers reported a high level of father's commitment to the child at baseline (mean=0.78, SD=0.30, range=1). Eleven percent of the children in the sample had a low birthweight, and a sizable minority of children (42%) were first born.

*Multivariate Results*

Table 2 presents results from regression models exploring the association of Head Start participation with father involvement, when children were approximately 5 years old. Numbers in the table are OLS coefficients and t-statistics. Model 1 presents the bivariate relationship between Head Start participation and father involvement. Model 2 is fully adjusted, with controls for household, mother, father, child, and city dummies. Model 3 adds a lagged dependent variable, measured when the child was approximately 3 years old.

Head Start is associated with the social measures of father involvement – the engagement index and cooperative parenting – but not the material measures of involvement. Across all three models, Head Start participation is positively associated with the non-resident father engagement

index. In Model 3, including all controls and a lagged dependent variable, Head Start participation is associated with 0.17 of a standard deviation increase in father engagement.

The association between Head Start and cooperative parenting is only statistically significant in Model 3. Results from Model 3 suggest that on average mothers of Head Start participants rate their cooperative parenting with the non-resident father 0.15 higher (on 1-4 scale) than mothers of non-participants. In this model, which includes the lagged dependent variable, few other covariates are significant. Likely, many of these are associated with the cooperative parenting at the prior wave. This model explains 38% of the variation in frequency of father contact.

**Conclusion and Implications**

These findings provide preliminary support for the effectiveness of Head Start's efforts to promote father involvement and cooperative parenting. In subsequent analyses, we address potential selection of children into Head Start by estimating models with inverse probability weights in order to make the Head Start and non-Head Start groups as similar as possible on a rich set of control variables. Additionally, we plan to explore whether the associations of Head Start persist (or emerge) as children get older by estimating associations of Head Start participation with father involvement outcomes when children are 9 years old. Finally, we will also examine differences by fathers' education and other indicators of his SES to explore whether these associations are being driven by the most or least involved fathers. If Head Start participation can increase father involvement among children in lower-income single mother families, then such programming may be a crucial tool in reaching the ultimate goal of improving developmental outcomes among disadvantaged children.

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**Table 1**: Descriptive Statistics of Main Predictor and Outcome Variables by Head Start Participation

| | Full Sample (N=1495) | | Non - Participants (N=1265) | | Head Start Participants (N=230) | | Difference Between Groups |
|---|---|---|---|---|---|---|---|
| | mean or % | SD | mean or % | SD | mean or % | SD | |
| **Standardized Index of Father Engagement** | 6.1% | | 7.2% | | 0.0% | | |
| *Age 3* | 0.00 | 1.00 | -0.01 | 0.99 | 0.08 | 1.06 | |
| *Age 5* | 0.00 | 1.00 | -0.03 | 0.98 | 0.17 | 1.10 | ** |
| **Cooperative Parenting (1-4, higher score=more cooperation)** | | | | | | | |
| *Age 3* | 2.49 | 1.12 | 2.49 | 1.12 | 2.50 | 1.11 | |
| *Age 5* | 2.30 | 1.07 | 2.28 | 1.07 | 2.42 | 1.08 | |
| *Age 9* | 2.12 | 1.08 | 2.11 | 1.08 | 2.19 | 1.11 | |
| **Total Formal Support ($, past year)** | | | | | | | |
| *Age 3* | 507.69 | 1425.51 | 486.13 | 1405.93 | 626.70 | 1526.94 | |
| *Age 5* | 734.91 | 1639.69 | 713.84 | 1622.55 | 850.84 | 1730.14 | |
| **Total Informal Support ($, past year)** | | | | | | | |
| *Age 3* | 568.18 | 2012.81 | 590.05 | 2126.62 | 448.65 | 1211.69 | |
| *Age 5* | 418.37 | 1351.08 | 426.10 | 1398.83 | 376.87 | 1060.22 | |
| **In Kind Support** | | | | | | | |
| *Age 3* | 44.7% | | 44.7% | | 45.1% | | |
| *Age 5* | 39.1% | | 39.0% | | 39.8% | | |
| **Household Characteristics** | | | | | | | |
| Parents' Relationship | | | | | | | |
| *Married* | 5.8% | | 6.0% | | 4.8% | | |
| *Cohabiting* | 29.0% | | 28.5% | | 31.3% | | |
| *Friends or Visiting* | 52.2% | | 51.7% | | 54.8% | | |
| *Parents not Involved* | 13.0% | | 13.8% | | 9.1% | | |
| Income:Needs Ratio | 1.55 | 1.54 | 1.57 | 1.54 | 1.45 | 1.58 | |
| Medicaid birth | 74.20% | | 74.00% | | 75.70% | | |
| Number of Kids in Household | 2.46 | 1.42 | 2.47 | 1.45 | 2.46 | 1.29 | |
| Number of Adults in Household | 1.77 | 0.90 | 1.79 | 0.91 | 1.65 | 0.85 | * |
| **Father's Characteristics** | | | | | | | |
| Education | | | | | | | |
| *Less than HS* | 33.1% | | 33.0% | | 33.5% | | |
| *HS or GED* | 41.7% | | 41.3% | | 43.9% | | |
| *At Least Some College* | 20.1% | | 20.5% | | 17.8% | | |
| *Missing* | 5.1% | | 5.1% | | 4.8% | | |
| Race | | | | | | | |
| *White - Non-hispanic* | 9.8% | | 10.1% | | 7.8% | | |
| *Black - Non-hispanic* | 65.6% | | 64.5% | | 71.7% | | |
| *Hispanic* | 21.3% | | 22.1% | | 17.0% | | |
| *Other* | 3.3% | | 3.3% | | 3.5% | | |
| Worked last week | | | | | | | |
| *No* | 22.8% | | 22.2% | | 26.1% | | |
| *Yes* | 63.7% | | 64.0% | | 62.2% | | |
| *Missing* | 13.4% | | 13.8% | | 11.7% | | |
| Number of Survey Waves Resident | | | | | | | |
| *0* | 72.8% | | 72.9% | | 72.2% | | |
| *1* | 24.9% | | 24.7% | | 26.1% | | |
| *2* | 0.9% | | 0.9% | | 0.9% | | |
| *Missing* | 1.5% | | 1.6% | | 0.9% | | |
| Commitment at baseline | 0.78 | 0.30 | 0.78 | 0.31 | 0.79 | 0.30 | |
| Drug/Alcohol Problem | | | | | | | |
| *No* | 88.9% | | 89.2% | | 87.4% | | |
| *Yes* | 7.8% | | 7.6% | | 9.1% | | |
| *Missing* | 3.3% | | 3.2% | | 3.5% | | |
| **Mother's Characteristics** | | | | | | | |
| Education | | | | | | | |
| *Less than HS* | 37.5% | | 37.3% | | 38.3% | | |
| *HS or GED* | 34.8% | | 34.2% | | 37.8% | | |
| *At Least Some College* | 27.8% | | 28.5% | | 23.9% | | |
| Mother Race Different from Father | 15.9% | | 16.0% | | 15.2% | | |
| Age difference from father (years) | 2.67 | 4.98 | 2.62 | 4.99 | 2.97 | 4.91 | |
| Born in the US | 92.9% | | 92.4% | | 95.7% | | + |
| Lived with both bio parents at age 15 | 31.6% | | 33.0% | | 24.3% | | * |
| Worked last week | | | | | | | |
| *No* | 14.2% | | 13.8% | | 16.1% | | |
| *Yes* | 75.8% | | 75.6% | | 77.0% | | |
| *Missing* | 10.0% | | 10.6% | | 7.0% | | |
| Drug/Alcohol Problem | 3.3% | | 3.2% | | 3.5% | | |
| **Child's Characteristics** | | | | | | | |
| Age in months | | | | | | | |
| *Year 5* | 61.82 | 2.74 | 61.88 | 2.81 | 61.50 | 2.29 | |
| *Year 9* | 112.45 | 4.46 | 112.47 | 4.38 | 112.34 | 4.84 | |
| *Year 15* | 186.06 | 6.99 | 186.24 | 7.19 | 185.16 | 5.74 | + |
| Birth weight | | | | | | | |
| *Normal* | 86.2% | | 85.9% | | 87.8% | | |
| *Low (<1500 g)* | 10.9% | | 11.4% | | 8.3% | | |
| *Missing* | 2.9% | | 2.7% | | 3.9% | | |
| Male | 53.4% | | 53.9% | | 50.4% | | |
| Mother's first born | 41.6% | | 42.6% | | 36.1% | | + |

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

**Table 2:** Association of Head Start Participation with Father Involvement & Material Support at age 5, OLS Regression

| | Standardized Index of Father Engagement | | | Cooperative Parenting | | | Total Formal Child Support ($) | | | Total Informal Child Support ($) | | | Any Inkind Support | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M1 | M2 | M3 | M1 | M2 | M3 | M1 | M2 | M3 | M1 | M2 | M3 | M1 | M2 | M3 |
| **Head Start in year before Kindergarten** | 0.204** | 0.190** | 0.166** | 0.145 | 0.129 | 0.155* | 126.236 | 169.663 | 50.709 | -46.169 | -64.450 | -49.393 | 0.007 | 0.001 | 0.006 |
| | (2.846) | (2.714) | (2.684) | (1.887) | (1.736) | (2.430) | (1.066) | (1.428) | (0.481) | (-0.451) | (-0.637) | (-0.514) | (0.189) | (0.026) | (0.198) |
| **Lagged DV** | | | 0.480*** | | | 0.507*** | | | 0.534*** | | | 0.208*** | | | 0.379*** |
| | | | (20.251) | | | (22.302) | | | (19.345) | | | (11.649) | | | (15.281) |
| **Household Characteristics** | | | | | | | | | | | | | | | |
| Parent's relationship (ref: married) | | | | | | | | | | | | | | | |
| *Cohabitating* | | 0.091 | 0.056 | | 0.106 | 0.132 | | 22.446 | 301.358 | | -975.402*** | -1,059.556*** | | -0.015 | -0.013 |
| | | (0.764) | (0.536) | | (0.851) | (1.230) | | (0.110) | (1.664) | | (-5.585) | (-6.379) | | (-0.254) | (-0.239) |
| *Friendly/visiting* | | 0.174 | 0.138 | | 0.115 | 0.116 | | -24.099 | 234.102 | | -1,049.458*** | -1,161.530*** | | 0.013 | 0.016 |
| | | (1.476) | (1.326) | | (0.919) | (1.081) | | (-0.118) | (1.295) | | (-5.991) | (-6.967) | | (0.219) | (0.286) |
| *No relationship* | | -0.005 | 0.000 | | -0.171 | -0.028 | | -88.079 | 86.844 | | -1,089.067*** | -1,167.859*** | | -0.114 | -0.056 |
| | | (-0.035) | (0.000) | | (-1.094) | (-0.205) | | (-0.351) | (0.390) | | (-4.921) | (-5.552) | | (-1.530) | (-0.817) |
| Income:Needs Ratio | | 0.005 | -0.002 | | 0.021 | -0.005 | | -61.145 | -59.419* | | 130.763*** | 102.471*** | | 0.010 | 0.007 |
| | | (0.279) | (-0.111) | | (1.016) | (-0.279) | | (-1.849) | (-2.027) | | (4.686) | (3.849) | | (1.044) | (0.795) |
| Medicaid at Baseline | | 0.082 | 0.033 | | 0.103 | 0.014 | | -414.506*** | -260.318** | | 147.668 | 102.039 | | 0.045 | 0.013 |
| | | (1.301) | (0.590) | | (1.542) | (0.240) | | (-3.909) | (-2.760) | | (1.626) | (1.181) | | (1.421) | (0.428) |
| Number of kids in household (at time of outcome) | | -0.029 | -0.023 | | -0.013 | -0.010 | | -12.735 | -22.750 | | 30.511 | 45.644 | | -0.005 | 0.001 |
| | | (-1.404) | (-1.271) | | (-0.610) | (-0.556) | | (-0.361) | (-0.728) | | (0.989) | (1.555) | | (-0.451) | (0.116) |
| Number of adults in household (at time of outcome) | | -0.041 | 0.002 | | -0.029 | -0.011 | | -49.266 | -30.403 | | -95.093* | -109.700** | | -0.012 | -0.006 |
| | | (-1.395) | (0.080) | | (-0.940) | (-0.404) | | (-1.003) | (-0.698) | | (-2.246) | (-2.725) | | (-0.801) | (-0.430) |
| **Mother's Characteristics** | | | | | | | | | | | | | | | |
| Education (ref: less than high school) | | | | | | | | | | | | | | | |
| *High School* | | -0.087 | -0.071 | | -0.093 | -0.052 | | 9.254 | 25.978 | | 73.830 | 43.184 | | -0.051 | -0.032 |
| | | (-1.415) | (-1.307) | | (-1.433) | (-0.928) | | (0.090) | (0.285) | | (0.823) | (0.506) | | (-1.657) | (-1.108) |
| *More than high school* | | -0.109 | -0.098 | | 0.002 | 0.013 | | 166.112 | 100.013 | | -48.037 | -101.791 | | -0.015 | 0.007 |
| | | (-1.465) | (-1.497) | | (0.029) | (0.199) | | (1.332) | (0.905) | | (-0.437) | (-0.974) | | (-0.390) | (0.206) |
| Race is Different from Father's | | -0.008 | 0.044 | | -0.146 | -0.065 | | -90.314 | -47.232 | | 44.186 | 60.779 | | -0.043 | -0.016 |
| | | (-0.104) | (0.665) | | (-1.836) | (-0.945) | | (-0.705) | (-0.416) | | (0.403) | (0.584) | | (-1.145) | (-0.442) |
| Difference from father's age | | -0.018** | -0.017** | | -0.012 | -0.016* | | -11.681 | 3.596 | | -3.404 | -10.478 | | -0.007 | -0.006 |
| | | (-2.602) | (-2.726) | | (-1.629) | (-2.469) | | (-0.981) | (0.340) | | (-0.322) | (-1.042) | | (-1.947) | (-1.746) |
| Born in the US | | 0.135 | 0.041 | | 0.108 | -0.001 | | 446.473* | 319.158 | | -28.187 | 44.210 | | 0.021 | -0.018 |
| | | (1.228) | (0.426) | | (0.928) | (-0.007) | | (2.379) | (1.917) | | (-0.172) | (0.283) | | (0.377) | (-0.346) |
| Lived with both parents at 15 | | 0.062 | 0.063 | | 0.006 | 0.048 | | 15.647 | 30.538 | | -40.607 | -32.493 | | 0.044 | 0.049 |
| | | (1.081) | (1.238) | | (0.091) | (0.908) | | (0.162) | (0.356) | | (-0.486) | (-0.409) | | (1.531) | (1.813) |
| Employed (at year 1) | | | | | | | | | | | | | | | |
| *Employed* | | -0.002 | 0.003 | | 0.095 | 0.082 | | 258.560* | 201.066 | | -128.242 | -121.230 | | 0.010 | -0.005 |
| | | (-0.024) | (0.045) | | (1.206) | (1.217) | | (2.052) | (1.800) | | (-1.198) | (-1.192) | | (0.260) | (-0.138) |
| *Missing* | | 0.070 | 0.040 | | 0.043 | 0.079 | | -55.782 | 4.183 | | -189.410 | -220.093 | | -0.022 | -0.049 |
| | | (0.649) | (0.416) | | (0.370) | (0.793) | | (-0.306) | (0.026) | | (-1.163) | (-1.423) | | (-0.398) | (-0.977) |
| Drug/alcohol problem | | -0.115 | -0.052 | | -0.100 | -0.110 | | -182.489 | -295.289 | | -162.766 | -160.629 | | -0.093 | -0.068 |
| | | (-0.790) | (-0.403) | | (-0.654) | (-0.834) | | (-0.741) | (-1.353) | | (-0.764) | (-0.794) | | (-1.275) | (-1.004) |
| **Father's Characteristics** | | | | | | | | | | | | | | | |
| Age | | 0.014* | 0.014** | | 0.010 | 0.014** | | 18.747* | 7.641 | | 9.029 | 12.162 | | 0.006* | 0.005 |
| | | (2.461) | (2.907) | | (1.797) | (2.727) | | (2.032) | (0.932) | | (1.114) | (1.578) | | (2.105) | (1.950) |
| Education (ref: less than high school) | | | | | | | | | | | | | | | |
| *High School* | | 0.055 | 0.016 | | 0.094 | 0.056 | | 206.077* | 132.303 | | 74.796 | 77.942 | | -0.007 | -0.016 |
| | | (0.913) | (0.309) | | (1.464) | (1.012) | | (2.025) | (1.465) | | (0.851) | (0.934) | | (-0.217) | (-0.575) |
| *More than high school* | | 0.161* | 0.088 | | 0.229** | 0.171* | | 506.530*** | 355.966** | | 170.587 | 116.601 | | 0.085* | 0.054 |
| | | (1.984) | (1.235) | | (2.681) | (2.323) | | (3.708) | (2.934) | | (1.430) | (1.028) | | (2.079) | (1.425) |
| *Missing* | | -0.015 | 0.013 | | -0.145 | -0.104 | | 5.462 | 129.743 | | -129.745 | -142.182 | | 0.004 | -0.017 |
| | | (-0.116) | (0.117) | | (-1.058) | (-0.884) | | (0.025) | (0.672) | | (-0.716) | (-0.826) | | (0.057) | (-0.276) |
| Race (ref: white) | | | | | | | | | | | | | | | |
| *Black, Non Hispanic* | | -0.123 | -0.131 | | 0.108 | -0.031 | | -395.196* | -82.753 | | 7.576 | 23.551 | | 0.003 | 0.010 |
| | | (-1.294) | (-1.572) | | (1.081) | (-0.355) | | (-2.506) | (-0.588) | | (0.056) | (0.183) | | (0.054) | (0.220) |
| *Hispanic* | | -0.206 | -0.164 | | -0.188 | -0.202* | | 19.569 | 135.497 | | -54.866 | -12.166 | | -0.134* | -0.117* |
| | | (-1.881) | (-1.696) | | (-1.612) | (-2.019) | | (0.107) | (0.832) | | (-0.349) | (-0.082) | | (-2.379) | (-2.254) |
| *Other* | | -0.211 | -0.231 | | 0.243 | 0.049 | | 87.759 | 81.380 | | 215.034 | 164.918 | | 0.001 | -0.068 |
| | | (-1.260) | (-1.561) | | (1.364) | (0.320) | | (0.310) | (0.324) | | (0.876) | (0.707) | | (0.006) | (-0.846) |
| Employed | | | | | | | | | | | | | | | |
| *Employed* | | 0.024 | 0.010 | | -0.001 | 0.035 | | 231.355* | 161.065 | | 18.936 | 12.288 | | 0.013 | 0.013 |
| | | (0.368) | (0.167) | | (-0.011) | (0.587) | | (2.140) | (1.679) | | (0.201) | (0.137) | | (0.391) | (0.430) |
| *Missing* | | -0.020 | -0.086 | | 0.021 | 0.066 | | -155.777 | -75.312 | | 66.401 | 63.335 | | 0.003 | -0.024 |
| | | (-0.213) | (-1.030) | | (0.207) | (0.769) | | (-0.976) | (-0.532) | | (0.491) | (0.493) | | (0.063) | (-0.555) |
| Number of Waves Resident | | | | | | | | | | | | | | | |
| *1* | | 0.364*** | 0.197*** | | 0.148* | -0.047 | | -228.315* | -15.288 | | 140.644 | 107.515 | | 0.095** | 0.044 |
| | | (5.793) | (3.524) | | (2.223) | (-0.819) | | (-2.145) | (-0.161) | | (1.519) | (1.221) | | (2.999) | (1.482) |
| *2* | | 1.779*** | 1.212*** | | 0.920** | 0.371 | | -272.313 | 41.212 | | 877.784* | 676.766 | | 0.369** | 0.201 |
| | | (6.638) | (5.095) | | (3.251) | (1.514) | | (-0.593) | (0.101) | | (2.288) | (1.855) | | (2.670) | (1.568) |
| *Missing* | | -0.105 | -0.039 | | -0.154 | 0.163 | | 124.608 | 58.017 | | 217.037 | 219.424 | | 0.039 | 0.093 |
| | | (-0.457) | (-0.195) | | (-0.648) | (0.791) | | (0.335) | (0.176) | | (0.664) | (0.707) | | (0.342) | (0.890) |
| Commitment to child at baseline | | 0.479*** | 0.131 | | 0.617*** | 0.216* | | 133.682 | 33.458 | | 292.185 | 211.183 | | 0.238*** | 0.137* |
| | | (4.045) | (1.241) | | (4.892) | (1.962) | | (0.671) | (0.189) | | (1.668) | (1.267) | | (3.972) | (2.457) |
| Drug/alcohol problem (ref: no) | | | | | | | | | | | | | | | |
| *Yes* | | -0.049 | -0.023 | | -0.129 | -0.028 | | -20.952 | 71.330 | | 194.150 | 207.712 | | -0.018 | -0.006 |
| | | (-0.480) | (-0.258) | | (-1.210) | (-0.309) | | (-0.123) | (0.472) | | (1.337) | (1.506) | | (-0.362) | (-0.131) |
| *Missing* | | -0.091 | -0.028 | | -0.417** | -0.292* | | -66.610 | -47.775 | | -45.310 | -2.260 | | -0.109 | -0.066 |
| | | (-0.616) | (-0.211) | | (-2.634) | (-2.144) | | (-0.266) | (-0.215) | | (-0.212) | (-0.011) | | (-1.450) | (-0.958) |
| **Child's Characteristics** | | | | | | | | | | | | | | | |
| Age in months (at time of outcome) | | 0.009 | 0.005 | | 0.012 | 0.010 | | -8.435 | 2.750 | | 16.000 | 8.621 | | 0.003 | 0.001 |
| | | (0.815) | (0.496) | | (1.022) | (1.035) | | (-0.461) | (0.169) | | (1.002) | (0.568) | | (0.555) | (0.151) |
| Birthweight (ref: healthy) | | | | | | | | | | | | | | | |
| *Low* | | -0.120 | -0.057 | | -0.187* | -0.133 | | -16.135 | 99.941 | | -279.526* | -298.859** | | -0.049 | -0.024 |
| | | (-1.478) | (-0.804) | | (-2.176) | (-1.802) | | (-0.118) | (0.826) | | (-2.402) | (-2.703) | | (-1.201) | (-0.626) |
| *Missing* | | -0.045 | 0.090 | | -0.171 | -0.038 | | -127.375 | -25.674 | | 25.804 | 30.038 | | -0.030 | 0.022 |
| | | (-0.298) | (0.676) | | (-1.072) | (-0.276) | | (-0.493) | (-0.112) | | (0.118) | (0.145) | | (-0.386) | (0.312) |
| Male | | 0.019 | -0.011 | | -0.046 | -0.055 | | 1.066 | -12.852 | | -100.632 | -87.814 | | -0.009 | -0.015 |
| | | (0.386) | (-0.242) | | (-0.858) | (-1.196) | | (0.013) | (-0.172) | | (-1.369) | (-1.257) | | (-0.339) | (-0.641) |
| Mother's first born | | -0.031 | -0.002 | | 0.027 | 0.092 | | 228.334* | 198.545* | | 15.713 | 58.244 | | -0.002 | 0.008 |
| | | (-0.476) | (-0.042) | | (0.385) | (1.537) | | (2.075) | (2.035) | | (0.164) | (0.637) | | (-0.055) | (0.259) |
| **Constant** | -0.032 | -1.524 | -0.855 | 2.276*** | 0.297 | -0.467 | 690.586*** | 496.571 | -488.144 | 420.787*** | -534.186 | -48.620 | 0.387*** | -0.207 | -0.094 |
| | (-1.119) | (-1.946) | (-1.237) | (75.050) | (0.355) | (-0.647) | (14.904) | (0.377) | (-0.417) | (10.323) | (-0.455) | (-0.044) | (27.567) | (-0.524) | (-0.257) |
| **Observations** | 1,483 | 1,483 | 1,483 | 1,471 | 1,471 | 1,471 | 1,424 | 1,424 | 1,424 | 1,308 | 1,308 | 1,308 | 1,428 | 1,428 | 1,428 |
| **R-squared** | 0.005 | 0.142 | 0.334 | 0.002 | 0.164 | 0.382 | 0.001 | 0.100 | 0.293 | 0.000 | 0.124 | 0.210 | 0.000 | 0.118 | 0.247 |

t-statistics in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Not shown: mother's baseline city of residence included as a control in Models 2 & 3