**Final Report**
**To**
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# An Early, Intensive Parenting Intervention to Prevent Child Neglect: Five Year Mother-Child Outcomes

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## Introduction

Over 2 million cases of child maltreatment are reported each year in the United States. Of these cases, child neglect is the largest single maltreatment category and often co-occurs in homes where child abuse is taking place. Children of mothers who are ill-prepared to parent—including teenagers and adults with low levels of education—are not only at elevated risk for child maltreatment, but also for a variety of problems in their cognitive, academic, and socio-emotional development (Black, et al., 2009; Kotch, et al., 2008). The societal and personal costs of child maltreatment are enormous, including increased expenses related to medical care, special education and grade repetition, criminal behavior, entrenched unemployment, reliance on public assistance, substance abuse, and involvement of child protective services (Borkowski, Bisconte, Willard, Weed, & Whitman, 2002; Ramey & Ramey, 2000; Ramey & Keltner, 2002). As such, research on programs designed to reduce abuse and neglect have important public policy implications for investing in programs that could prevent maltreatment and its consequences, as opposed to spending greater amounts of money on remediation of its devastating consequences for children's life-long development. Moreover, systematic research on the prevention of maltreatment through home visitation is especially relevant to at-risk samples (Howard & Brooks-Gunn, 2009), given that home-visiting programs tend to have the greatest benefits for mothers who are at high risk for maltreating their children (e.g., low-income, first-time adolescent mothers).

The increasing and high rate of child maltreatment in the U.S.—and its potential reduction using extensive home visitations—formed the basis for our My Baby and Me (MBM) intervention, which was implemented in Phase 1 of this project with the support

of NIH. The Pew project (or Phase 2) evaluated the long-term benefits of MBM on a subsample of 5-year-old children who had been enrolled in the home visitation program and completed it at age 2½. It was expected that home visitations from pregnancy until age 2½ would significantly improve preschool readiness skills and maternal outcomes at age 5.

Although policymakers have proposed federal legislation to provide a direct funding streamline for home visitation services, the field's opinion regarding the effectiveness of home visitation on preventing or reducing child maltreatment remains divided (Astuto & Allen, 2009). Critics of home visitation have cited the lack of rigorous testing (e.g., randomized, controlled trials) and common use of proxies for intended outcomes (e.g., measuring hospital admission rates rather than actual reports of neglect or abuse) as serious barriers to placing trust in the effectiveness of home visitations (Howard & Brooks-Gunn, 2009). Moreover, many home visitation programs have failed to use standardized, replicable intervention procedures or to document treatment fidelity during individual visits, even though program fidelity and staff competence have been identified as essential components of successful home visiting programs (Borkowski, Akai, & Smith, 2006; Wasik & Bryant, 2009).

Our development and implementation of the My Baby and Me (MBM) home visiting program provided an innovative alternative by delivering a manualized, rigorous, randomized clinical trial designed to assess the role of home visitations in improving parenting and decreasing the risk for child maltreatment, especially neglect, and enhancing children's well-being. The MBM intervention was unique in that it was theory-driven, comprehensive, utilized varied teaching methods, focused on participant

engagement, and assessed dosage levels. Moreover, it recruited and maintained a high number of teen and low-educated adult mothers. These at-risk mothers are difficult to keep involved in intervention projects, but if they stay involved they are likely to improve their parenting skills and enhance their children's development (Early Head Start Research and Evaluation Project, 2006).

**Literature Review**

Over the past decade, several demonstration programs have been adopted by community-based agencies and welfare organizations. Goals for these broad-based programs include preventing second pregnancies, improving teen parents' educational attainment, and enhancing self-sufficiency (Cave, Bos, Doolittle, & Toussaint, 1993; Maynard, Nicholson, & Ragarajan, 1993; Polit, Quint, & Riccio, 1988). For instance, the New Chance model was developed and evaluated by the Manpower Demonstration Research Corporation in 16 sites (Quint, Bos, & Polit, 1997). Although the intervention varied across sites, each site implemented a comprehensive program that addressed mothers' multiple needs, including instruction in basic academic skills and GED training, career exposure and employability classes, occupational skills training, work experience, job placement assistance, health and family planning classes and services, parenting workshops, and life-skills classes such as communication and decision-making. At each site, teenage mothers were randomly assigned to the comprehensive New Chance intervention or to a comparison group in which they accessed existing community-based programs. Although positive maternal outcomes were reported after 3½ years in the program (e.g., the teen mothers had a greater likelihood of receiving a GED and earning college credits), children in the intervention showed no improved

outcomes relative to untreated controls. Among the reasons offered for the lack of positive outcomes were a high degree of absenteeism, “dropping out” from the intervention group, lack of intervention focus, and perhaps a high but undocumented level of use of community services by mothers in the control group—all factors that we sought to remedy in the My Baby and Me project.

One of the most widely cited programs in the area of high-risk parenting and child maltreatment prevention has been conducted by David Olds and his associates (e.g., Olds, Henderson, Chamberlin, & Tatelbaum, 1986). Although their highly-focused intervention, the Nurse-Family Partnership, has focused on various groups of parents (including middle class families with no identified risks), Olds and Henderson (1989) reported significant declines in child abuse for a subsample of teen parents who received home visitations (Olds, Henderson, & Kitzman, 1994; Olds, Henderson, Cole, et al., 1998). However, the effects of Olds et al.’s intervention on children’s intellectual and language development, generally in the range of 0.17 – 0.25 standard deviations, depended on the specific measure and whether the effects were estimated for the whole sample or for children born to low-resource mothers (Olds, Kitzman, Cole, et al., 2004).

Similarly, Wagner and Clayton (1999) reported on teen mothers who were included within a large-scale evaluation of the Parents-as-Teachers program (PAT), a national program in which paraprofessionals provided monthly home visits and group meetings for families when children are between 0 and 3 years of age. Modest benefits were found for the PAT condition on children’s cognitive development as well as for their social and self-help skills. Effects of this program on parenting practices have

focused primarily on parental knowledge of child development and attitudes toward parenting as opposed to changes in specific caregiving behaviors.

Some of the more powerful interventions for changing behavioral trajectories of parents at risk for maltreatment have been those that have focused on changing specific parenting practices rather than parenting knowledge and beliefs (Egeland, Carlson, & Sroufe, 1993). Van den Boom (1994, 1995) instituted a short-term, behaviorally focused skill-based training program to enhance sensitivity of low-income mothers to the signals of their irritable infants. In an evaluation of the home-visitation program, family coaches taught parents of children between 6 and 9 months of age how to respond to positive and negative cues during everyday interactions. Three years after the intervention ended, mothers in the intervention condition, compared to mothers in a control group, remained more responsive to their children, and their children were more cooperative.

Other highly promising approaches to reducing abuse and neglect have employed a combination of social support and training in specific parenting strategies. These models recognize the multiple risks that increase families' likelihood of abuse and neglect (e.g., lack of resources, stress, marital discord) and address those broader issues in the course of their intervention. Examples of such models are Project 12-Ways (Lutzker, 1994) and Project Safe Care (Gershater-Molko, Lutzker, & Wesch, in press). These projects have focused on providing training in areas such as stress reduction, money management, home safety, and job training in addition to enhancing the quality of parent-child interactions. Although these interventions have demonstrated changes in parenting behaviors and reductions in recidivistic child maltreatment, they have

generally relied on single-subject designs and have not yet been evaluated in large-scale, randomized prevention trials.

A recent review of existing home-visiting interventions has suggested that most intervention programs have not been successful in directly preventing child maltreatment (Howard & Brooks-Gun, 2009). Perhaps the single exception is the Nurse-Family Partnership, which has shown significant impact on reducing maltreatment up to15 years post-intervention (Olds, Eckenrode, et al., 1997). However, the control group used in this project was “weak” rather than “strong,” especially in terms of the limited contact between staff and control mothers and minimal provision of instrumental supports.

What stands out about most home-based parent intervention models, however, is that the effects of children’s health and development have been concentrated among families at greatest risk due to poverty and limited maternal psychological resources (e.g., Olds, Robinson, Pettitt, et al., 2004). These findings are consistent with evidence suggesting that enriched environmental factors play a larger role in predicting children’s cognitive development in families from impoverished environments as compared to families from more advantaged environments (Ramey & Ramey, 2000).

Based on a broad range of studies evaluating the effectiveness of parenting interventions with at-risk mothers, the following conclusions seem plausible: First, group interventions (e.g., parenting classes or support groups) are more effective at producing gains on indirect measures of parenting such as helping parents develop more positive attitudes or developmentally-appropriate expectancies, and less effective at changing parenting behaviors. Second, home-visiting programs have yielded mixed results:

Those that focus on imparting child development information sometimes produce short-term gains in parenting-related knowledge, whereas those that incorporate a more interactive approach to teaching (e.g., allowing parents to engage in specific activities with their own or other children with video-taped feedback and modeling) are more likely to result in long-term improvements in observed parenting and reductions in reports of child maltreatment. Thus, a highly interactive, skills-oriented, constructivist approach was utilized in the My Baby and Me home visitation intervention project.

**Focus, Breadth, and Innovation in the My Baby and Me Intervention**

Too often, outreach and intervention programs have addressed child maltreatment only when it is at an extremely advanced point and when harm has already been inflicted upon the child and/or mother. In such situations, children suffer and mothers often slip back into the cycle of maltreatment. There have been a number of only moderately successful efforts to enhance the developmental outcomes of children with adolescent mothers and other at-risk parents through early intervention. The lessons learned from these efforts formed the basis for the comprehensive, highly-focused My Baby and Me model of early intervention which included a combination of elements to teach parents specific skills, alter trajectories of maternal and child development, and set the stage for the child's successful entry into the formal school environment.

Participants in the My Baby and Me program were recruited during the last trimester of pregnancy (N = 361) and randomly assigned to either a low-intensity or high-intensity intervention condition; both groups received the same assessment battery throughout the course of the study. Participants in the low-intensity group received a set

of “enabling conditions,” which included services such as referrals to community agencies based on individual needs and assistance in obtaining high-quality child care**;** thus, the low-intensity control group was ethically-sensitive in that participants received frequent contact as well as instrumental supports from the staff.

Participants in the high-intensity group received the same enabling conditions as well as an intensive home-based intervention which consisted of nine overlapping modules with 55 sessions: *fostering healthy mother and child development* (11 sessions), *personal problem solving and decision making* (5 sessions), *establishing early routines* (2 sessions), *encouraging early positive parenting practices, including the importance of infant touch and massage* (2 sessions), *teaching specific parent-child interaction strategies* (PALS I; 10 sessions), *teaching game playing activities* (5 sessions), *information about developmental milestones during infancy and toddlerhood* (4 sessions), *nurturing positive parent-child interactions and behavioral management principles* (PALS II; 12 sessions), and *promoting positive behavior, educational readiness, and community connections* (4 sessions).

Our intervention program included a number of unique elements, combined with other components that independently have produced at least short-term benefits for various aspects of parenting. For example, we combined a knowledge-based parenting module, “My Baby U” (Brown, Yando, & Rainforth, 2000) with a responsive parenting curriculum (PALS; Landry, 2002). Innovative aspects of our intervention package included (1) a focus on building positive parenting skills prior to the emergence of major problems; (2) inclusion of specialized services for mothers who were intellectually low-functioning, substance abusers, depressed, or had been exposed to acts of violence;

(3) ongoing, explicit use of a clear positive model of parenting that is practical, evidence-based, and culturally-sensitive, with specific parenting strategies and behaviors that were taught at levels that were developmentally appropriate for each mother who participated in the project; (4) linking the intensity of the intervention at any given time with the behavioral needs of the mother; (5) providing an intensive intervention delivered by well-trained professionals, with careful monitoring and measurement of treatment fidelity; (6) the systematic involvement of a friend or relative in the program in an effort to ensure appropriate support and mentoring from an individual who already had a meaningful relationship with the mother; and (7) attending to other related problems such as health status, safety in the home, and optimal spacing of additional pregnancies, as part of the treatment package (Guttentag et al., under review).

The My Baby and Me intervention was comprised of several components that differentiated it from other home visiting models; we identified three aspects of this program that were likely to promote children's school readiness in ways that were untapped by existing programs. First, The My Baby and Me project contained multiple modules that focused on important behaviors that had not been systematically addressed in previous home visitation studies, such as personal responsibility, decision making, and health and safety issues. Even when these topics were addressed in previous studies, they had not necessarily been delivered with a manualized curriculum that was followed rigorously by the "family coaches" (i.e., home visitors). Second, our use of videotaped mother-child interaction instruction procedures provided guidance on the shaping of positive maternal behaviors that are, in fact, the antithesis of child

maltreatment. Third, the implementation of the curriculum included frequent fidelity checks, thereby providing a high level of standardization as well as statistical control that allowed for tests of engagement and the actual dosage received within each module (Guttentag et al., under review).

Short-term results from the intervention were most evident on observed measures of parenting. Mothers in the high-intensity condition showed significant improvements over time when compared to mothers in the low-intensity condition in warmth, verbal scaffolding, contingent responsiveness, reduced negativity and physical intrusiveness; the effect sizes were moderately large, ranging from .20 to .66 (Guttentag et al., under review). Interestingly, positive changes in parenting were related to gains in children's engagement with the environment as well as social engagement. Most importantly, children in the My Baby and Me project whose mothers participated in the high-intensity intervention showed small but significant gains in social engagement, expressive language, engagement with the environment, and complexity of toy play at 30 months of age. However, no effects were found on standardized measures such as the PLS (language skills) or Bayley (intelligence).

The short-term effects of the intervention on children's cognitive and socioemotional development as well as strong relationships between maternal changes in positive parenting practices and child outcomes led us to believe that children's development may be even more pronounced at age 5, upon their entry into kindergarten, given that differences in children's functioning are more likely to be manifested during major developmental transitions (e.g., the start of school) than in periods of relative stability (Caspi, 1998). Although the My Baby and Me program was a

comprehensive and intense intervention, it was delivered only through the first 2½ years of life. The demonstration of long-term effects of this program on children's school readiness at age 5**,** and the potential maintenance of improved parenting skills, has important implications for the development and refinement of home visitation programs (Astuto & Allen, 2009).

**The Pew Project: "An Early, Intensive Parenting Intervention to Prevent Child Neglect: Five Year Mother-Child Outcomes"**

With funding from the Pew Center on the States, we conducted a study to determine the effectiveness of the My Baby and Me Project--an early, intensive parenting intervention—originally designed to prevent child abuse and neglect. In the Pew project, we developed a comparative effectiveness trial with at-risk children to examine a wide range of maternal and child outcomes at age 5 to address the following three major research questions:

**(1)** Does an intensive, comprehensive, early parenting intervention—beginning during pregnancy and lasting 2½ years—significantly improve children's language, cognition, and socioemotional development? More specifically, does maternal participation in the high- vs. low-intensity (or control) conditions of the My Baby and Me intervention program improve preschool readiness?

**(2)** Do acquired parenting skills developed from birth to age 2½ for mothers in the high- and low-intensity conditions relate to their children's preparedness for entrance into the formal school environment at age 5?

**(3)** Do high-risk mothers who participated in the high- and low-intensity conditions differ in the frequency of CPS-reported child neglect as well as the

variety of family outcomes (e.g., fertility, educational attainment, partner stability and workforce participation)?

We chose these three broad research questions because a number of intervention studies have suggested "sleeper effects"—that is, effects which are not present immediately after the intervention but emerge later provided that the newly-acquired skills are maintained and utilized (Gray & McCormick, 2005). For example, a longitudinal study of Swedish children found that the quality of childcare during infancy and early childhood was predictive of children's math ability at age 8; this effect was not evident in prior analyses conducted when children were 40 months of age (Broberg, Wessel, Lamb, & Hwang, 1997). Moreover, a study aimed at improving social skills and decreasing aggression demonstrated evidence of sleeper effects that were observed two years after the end of the intervention (Peters, 1999).

Along these same lines, researchers have suggested that home visiting programs may result in sleeper effects, but the specific nature of these effects have not yet been clearly established (Early Head Start Research and Evaluation Project, 2006; Gomby, 2005). However, long-term effects appear to be more evident in home-visitation programs as compared to center-based programs. For example, previous research has suggested that the effects of center-based programs on preschoolers' IQ and language gradually decrease over time, whereas the effects of home-based programs start out at a modest level and increase over time (Olds, Kitzman et al., 2004). It is likely that sleeper effects following an early intervention will not be seen without at least some early, precursor "signals" that would suggest that significant outcomes might emerge later in life (Gomby, 2005).

## Participants

We selected 92 participants from the original My Baby and Me project, which was implemented in South Bend, Indiana, Kansas City, Kansas, and Houston, Texas. The selection process was based on 2 criteria: (1) Children must have had reached age 5 (plus or minus 3 months) and (2) available for a home visit (i.e., still living in the same geographic area and reachable by phone contact). Of the 92 participants, 52% had been originally enrolled in the low-intensity condition and 48% in the high-intensity condition. Fifty-four percent of participants were teens and 46% were adults (over the age of 18). Race and ethnicity characteristics of the subsample included 48% African-American, 35% Latina, and 17% European-American. Most participants had very low annual incomes (52% unemployed at 5 years) and less than a high school education or its equivalent (51%). It should be noted that all of the key demographic characteristics of the subsample were identical to, and not significantly different from, the larger sample of participants who had completed the assessments at 2½ years of age. Neither race, ethnicity, education/income, nor age related to 5 year outcomes; hence, these variables were not included in subsequent analyses.

## Methods and Procedures

We assessed both mothers and children in the Pew-phase of the overall project. First, we developed a maternal self-report interview to obtain demographic and personal information (use of physical punishment and reports regarding CPS involvement). The questions were similar to those collected during the earlier phase of the MBM intervention, with a focus on information related to subsequent unplanned pregnancies, educational attainment, occupational employment, and involvement with child protection

agencies (see Table 2 for a list of the specific maternal variables).

We assessed each mother-child dyad when the children were 5 years of age, 2.5 years after the intervention had ended. The Stanford-Binet-5 was used to assess children's IQ**;** the Preschool Language Scale (PLS-4) to assess receptive and expressive vocabulary; and the Test of Preschool Early Literacy (TOPEL) to assess early literacy in terms of phonemic awareness, parent knowledge, and definitional vocabulary. Finally, we obtained maternal reports about children's behavioral adjustment, using questions from the Behavior Assessment System for Children (BASC). The focus here was on internalization (depression), externalization (aggression), and positive adaptive behaviors (e.g., socialization).

## Results: 5 Year Mother-Child Outcomes

In this section, we provide results for three research questions: (1) Was preschool readiness impacted by the MBM intervention? (2) Were 5 year child outcomes related to earlier improvements in parenting skills?; and (3) Did the MBM intervention have a lasting impact on maternal outcomes, such as unplanned pregnancies, educational attainment, current employment and child neglect?

### Preschool Readiness

***Descriptive statistics.*** Means and standard deviations for the Stanford-Binet-5; PLS-4 Auditory Comprehension, Expressive Communication, and Total Language Standard Scores; TOPEL Print Knowledge, Definitional Vocabulary, and Phonological Awareness Standard Scores; and BASC Externalizing, Internalizing, and Adaptive Skills Composite T-scores are presented in Table 1. Descriptive statistics are presented for children whose mothers received the low-intensity (control) intervention, those whose

mothers received the high-intensity intervention, and for the combined sample. On average, children in both conditions showed larger than expected scores on the measures of IQ, language, early literacy, and adjustment behavior; it should be noted all of the major outcomes for both groups of children were in the normal range. However, none of the between-group differences were significant, indicating that children in both intervention conditions had identical levels of IQ, language, literacy, and behavioral adjustment at the time of the 5-year assessment.

**Table 1**

**Descriptive Statistics for Children's Preschool Readiness Measures**

| **Variable** | **Descriptive Statistics** | | | | | |
|---|---|---|---|---|---|---|
| | **Low-Intensity** | | **High-Intensity** | | **Full Sample** | |
| | ***M*** | ***SD*** | ***M*** | ***SD*** | ***M*** | ***SD*** |
| SB-5 Abbreviated IQ Score | 97.13 | 18.64 | 97.07 | 19.54 | 97.10 | 18.98 |
| PLS-4 Auditory Comprehension | 95.52 | 15.40 | 91.23 | 15.04 | 93.49 | 15.30 |
| PLS-4 Expressive Communication | 96.04 | 15.05 | 98.71 | 16.93 | 97.30 | 15.92 |
| PLS-4 Total Language Standard Score | 96.40 | 15.80 | 95.54 | 15.33 | 95.99 | 15.49 |
| TOPEL Print Knowledge Standard Score | 95.23 | 15.35 | 93.48 | 16.14 | 94.39 | 15.67 |
| TOPEL Definitional Vocabulary Std. Score | 89.63 | 15.74 | 85.98 | 16.11 | 87.88 | 15.94 |
| TOPEL Phonological Awareness Std. Score | 84.75 | 19.15 | 85.23 | 19.12 | 84.98 | 19.03 |
| BASC Externalizing Composite T-score | 47.34 | 10.54 | 50.72 | 9.70 | 48.99 | 10.21 |
| BASC Internalizing Composite T-score | 48.87 | 9.51 | 51.38 | 10.94 | 50.11 | 10.25 |
| BASC Adaptive Skills Composite T-score | 52.39 | 8.93 | 49.35 | 9.54 | 50.89 | 9.30 |

***Children's outcomes in relation to early parenting practices.*** Hierarchical linear modeling (HLM 6.06; Bryk & Raudenbush, 1987, 1992; Raudenbush & Bryk, 2002) techniques were used to estimate slopes for changes in parenting practices throughout the course of the MBM intervention. Findings from the first phase of the project had indicated that parenting slopes differed between groups, and that these slopes were predictive of children's language, literacy, and behavioral development at 2½ years of age (Guttentag et al., under review). In the present study, we used these same slopes to assess whether earlier changes in parenting were predictive of children's preschool readiness at 5 years of age.

In order to estimate changes in parenting, data from the participants enrolled in the original intervention study were entered into the HLM program (for additional details on this procedure see Guttentag et al., under review). The univariate, continuous scores on the Landry Home Observation parenting variables (i.e., positive affect, warmth, contingent responsiveness, physical intrusiveness, negativity, demonstration/physical teaching, and verbalness) assessed at 4, 10, 16, 24, and 30 months postpartum were entered as the Level 1 outcome variable (i.e., each variable was entered as the outcome in a separate model); time of assessments was entered as an independent variable. Thus, each parenting variable was defined by an individual growth trajectory over time dependent upon a unique set of parameters (Bryk & Raudenbush, 1987, 1992) and defined as follows: $Parenting_{ij} = \pi_{0ij} + \pi_{1ij}(time) + \varepsilon_{ij}$

In this equation, $Parenting_{ij}$ was a function of the observed initial status of individual *i* in group *j*, a growth trajectory, and residual error. Each growth trajectory was defined by two parameters: an intercept or initial status factor ($\pi_{0ij}$) and a slope or

growth rate factor ($\pi_{1ij}$). Models were designed to assess linear growth trajectories, such that the slope term represented the linear rate of change over time (i.e., the change in each of the parenting variables for each participant at a steady rate); the errors ($\varepsilon_{ij}$) were assumed to be independent and normally distributed with a common variance. The estimated slopes were based on intercept data that was centered at 30 months, since we were interested in how changes up to the final timepoint of the intervention affected children's development at age 5. In order to account for between-group differences in slopes, a "group" term was added in to the Level-2 HLM model. Following from the Level-1 model presented above, the Level-2 model was represented by the following equations:

$$\pi_{0i} = \gamma_{00} + \gamma_{01}(group) + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{10} + \gamma_{11}(group) + \zeta_{1i}$$

HLM residual estimates from the Level-2 portion of each model were used to determine whether the estimated slopes for specific parenting skills (the predictive variables) gathered from birth to age 2½ were related to children's preschool readiness skills (the outcome variables) at the time of the 5-year assessment. Results indicated that several of the changes in parenting (slopes) were positively related to children's literacy skills and behavioral development. Specifically, gains in maternal contingent responsiveness were associated with more favorable TOPEL Definitional Vocabulary Standard Scores ($\beta$ = .27, $t$ = 2.30, $p$ = .025), TOPEL Sum of Standard Scores ($\beta$ = .25, $t$ = 2.11, $p$ = .038), and BASC Internalizing Problems Composite T-scores ($\beta$ = -.26, $t$ = -2.11, $p$ = .039). Decreases in maternal physical intrusiveness were associated with more favorable TOPEL Phonological Awareness Standard Scores ($\beta$ = .26, $t$ = 2.29, $p$ =

.025). Finally, decreases in maternal negativity were associated with more favorable BASC Adaptive Skills Composite Scores ($\beta$ = -.26, $t$ = -2.11, $p$ = .039).

These findings suggest that some of the changes that were evident in the first phase of this project, in which mothers in the high-intensity condition showed more rapid and positive changes in parenting practices than those in the low-intensity condition (cf. Guttentag et al., under review), continued to have significant impact on children's literacy skills and behavioral development 2½ years following the final session of the MBM home visititation intervention.

**Maternal Outcomes**

We used questions from the maternal Life Course Development Interview to develop a picture of maternal functioning at the follow-up assessment, 2.5 years after the completion of the initial intervention phase. Frequency statistics for self-reported fertility, education, employment, and maltreatment are presented in Table 2. Frequencies are shown for high-intensity participants, low-intensity participants, and for the sample as a whole. None of these outcomes differed significantly between mothers who had previously been enrolled in the low- vs. high-intensity intervention conditions during the first phase of the project.

**Table 2**

**Percentage of Mothers Who Have Attained Specific Developmental Outcomes**

| **Variable** | **Low-Intensity** | **High-Intensity** | **Full Sample** |
|---|---|---|---|
| **Fertility (including target child)** | | | |
| 1 child | 14.58% | 20.45% | 17.39% |

| | | | |
|---|---|---|---|
| 2 children | 45.83% | 36.36% | 41.30% |
| 3 or more children | 39.59% | 43.19% | 41.31% |
| **Education** | | | |
| Obtained HS Diploma or GED | 52.08% | 45.45% | 48.91% |
| In 12th grade or GED program | 6.25% | 4.55% | 5.43% |
| Attending/completed post-HS program | 29.17% | 25.00% | 27.17% |
| **Employed** | 51.06% | 45.45% | 48.35% |
| **Maltreatment** | | | |
| **Mothers reported** use of physical punishment | 45.83% | 59.09% | 52.17% |
| **Mothers** reported CPS involvement | 10.42% | 11.36% | 10.87% |

## Discussion and Conclusions

Although the MBM intervention significantly changed multiple aspects of parenting, such as warmth and contingent responsiveness, and child outcomes, such as engagement, expressive language, and complexity of toy play at 2.5 years of age, our comprehensive, intense curriculum failed to differentiate outcomes for children at age 5 whose mothers had been assigned to the low- vs. high-intensity conditions. Despite the failure to produce between-group differences, the MBM intervention did show some evidence of “sleeper effects”: Whereas the slopes for maternal parenting variables were predictive of only a few socioemotional outcomes in the short term at 2.5 years, these same slopes predicted a number of important literacy and behavioral outcomes when children were 5 years of age.

At face value, the nonsignificant differences we observed at age 5 seem surprising and disappointing. At another level, however, the high levels of performance found in both conditions, 2.5 years following the last home visit, were encouraging. For instance, at age 5, the overall IQ score was 97 as was the total language score, with expressive communication being slightly superior (97) to auditory comprehension (94); similarly, children's average preschool readiness skills, such as print knowledge (94) and working vocabulary (88), were higher than might be expected among demographically similar children who did not have the benefit of home visitations or intensive preschool involvement. It should be noted that these high scores for preschool readiness skills are considerably higher than similar scores for the same children at age 2½.

In the population at large, it is difficult to obtain precise values that might be expected for predominantly minority children with teenage mothers or adult single mothers with less than a high school education and currently living in poverty. However, based on data from control children in the Abcedarian, Infant Health and Development, and Notre Dame Adolescent Parenting projects, our conservative estimate of expected scores on the Standard Binet, PLS, and TOPEL would be in the range from 75 to 85. If these estimates are reasonably accurate, then children in both the low- and the high-MBM conditions scored significantly above the expected levels and close to the overall population average in several domains (i.e., intelligence and expressive language).

The question remains, however, as to why children in the low-intensity condition did as well as those children who were enrolled in the more comprehensive condition. Borkowski, Akai, and Smith (2006) have argued that among the most important

principles for achieving positive effects from home visitation programs are “nonspecific” components such as a highly trained, sensitive staff who form meaningful relationships with their clients, and maintain those relationships over time. Given our original design in which mothers in the low-intensity condition received a set of enabling supports (i.e., information about health, safety, and frequent contact with their family coaches as well as multiple assessments throughout the course of the 2.5 year intervention), these important relationship-building components were present in the lives of participants in both of the MBM conditions. It may well be that the consistent presence of stable, supportive, and positive role models was the key factor in producing the positive outcomes we observed at age 5 for children in the low-intensity control condition, especially in the domains of language and intelligence; relatedly, these positive supports, common to all participants, may account for the nonsignificant differences between the control and treatment groups or key developmental measures of growth and development.

**Study Limitations**

There are several limitations inherent in our analysis of 5 year outcomes following the 2.5 year MBM parenting intervention. For instance, our sampling approach and the absence of direct measures of parenting practices were potential weaknesses. Although the subsample of 92 dyads we tested at age 5 were not statistically different in demographic and personal characteristics from the dyads that completed the assessment at 2.5 years, it is possible that a more robust sampling approach, doubling the number of cases, would have produced differential child outcomes. Relatedly, we were unable at age 5 to assess observed parenting practices that had yielded the most

substantial, high-low condition differences in our earlier MBM project which lasted from birth to age 2½ years. It would have been desirable to video-tape mother-child interactions at age 5 and to assess whether mothers in the high-intensity condition, who had improved their parenting skills the most, also maintained gains in responsive and sensitive parenting during the ensuing 2.5 year period. Substantial costs involved in video-taping and scoring these protocols precluded the inclusion of direct observations of parenting in the Pew project.

**Recommendations for Research and Policy**

It should be noted that past research on the effectiveness of home visitation programs have generally used weak (i.e., minimal contact between participants and their family coaches) rather than strong control conditions, in striking contrast to what occurred in our low-intensity control condition in the MBM project. It may prove to be the case that nonspecific aspects of parenting interventions—such as the warmth, availability, and supportiveness of family coaches—are as important in producing positive long-term outcomes as specific, programmatic components of the curriculum.

Additional research will be needed to separate out the “nonspecific” from the “specific” components that are embedded in most home visitation curricula. We suggest that future home visitation research projects use two control conditions: a weak control in which assessments are the major component and a strong control in which support from a family coach, frequent contact, and assessments are all included. More complex designs—although time consuming and costly in clinical trials research—would help unravel “nonspecific” components from theory-driven, programmatic aspects of

parenting interventions. Most investigators often assume that the latter are assumed to be responsible for children's developmental gains.

It would seem that the important messages to take away from this research in terms of improving and strengthening home visitation programs are three-fold: (1) Important gains in preschool readiness skills were maintained 2½ years following an intensive home visitation program for participants in both the high- and low-intensity conditions; (2) comprehensive, home-based interventions can improve multiple aspects of parenting, which are important on many levels to children's development, safety, and well being; and (3) the support and trusting relationship developed between a home visitor and a client are likely significant, and essential, factors in the effectiveness of most parenting interventions and their widespread eventual implementation in the field.

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