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**Effects of Healthy Families New York on Maternal Behaviors:
Observational Assessments of Positive and Negative Parenting
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ABSTRACT

This paper examines the effectiveness of Healthy Families New York (HFNY), a home visiting program based on the Healthy Families America model, in promoting parenting competencies and preventing maladaptive parenting behaviors. The evaluation used a randomized controlled trial, in which women were randomly assigned during pregnancy or shortly after the birth of the target child to an intervention group that was offered home visitation services or to a control group that was given information and referral to other appropriate services. The original data collection effort included maternal self-report and administrative data gathered at baseline, birth, and one, two, and three years post-birth. At Year 3, we incorporated observational assessments of 522 of the original mothers while they interacted with their three-year-old children in a series of structured tasks, including a Puzzle Problem Solving Task, a Delay of Gratification Task, and a Cleanup Task. The trial evaluated HFNY's effects on positive and negative parenting behaviors. The study also investigated whether, consistent with findings from Year 2, HFNY was particularly effective for young, first-time mothers who were randomized during pregnancy (the prevention subgroup) as compared to other mothers (the non-prevention subgroup). Results indicate that across all three tasks, the program promoted the use of positive parenting skills, increasing the extent to which mothers engaged in cognitive stimulation and maternal responsiveness. With respect to negative parenting, HFNY mothers in the prevention subgroup were substantially less likely than their counterparts in the control group to use harsh parenting, while no differences were detected for the non-prevention subgroup. Thus, we recommend prioritizing HFNY services for young, first-time mothers who are offered the program during pregnancy and additional research to investigate more effective strategies to reduce negative parenting practices among women belonging to the non-prevention subgroup.

Introduction and Overview

Healthy Families America (HFA) is a national program model that uses specially trained professionals or paraprofessionals to provide voluntary, intensive home visiting services to expectant and new parents. The model aims to promote positive parenting, enhance child health and development, and prevent child abuse and neglect. Since its inception in 1992, HFA has become one of the most broadly recommended and practiced strategies for child abuse prevention in the nation (Díaz, Oshana, & Harding, 2004; Leventhal, 2005). In 2003, 430 HFA program sites across 35 states assessed more than 71,000 families and provided home visiting services to nearly 47,500 families (Díaz, et al., 2004). In 2004, HFA programs secured roughly 269 million dollars to support their home visiting services (personal communication, Schreiber, 2007). Given the widespread use of the model and the considerable resources utilized, a number of studies that vary in quality, design, and duration have been conducted to evaluate the program's effectiveness. Harding and colleagues (2007) estimate that 33 studies have evaluated the HFA model, including four randomized controlled trials with an intention-to-treat approach, the most rigorous evaluation design. Evidence from these four randomized trials suggests that program impacts on child outcomes are generally encouraging, but results indicating increased positive parenting and prevention of child abuse and neglect have been mixed.

This paper examines the effectiveness of one HFA-based home visiting program, Healthy Families New York (HFNY), in promoting parenting competencies and preventing maladaptive parenting behaviors, using a randomized controlled trial with an intention-to-treat approach. The HFNY trial randomly assigned women during pregnancy or shortly after the birth of the target child to enter an intervention group that was offered home visitation services or a control group that was given information and referral to other appropriate services. The original data collection effort included self-report and administrative data gathered through a review of Child

Protective Services (CPS) records and maternal interviews at baseline, birth, and one, two, and three years post-birth. At Year 3, we incorporated observational assessments of mothers interacting with their three-year-old children to examine the impact of HFNY on parenting behaviors. Each mother and child pair were videotaped in their homes participating in a series of structured tasks that challenged specific maternal and child competencies, including a puzzle problem solving task, a delay of gratification task, and a cleanup task. The videotapes were sent to a lab created expressly for this study, where specific overt positive and negative parenting behaviors were observed and coded in short intervals (i.e., every 10 seconds, consecutively). By analyzing the data at this micro-level, we generated detailed, qualitative data that was quantifiable, precise, and replicable.

The HFNY study is the first randomized trial to use a micro-analytic observational assessment to evaluate the effects of an HFA program on parenting behaviors. One of the known advantages of micro-analytic observational assessments is that they often avoid the cultural and method biases inherent in more traditional measures of parenting, such as self-report assessments (Straus, Hamby, Finkelhor, Moore, & Runyan, 2004), administrative records (Mitchell-Herzfeld, et al., 2005; Olds, Henderson, Kitzman, & Cole, 1995), and inventories of observed behaviors such as the NCAST and HOME (Berlin, Brooks-Gunn, Spiker, & Zaslow, 1995; Bradley, Mundfrom, Whiteside, Casey, & Barrett, 1994; Farel, Freeman, Keenan, & Huber, 1991; Huang, Caughy, Genevro, & Miller, 2005). As compared to these other assessment tools, micro-analytic observational assessments may more precisely capture behaviors that are targeted for change by the HFA model, such as supporting and encouraging child explorations, using effective strategies to direct or re-focus the child's behaviors, providing opportunities for cognitive stimulation, and using positive or harsh strategies to deal with the child's resistance to comply. These parenting behaviors were not comprehensively assessed during the earlier waves of the study.

In the current study, data generated from micro-analytic observational assessments conducted at age 3 are used to integrate results from other HFA randomized trials, including earlier results from HFNY. The study also investigates whether, consistent with earlier findings from the HFNY evaluation (DuMont et al., 2008), program impacts on parenting practices were distinct for young, first-time mothers who were randomized during pregnancy (the prevention subgroup) as compared to other mothers in the sample (the non-prevention subgroup).

Healthy Families New York Program Description

New York State's Office of Children and Family Services (OCFS) established HFNY in 1995 as a voluntary, comprehensive and intensive home visitation program based on the HFA model. Specially trained Family Support Workers (FSWs) conduct home visits with new or expectant parents who are deemed to be at risk of abusing or neglecting their children. HFNY currently operates in 38 sites throughout New York State and has an allocated budget of about \$25 million with an average cost per family of about \$3,500 per year.

Screening is used to target expectant parents and parents with an infant under three months of age who are deemed to be at risk for child abuse or neglect and live in communities that have high rates of teen pregnancy, infant mortality, welfare receipt, and late or no prenatal care. Parents who screen positive are referred to the HFNY program and assessed for risk of engaging in child abuse and neglect using the Kempe Family Stress Checklist (Kempe, 1976). Parents scoring at or above the pre-established cutoff of 25 on the checklist are eligible for the program.

Home visits are scheduled biweekly during pregnancy and increase to once a week after the mother gives birth. As families progress through the service levels, home visits occur on a diminishing schedule. The program continues until the target child is five years old, or enrolls in Kindergarten or Head Start. The content of each visit is intended to be individualized and

culturally appropriate. During the prenatal period, FSWs use curricula approved by HFA such as “Partners for a Healthy Baby” to support expectant mothers in achieving an optimal pregnancy experience. Following the birth of the child, FSWs utilize other curricula approved by HFA, including "Parents as Teachers" and “Helping Babies Learn.” Postnatal home visits concentrate on: (1) improving the parent-child relationship through instruction, reinforcement, modeling, and parent-child activities; (2) helping parents understand child development and age-appropriate behaviors by providing education and information; (3) promoting optimal health and development by supporting adequate nutrition and exercise, improving compliance with scheduled immunizations and well child visits, facilitating linkages to and encouraging appropriate use of health care, and connecting families with Food Stamps, housing assistance, and/or other community resources; and (4) enhancing parental life course development and self-sufficiency by developing Individual Family Support Plans that establish goals and reinforce strengths.

FSWs are most often paraprofessionals who live in the target community and share the same language and cultural backgrounds as program participants. They are selected primarily based on personal attributes such as non-judgmental attitude, fondness for children and belief in non-violent methods of disciplining children. All new HFNY staff members attend a one-week core training designed to teach the basic skills needed to perform home visits and assessments. FSWs are trained on parent-child interaction, child development, strength-based service delivery, communication skills, and being culturally sensitive and responsive. They also shadow an experienced home visitor before they are assigned to work with families. Special trainings are offered to emphasize service delivery that supports and reinforces parent-child interactions, provide detailed information and strategies for dealing with challenge areas (e.g., domestic violence, mental health issues, and substance abuse), and present additional information and

activities that will promote competent parenting. FSWs meet with their supervisors for at least 1.5 hours each week and are observed on one home visit per quarter.

Home Visitation and Positive Parenting

The promotion of parenting competencies is a central goal of HFA-based home visitation programs. From the start, FSWs focus on helping parents understand the needs and demands of an infant, children's developmental milestones, strategies for behavior management, and ways to create a safe environment. FSWs are trained to assist parents to provide greater stimulation to children's play, engage in activities that reinforce early language skills, interact with their children in a positive manner, and promote the healthy development of their children. These activities are expected to foster healthier attitudes about parenting, enhance parents' knowledge of child development, expand their skills for stimulating children's cognitive and social development, promote patterns of nurturing and non-coercive parenting, and to generally contribute to positive parent-child interactions (Bavolek & Keene, 1999; Crittenden, 1985; Lahey, Conger, Atkeson, & Treiber, 1984). In turn, parental warmth, responsiveness to distress, and the use of gentle guidance and support in mother-child play are expected to increase children's cognitive functioning (e.g., Pianta, Smith, & Reeves, 1991), protect against childhood aggression and behavior problems (Patterson, 1982; Zahn-Waxler, Iannotti, Cummings, & Denham, 1990), and promote children's self-control and emotion regulation skills (Rodriguez, Aber, et al., 2005; Robinson, Emde, & Korfmacher, 1997).

Several randomized trials of HFA-based programs have investigated impacts on two main indicators of positive parenting: cognitive stimulation and maternal responsivity (Caldera et al., 2007; Duggan et al., 2004; Landsverk, et al., 2002). These studies utilized two different observational assessments to examine positive parenting, the Home Observation for Measurement of the Environment Inventory (HOME, Caldwell & Bradley, 1984) and the

Nursing Child Assessment Satellite Training (NCAST, Barnard, 1978). The HOME assesses the level of stimulation and support available to a child in his or her home using an inventory of observed items, while the NCAST involves the mother teaching her child a new task while raters record the qualities of the interaction. Both measures use standardized, pre-established rating scales. Randomized trials that have used these measures to examine HFA's impacts on positive parenting have yielded mixed results. One randomized trial reported effects on the quality or amount of cognitive stimulation available in the home as measured by the HOME (Caldera et al., 2007), but two other randomized trials that used the HOME showed no significant program impacts on cognitive stimulation (Duggan et al., 2004; Landsverk et al., 2002). No or marginal program impacts were found on mothers' levels of responsiveness as measured by the NCAST (Caldera et al., 2007; Duggan et al., 2004; Landsverk et al., 2002).

While the HOME and NCAST assessment tools exceed the capacity of self-report measures to capture a broad range of behaviors as they unfold (Berlin, et al., 1995), they rely on standardized rating scales derived from pre-established behaviors that may limit the advantages offered by an observational assessment (e.g., surfacing and recording behaviors that are generated by the observed parent). In addition, both tools have been criticized for their failure to measure representative parenting behaviors across cultures, particularly for positive constructs such as sensitive parenting among Hispanic Americans (Bradley et al., 1994; Farel et al., 1991; Huang et al., 2005) and cognitive stimulation among African-American families (Berlin et al., 1995). Furthermore, the cognitive stimulation subscale of the HOME has been faulted for including items that require financial resources (e.g., the number of books present), and failing to reflect mothers' more dynamic efforts to provide ongoing learning opportunities such as stating leading questions or providing probes to elicit knowledge (Berlin et al., 1995). Although the NCAST offers the opportunity for more active exchanges between mother and child, maternal

behaviors are limited to the task of “teaching” the child how to use a new play object rather than engaging in more common play and other activities, in which more typical maternal behaviors may be displayed. Given these limitations of the HOME and NCAST, it is unclear whether the HFA model is not effective in promoting cognitive stimulation and responsivity or whether the HOME and NCAST are not robust or flexible enough to detect such positive parenting behaviors.

Micro-analytic observational assessments are an alternative to the HOME and NCAST that offer an enhanced opportunity to capture spontaneously occurring behaviors in tasks designed specifically to tap parenting dimensions relevant to the intervention of interest. Direct assessments of mothers’ behaviors in different situations when they are interacting with their children that are coded at the micro-level are also more likely to reveal typical patterns of behaviors or repertoires that mothers use with their children. Furthermore, micro-analytic observational assessments minimize the potential for individuals who are coding the observed behaviors to introduce cultural biases for two reasons. First, coders use detailed coding schemes that provide an extensive list of very specific behaviors. As the coders’ task is to search for the best descriptor of the maternal behavior observed, opportunities to interpret the meaning of maternal behaviors, in which personal and cultural biases are implicit, are reduced. Second, the use of brief time intervals for viewing maternal behaviors helps to keep the coders focused on the immediate behaviors and limits the potential for more global impressions or judgments.

Randomized trials of other home visitation models such as the Nurse Family Partnership (NFP) and Early Head Start have used micro-analytic observations of parent and child interactions to examine program impacts on the quality of parenting behaviors. Results from videotaped observational assessments in NFP’s Denver randomized trial indicate that mothers who were offered home visitation, whether by nurses (Olds et al., 2002) or paraprofessionals

(Olds, Robinson, et al., 2004), showed higher levels of responsiveness than mothers in the control group. Similarly, based on their videotaped sessions of a semi-structured play task, evaluators of Early Head Start reported program impacts on the quality of assistance and levels of supportiveness offered by mothers (Love et al., 2002). Thus, micro-analytic observational assessments may provide a more sensitive and discriminating lens for describing program impacts on dimensions of positive parenting such as maternal responsiveness, sensitivity, structuring, and cognitive engagement than the observational assessment tools that have been used to evaluate HFA programs. As the first randomized trial of a HFA-based program to include micro-analytic observational assessments, the current study can make an important contribution to the body of knowledge concerning HFA's effectiveness in achieving its primary goal of enhancing parent-child interactions.

Home Visitation and Negative Parenting

The prevention of negative and harmful parenting practices is also a critical goal of the HFA model, as harsh and coercive parenting behaviors are prominent risk factors for later child behavioral problems (Eddy, Leve, & Fagot, 2001; O'Connor, Deater, Rutter, & Plomin, 1998). It is widely accepted that negative parenting behaviors such as threats, coercion, and harshness are associated with children's oppositional and aggressive behaviors (Stormshak, Bierman, McMahon, & Lengua, 2000), self-regulatory deficits, and child psychopathology (Egeland & Sroufe, 1981; Olson, Bates, & Bayles, 1984; Rodriguez, Ayduk, et al., 2005; Sethi, Aber, Shoda, Rodriguez, & Mischel, 2000). Similarly, research suggests that children are placed at risk when there is a breakdown of parent-child boundaries and the parent assumes a peer or child role or relies upon the child for emotional support and fulfillment of unmet needs. This form of role-reversed parenting has been associated with an array of attention, social, and behavioral problems (Macfie, McElwain, Houts, & Cox, 2005; Shaffer & Sroufe, 2005).

To date, evaluations of the impacts of HFA-based programs on negative parenting practices have relied heavily on CPS records and self-reported parenting measures. Program effects on official reports of abuse and neglect during the early years of life have been scant (Duggan et al., 2004; Duggan, et al., 2007; DuMont et al., 2008). In contrast, results from several randomized trials suggest that in the first one to three years of life, the effects of HFA-based programs on less severe forms of negative parenting, such as minor physical and psychological aggression, are more favorable (Duggan, et al., 2004; Duggan et al., 2007; Landsverk et al., 2002; Mitchell-Herzfeld et al., 2005; DuMont et al., 2008). It is possible that less severe and perhaps more chronic forms of negative parenting behaviors are more susceptible to change during the early years of parenting, but left unchecked may develop into intractable patterns of negative parent-child interactions (Patterson, 1982). Eventually, as children age, these exchanges may escalate into parenting behaviors that meet the official definition of child abuse or neglect. As none of the randomized trials of HFA-based programs has tracked CPS reports after age 3, the hypothesis that program effects on abuse and neglect will emerge later in childhood has yet to be tested. However, some support for this hypothesis comes from the only study of a home visitation program that examined official reports of abuse and neglect over an extended period, the randomized trial of NFP in Elmira. The evaluators of NFP found effects on confirmed abuse and neglect at the age fifteen follow-up (Olds et al., 1997), but not at the age four follow-up (Olds, Henderson, & Kitzman, 1994). The lack of program impacts on CPS reports in the early years of life may also reflect a surveillance bias in which those receiving home visiting services, whether offered by NFP or HFA, are more closely monitored and more frequently reported to CPS (Mitchell-Herzfeld et al., 2005; Olds, Henderson, & Kitzman, 1994). Consequently, several researchers have cautioned against relying solely on official reports to

evaluate the impact of home visitation on child abuse and neglect outcomes (Olds et al., 1995; Mitchell-Herzfeld et al., 2005).

There is general agreement that self-report data and observational assessments are required to effectively evaluate the form and quality of mother-child relations (e.g., Patterson, Reid, & Dishion, 1992; Cook & Goldstein, 1993). These methodologies are useful for different purposes but also pose distinctive problems and challenges. Self-report methodology is useful for identifying stable patterns of behaviors that occur over extended periods of time, and is cost and time efficient. However, self-report parenting measures are susceptible to biases such as overestimation of the use of positive parenting practices due to social desirability, or underestimation of severe negative parenting practices owing to the negative consequences that may ensue from reporting such behavior.

Studies using micro-analytic observational assessments have found intervention effects on parenting that would not have been captured using self-report measures (Aragona & Eyberg, 1981; Bennett, Sullivan, & Lewis, 2006; Gardner, 2000). They discriminate well between independently rated groups of maltreating parents (Reid, Patterson, & Snyder, 2002), and have been shown to predict later child outcomes above and beyond the variance predicted by maternal or interviewer report (Weinfeld & Egeland, 1997). In addition, because micro-analytic observational assessments have the capacity to generate a record of precise behaviors and events as they unfold over time, it is possible to examine how mothers and their children adapt to changes in their environment and to shifts in the demands of a situation or interaction, a key process underlying healthy development. Videotaped observational assessments also present their own challenges, including high costs, the use of open-ended parenting constructs, and the possible artificiality produced by the presence of a camera.

The current study used structured but common mother-child tasks, administered in the family's home, to record maternal behaviors in a highly familiar environment, in order to optimize the study's ability to detect program impacts on negative parenting. The tasks challenged mothers to assist their children in ways that promoted their autonomy, cognitive engagement and exploration, compliance with external rules, and strategies to maintain self-control. The coding schemes also reflected parenting behaviors and strategies that are not easily captured using self-report measures, including inappropriate bids for attention, physical tactics to engage or restrain the child, the use of bribing and bargaining to gain the child's cooperation, and punitive behaviors. Thus, the current data have the potential to increase the validity and clinical relevance of the study's previous findings, provide information about the longevity of early program impacts on negative parenting, and add to the general understanding of how home visitation influences two specific negative parenting behaviors: harsh parenting and role reversal.

Potential Moderating Effects on Parenting: The Prevention Subgroup

A final goal of the current study is to investigate whether program impacts on positive and negative parenting were moderated by the group of young, first-time mothers who were randomized during pregnancy. A number of papers have examined the role of specific risk factors or subgroups in conditioning the impacts of home visitation programs. Of particular interest is a group that has been documented to be at very high risk for child maltreatment— young, poor, first-time mothers who enroll in home visitation early in pregnancy—and a group for whom NFP has realized long-term successes. The problems the NFP model are designed to address are often concentrated among adolescent mothers (Maynard, 1997; Stier, Leventhal, Berg, Johnson, & Mezger, 1999). It has been postulated that young, first-time mothers may be more receptive to either learning positive behavioral skills or avoiding negative parenting behaviors than older or multiparous mothers (i.e., those having borne more than one child)

whose behaviors are more established or who may have already engaged in child maltreatment (Olds, et al., 1999). Alternatively, home visiting may increase positive interactions in all mothers, but for the older or multiparous mothers, they may not be sufficient to decrease harsh parenting once these practices have been initiated or become chronic.

In contrast to the group of young, first-time mothers who enter the program early in pregnancy, a fairly homogeneous grouping of women we refer to as the “prevention subgroup,” HFA-based programs typically serve a broader spectrum of families. Although HFA was not designed to intervene with abusive or neglectful parents in order to avert further maltreatment, many women have already given birth to the target child or other offspring at the time of their entry into HFA programs. Even if these women do not have an administrative record of abuse or neglect, there is still the possibility that they have engaged in behaviors that are likely precursors of maltreatment, such as harsh scolding or punishments, or abusive or neglectful behaviors that have not been reported. We previously hypothesized that the participation of such women in HFA programs is likely to dilute their impact in preventing negative parenting by introducing the possibility that maladaptive parenting may have occurred prior to or concurrent with program entry (DuMont et al., 2008). Consistent with this hypothesis, at Year 2, the HFNY randomized trial found that the program reduced self-reported harsh parenting practices and minor physical aggression for mothers belonging to the prevention subgroup, but no impacts were found on these measures for the group of remaining mothers, who varied in age, pregnancy status, and presence of other offspring (DuMont et al., 2008). Similarly, MacMillan and colleagues (2005) found limited impacts when they used a randomized controlled trial to evaluate the effectiveness of a home visitation program delivered by nurses in preventing the recurrence of child abuse and neglect. Thus, who is offered home visitation services may moderate program impacts on parenting processes. The

current paper attempts to replicate the earlier finding concerning HFNY's impact on harsh parenting (DuMont et al., 2008) using a different method of measurement at a later point in time.

Methods

Overview of the Randomized Controlled Trial of HFNY

In 2000, OCFS's Bureau of Evaluation and Research in collaboration with the Center for Human Services Research (CHSR) at the University at Albany, launched a three-year evaluation to determine the effectiveness of HFNY. A randomized experimental design was used in which mothers meeting the eligibility criteria for HFNY were randomly assigned to either an intervention group or control group. The research protocol was approved by the Institutional Review Board of the University at Albany (IRB Approval # 00-246).

Recruitment, screening, random assignment, and enrollment. Recruitment for the study was conducted between March 2000 and August 2001 at three sites with home visiting programs that had been in operation since HFNY's inception. At the time of the random assignment, Site A comprised about half the sample, and Sites B and C each made up approximately a quarter of the sample. All mothers were selected for the study following the same screening and assessment procedures used to establish eligibility for HFNY. The initial informed consent was obtained just prior to the assessment, and random assignment was performed within each site using a computer program. Each participant assigned to the intervention group was appointed a home visitor, who contacted her to set up an initial home visit to complete the enrollment process. After enrollment in HFNY, families were offered the usual array of services provided by the program. Each participant assigned to the control group was provided with information about other services in the community and referrals to community services based on the needs

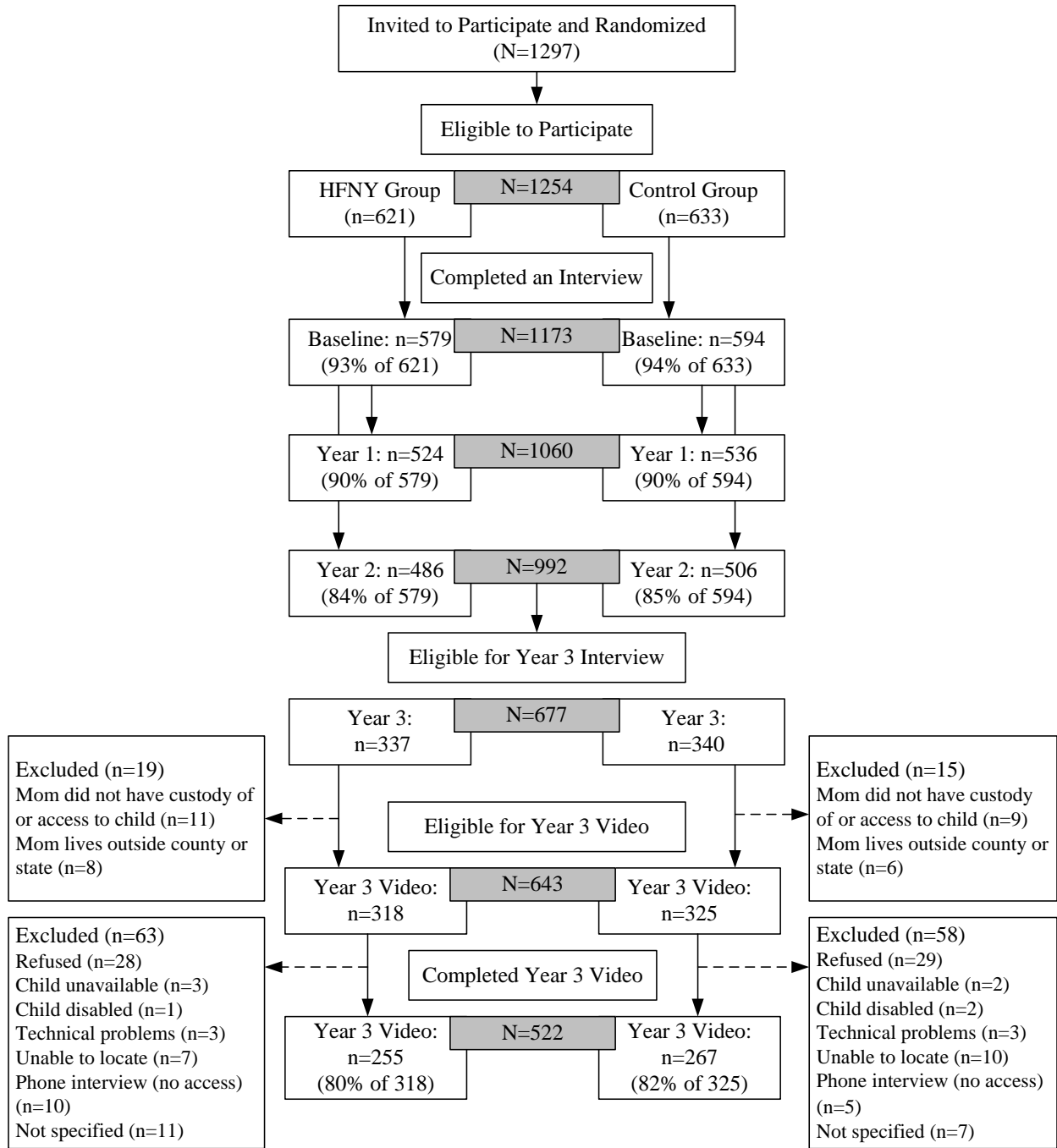
identified during the assessment. Mothers assigned to the control group were not referred to other home visiting programs that were similar in intensity or duration to HFNY.

Study sample. A complete description of the initial study sample and a consort diagram of the first follow-up periods are provided by DuMont et al., 2008. Over the eighteen-month sample selection period, 1297 women were randomly assigned to the HFNY program (n= 647) or the control group (n=650), 1254 were subsequently deemed eligible for the study, and 1173 (or 93.5% of the eligible mothers) completed baseline interviews (treatment, n=579; control, n=594). Mothers were interviewed in their homes at baseline, again shortly after the child's birth (if they entered the study prior to giving birth), and at the time of the target child's first, second, and third birthdays. Study retention rates during the initial years of follow-up were high, with 90% of those interviewed at baseline re-interviewed at the time of the child's first birthday and 85% re-interviewed at the child's second birthday. At Year 3, interviews and observational assessments were attempted for only a subset of the families in the original sample (Figure 1).

The Present Study: Year 3 Mother and Child Sample

Eligibility. The strategy used to select respondents for the Year 3 mother and child sample—522 women who received both the observational assessment and an interview—differed from prior waves in several important ways. First, the size of the targeted sample at Year 3 was reduced to approximately 600 in order to conduct micro-analytic observational assessments of mothers' parenting behaviors. The target number of participants to be selected from each of the three sites was set at about 200 in order to facilitate site-specific analyses, although we oversampled the number of respondents at each site to reach our target. Sampling approximately an equal number of respondents across the three sites differed from the strategy used in prior years when the distribution of the sample reflected the proportion of individuals served by each site—about one-half at Site A and roughly one-quarter at each of the two remaining sites.

Figure 1. Study Random Assignment, Participation, and Year 3 Mother and Child Sample



Second, due to constraints on time and financial resources, only mothers who completed a Year 2 interview and who lived within a limited distance of the interviewers were approached for follow-up at Year 3. Finally, as the purpose of the observational assessments was to evaluate the

program's impact on the quality of parenting of mothers interacting with their children, the mother had to have custody of and access to the target child. Although the sampling strategy changed, the research team sustained its commitment to maintaining the equivalence of the treatment and control conditions that was achieved at baseline.

Women at Site A who met the criteria specified above were randomly selected to reduce the sample to a reasonable size. All of the women at Site B and Site C who met the criteria outlined above were approached to participate in the sample in order to approximate a sample of 200 women from each site.

In total, 643 participants were eligible for the observational assessment at Year 3, and 522 (81%) agreed to participate (treatment, $n=255$; control, $n=267$). Reasons for nonparticipation included refusals, being unable to locate the respondent and/or her child, severe child disabilities, children's lack of cooperation, and problems with the video equipment. All families who agreed to participate in this portion of the study completed an additional informed consent form that described the risks and benefits of the structured tasks and videotaping.

Characteristics. The Year 3 mother and child sample consisted of participants from all three sites, including 36.4% from Site A, 29.9% from Site B, and 33.7% from Site C. Mothers were diverse in terms of their race and ethnicity with 42.0% of the mothers being White, 39.1% African-American, and 15.9% Latina. Mothers assessed at Year 3 also varied with regard to age (as of the baseline interview, 29.1% were less than 19 years old and 12% were 30 years old or older), and parity (55% reported being first-time mothers at baseline). Nearly one-quarter (21%) of the Year 3 sample had involvement with CPS prior to the baseline interview and 8.2% had a least one previous substantiated report. All children who participated in the videotaped observations were assessed at about the time of their third birthday (mean = 3.1 years, S.D. = .15,

range 2.9 years to 3.9 years), with the majority being at least three years old (66%). Slightly more boys (52.7%) participated in the observational assessment than girls (47.3%).

Receipt of HFNY home visiting services. Families in the Year 3 mother and child sample who were assigned to the treatment arm of the trial and enrolled in the HFNY program received an average of 35.4 visits between the time of random assignment and the Year 3 interview. One-quarter (24.9%) of the families received less than 10 visits during the three years, while one-third (33.3%) received at least 45 visits. Most of the visits were provided between the baseline interview and the Year 1 interview, with an average of 21 home visits received during the first year. Some of the families (8.6%) never enrolled in the HFNY home visiting program despite being offered the service. Of those who enrolled in the HFNY program, 58.8% participated for at least one year, 39.9% participated for at least two years, and 28.3% participated for at least three years. Consistent with an intention-to-treat approach, all of the mothers who were randomly assigned to the intervention and control conditions and completed baseline interviews were included in the analyses of program outcomes regardless of their level of participation in the program.

Procedures

Training of interviewers. Eight women (three bilingual Hispanic, two African-American, three White) who were familiar with the target neighborhoods were hired as interviewers. The interviewers received three days of centralized training about procedures for locating and contacting respondents, basic interviewing techniques, and the protocols for conducting the baseline and follow-up interviews. Additional sessions were held to train interviewers in conducting the observational protocol and using the video equipment. Each interviewer was shadowed by the survey manager for the initial interviews and observational assessments and periodically throughout the remainder of the project.

Data collection. Participating mothers and their children were assessed in their homes by at least one trained interviewer. All trained interviewers were independent of the HFNY program and blind to group assignment. Interviewers typically contacted mothers by telephone, described the observational assessment and interview, and scheduled a time to meet. Once in the home, the interviewer presented the consent forms to the mother, and arranged the filming space and lighting, laid out a plastic mat, and set up the video equipment while the mother reviewed the consent form. The tripod and camera were placed at a distance that would keep the entire mat in view. After answering the mother's questions about the study, if any, the interviewer and respondent signed the consent forms and the mother and child were asked to sit on the mat. Next, the interviewer followed a standard protocol to administer the observational assessment. Self-report data were typically collected next using an interview similar to those used at baseline, Year 1, and Year 2. Respondents were paid \$40 for their participation.

Observational assessment. The mother and child participated in four 5-minute tasks, three of which are described below. Each task presented a different kind of challenge for both mother and child and was designed to elicit a range of parenting behaviors such as attending to the child, providing stimulation, and offering guidance and support, as well as a number of key preschool child competencies, including cognitive maturity, self-control, and goal persistence. The tasks were structured and administered in a systematic way that generated detailed descriptions of behaviors for situations similar to those that might occur in a typical day, but for which the instructions and immediate setting had been standardized. The four tasks were conducted in the following order: the Puzzle Problem Solving Task, the Delay of Gratification Task, a Lego Task, and the Cleanup Task. A short snack period followed the Lego Task. This paper describes HFNY's impacts on mothers' parenting behaviors using data derived from the three tasks that have been coded to date, namely, the Puzzle Problem Solving Task, Delay of Gratification Task,

and Cleanup Task. These tasks were selected for coding because they are the most distinctive from each other. The Lego Task overlapped with the Puzzle and Cleanup Tasks in several ways, but may be coded at a later date to examine the consistency of parenting across similar challenges. The three tasks used for this study are described below.

The Puzzle Problem Solving Task. This is a widely used, standard procedure designed to assess maternal behaviors during a cognitively challenging situation for the child (Chase-Lansdale, Brooks-Gunn, & Zamsky, 2001; Matas, Arend, & Sroufe, 1978). In the current study, the mother and child were asked to sit on the mat, and then the mother was told:

“I have two puzzles for your child to play with. Have your child do the top one first, then the bottom one. There is a picture which might be useful as a guide for the second puzzle. The puzzles may be a little hard for your child’s age, especially the second one. Your child doesn't need to finish the puzzles, we just want to give him/her a chance to work on something new. You can help when you think it’s necessary.”

Because the situation taxed the child’s cognitive resources, he/she would likely be exposed to obstacles and failures. The mother’s ability to “scaffold” or structure the task while anticipating possible failures, her support and encouragement for the child to work autonomously, and her non-punitive reactions to the child’s missteps were viewed as appropriate parenting behaviors. When these parenting competencies were not present, mothers were expected to show parenting behaviors that were punitive, harsh, interfering or neglectful.

The Delay of Gratification Task. This task is a standard procedure that was selected and modified by the study team to examine what happens when a mother is called upon to engage in an activity of her own while simultaneously monitoring her child, who has been challenged to delay gratification by waiting for a snack. (See similar delay of gratification tasks in Mischel, Shoda, & Rodriguez, 1989; Rodriguez, Aber, et al., 2005; Rodriguez, Mischel, & Shoda, 1989;

Sethi, et al., 2000). The task was tailored for the current study to assess maternal monitoring and sensitivity to the child's self-regulatory needs. Specifically, the mother was asked to respond to a study questionnaire while also making sure that the child would wait until the next task to eat the snack. The snack was placed in a tempting position at the front of the mat. After positioning the snack, the mother was told:

“There will be a snack time later for you and your child, but it will be later, so please make sure your child does not touch or eat the snack yet. Now, I'd like you to fill out this form. Please try to fill in the circles completely. Have your child stay on the mat. You will have about 5 minutes for this activity.”

This was a difficult delay of gratification situation for a three-year-old because it required appropriate frustration tolerance as well as some elementary self-regulatory strategies such as distracting oneself from the tempting snacks, skills that typically do not appear until about age 4 or older (Kopp, 1982; Putnam, Spritz, & Stifter, 2002; Rodriguez, Ayduk, et al., 2005; Sethi et al., 2000). The challenge for the mother was to proactively attend and respond to the child's needs, promote the use of self-regulatory strategies, and complete her own assigned task.

The Cleanup Task. As in most versions of this standard mother and child interaction task (Kochanska, Coy, & Murray, 2001), the Cleanup Task occurred after a 5-minute free-play break during which mother and child played with some toys, including a few toys with numerous small pieces. For the Cleanup Task, mothers were asked to have the child put away the toys by him/herself and the mother was handed plastic bags to hold the toys. The interviewer said, “Now, please have your child clean up the toys. We want your child to do this by himself/herself. Help only if it is necessary.” No other instructions were given. As Kochanska and Askan (1995) point out, in contrast to the Delay Task where the mother assists the child to inhibit a predominant behavior (i.e., a “Don't Do” task), the Cleanup Task requires that the mother be

effective in assisting the child to generate effective behaviors and abide by external rules (i.e., a “Do” task). These situational demands challenged the mother’s abilities to remain positive and proactive in order to promote the child’s compliance. Research indicates that the child’s noncompliance during the Cleanup Task is a strong elicitor of maternal negative control (Campbell, 1991).

During each of the structured mother and child interaction tasks the interviewer remained in the room and busied herself with paperwork. When the appropriate time elapsed, the interviewer let the mother and child know, “This is all the time we have for this activity,” and moved on to the next task. Following the completion of the mother’s interview, the tape was sent to the Office for Research and Observational Studies at the Center for Human Services Research, University at Albany for coding.

Coding the Observational Assessments

Developing a coding scheme. Coding schemes standardize and structure how, when, and in what ways parenting behaviors will be identified and scored. Guided by specific theoretical questions, the set of codes developed typically lists and describes the target behaviors as well as their underlying constructs. The coding scheme also defines the time unit or segment in which to observe the interactions, the method used to assign a specific score when a target behavior is identified, and the specific targets of the observation, in this case the mother. Despite considerable overlap in the many mother and child interaction protocols described in the literature (see Bakeman, 2000), schemes for coding are often tailored to the individual questions and objectives unique to each study. This practice is consistent with one of the fundamental assumptions of observational assessments: behaviors observed over time and in particular contexts will vary due to changes in the demands of the place, situation, and interaction. It is

precisely this variation across contexts, along with the mother’s abilities and modes of adaptation that are of interest to observational studies evaluating program impacts on parenting outcomes.

Table 1
Mapping of program goals and parenting constructs for coding observed behaviors

Program Goal	Parenting Construct	References
Encouragement and expression of warmth and nurturance	Nurturing; supportive presence; connectedness; affective mutuality	Berlin Brooks-Gunn, Spiker, Zaslow (1995) Bradley et al (HOME, 1994); Bavolek & Keene (1999)
Develop empathy to child difficulties Encourage parent-child interactions	Listening; emotional understanding; sensitive, child centered interaction; expression of pride to child success and positive encouragement after failure	Brady-Smith, C., Ryan, R.M., Berlin, L.J., Brooks-Gunn, J., Fuligni, A.S. Early Head Start Research Evaluation Project.
Physical and emotional availability Attending to child’s needs and understanding child’s signals	Sensitivity; lack of inattentiveness, neglect or avoidance; non-intrusiveness; non-hostility; appropriate emotional expressions	Crittenden, P.M., Child-Adult Relationship Experimental Index. Biringen, Z. Emotional Availability Scales
Maturity demands Parental expectations of child development Understanding of boundaries	Appropriate discipline, non-coercive exchanges Parenting styles of interaction: Permissive, authoritarian, authoritative, neglecting	Brooks-Gunn, J., Liaw, F., Michael, A. Manual for coding freeplay-parenting styles: infant health and development program. Conger. Iowa Family Interaction Rating Scales at a Glance. Baumrind, Parenting styles Patterson
Cognitive Stimulation Appropriate structuring of the child environment	Goal directed behavior, quality of instruction; helping provide feedback; scaffolding; cognitive engagement; quality of instruction	Pianta, Erickson, Wagner, Kruetzer & Egeland (1990) HOME Caldwell et al (1994)
Promote child’s autonomy; Appropriate control	Parental strategies to control affect and self-regulate emotional expression; dual attending competencies (task and child); promotion of child’s attentional and behavioral strategies; adequate parental control and containment	Dix, 1995; Rothbart scales; Rodriguez et al. (2005); Sethi et al (2000)

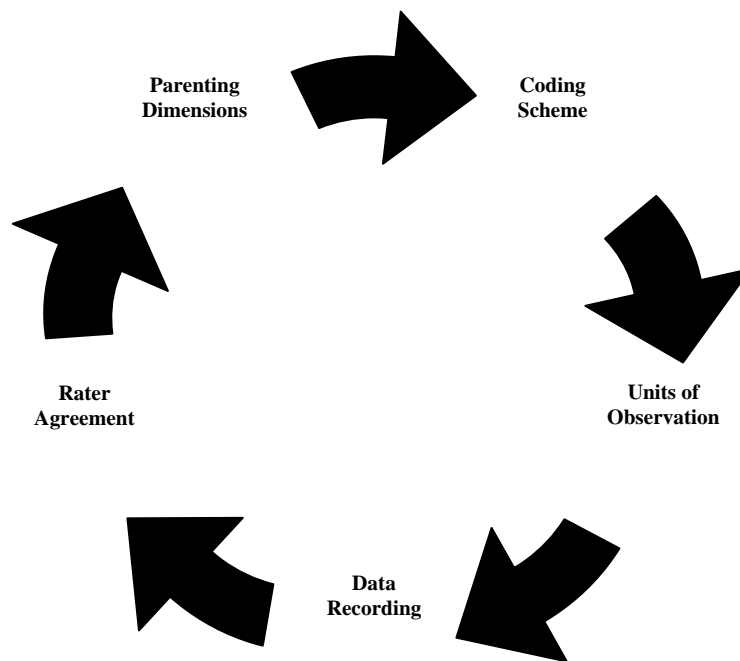
The coding scheme developed to assess parenting behaviors at Year 3 was based on the integration of HFNY's goals for parenting, a review of the relevant parenting literature, an examination of several mother and child interaction assessment tools used in other studies, and parenting behaviors observed during a pilot of the observational assessments for the current study (see Table 1). Of particular interest to this evaluation were coding schemes and theories that reflected HFNY's goals to promote effective parenting skills and reduce harmful and negative parenting practices (see the far left column of Table 1).

Five constructs were selected to represent varying dimensions of parenting: cognitive engagement, sensitivity and responsiveness, structuring and support, harshness, and role reversal. The coders generated a list of specific behaviors that might be observed under each of the five dimensions. Coders then observed and coded 6-10 pilot videotapes from which they checked the absence or presence of these behaviors. They also recorded the frequency of the codes, modified them to better describe the behaviors observed, and obtained additional maternal behaviors not previously listed. This process led to several changes in the behavior codes due to: 1) lack of agreement among coders while observing the behaviors, 2) the appearance of new relevant behaviors that exemplified one or more of the five dimensions, or 3) the trimming of codes that seemed unnecessary.

Once complete, the iterative process resulted in a dictionary that included approximately 100 behaviors for each task. The dictionary included the specific behaviors listed for each task, a detailed definition of the behavior, and, where necessary, an illustrative example. For example, "praises success" was used to describe situations when the mother let the child know that he or she was doing well, whereas "raises voice" was coded if the mother spoke to the child in a

hostile manner. “Help directing” was selected if the mother provided guidance to the child, and “ignores need” indicated situations when the mother did not assist with a request or situation that required attention.

Figure 2. The process for developing a configuration of codes



Coding configuration. Data were coded using Noldus, The Observer 5.0 program. The Observer is a computerized system that allows the user to upload videotaped observations directly into the program along with an automated version of the coding scheme, known as a “configuration.” The configuration includes a list of behavioral classes (i.e., the parenting dimensions mentioned above), the list of behaviors or codes within each behavioral class, the time of each observation segment, and the length of time allotted for coding the observed segment. Similar configurations were developed for each task, varying only on some of the behaviors or codes that were particularly task-specific. Once the configurations were established, videotapes were uploaded into the program and viewed concurrently with the corresponding parenting dimensions and behavioral items (similar to what is pictured in Figure 3).

Figure 3. Example of configuration of parenting dimensions and behavioral items for a puzzle task

The Observer - Observation Module - Test1(1)(2)(1)(1)(1)(1) - [Codes]								
File Edit View Customize Data Tools Video Window Help								
[Subjects]								
Mom	respects autonom	untimely affect	help controlling	gives in	Unstimu actvty	strict/control	disinterested	
Child	diminish own win	null3	lean in-crowding	lets child struc	Overstimu actvty	distracted	helpful/inf.	
	hug/kiss/stroke	null3a	null5	permissive	Actvty w/o enrg	null13	engaged	
[Body Position]		[Structuring]			Actvty w enrg	null13a	disengaged	
near-towrd child	express pride	help directing	[Unresp/Neglect]		Activ. inapprop	[AFFECT]		
near-away child	laugh together	help hinting	ignores bid	null7	Activity approp	not used	strained/phony	
mid-toward child	displays delight	helps	rejects bid	[Regulatory strat]		warm/positive	supportive	
mid-away child	responsive answer	corrects	pull away	self-correction	null10	cold/negative	incongruous	
remvd towrd chil	lean-affection	negotiates	looks away	chill emotion	null10a	happy/enjoy	attentive	
remvd away child	dual attending	remind of goal	mech. offers toy	restrain emotion	[Synchrony]		playful	
move chld away	null2	sets goals	respond listless	take a break	In-synch	impatient	strict/conting	
move chld close	null2a	break down steps	separate play	null8	Out-of-synch	patient	neutral	
null1	[Hurtful Beh.]		sets up activity	ignores play	null8a	Timing-adult sig	flat	
[Sensitivity]		raise voic/shout	sets limits	didn't praise	[Cog. Stimulation]		[Style (scales)]	
concern w/ dstrss	complains	lean in-help	Distracted	labels	Timing-child sig	disgust	1 NOT CHARACTERI	
elicit bid	tease/mock/putdn	null4	null6	describes	[Style (scales)]		2	
respond to bid	scolds	null4a	null6a	leading question	intrusive/contro	irritable/frustr	3 SOMEWHAT CHAR	
empathic comment	threat/coerces	[Control/Intrusiv]		elaborates	disinterested	sad/depressed	4	
praises success	hits/slaps/poke	push away f-mom	[Boundary dissolu]		helpful/inf.	enthusiastic	5 VERY CHARACTER	
encourage	physically rough	push away f-obj.	adultifies child	eliciting knowle	disengaged	lethargic		
accepts suggestn	shows irritation	controls toys	acts like peer	helps w/language	listless	direct		
gentle redirect	disapproval	Contr. body	colludes with	modeling	strained/phony	bored		
recip. affect	uses profanity	chooses for chld	fight over mtrl.	encourage play	responsive	neutral		
affirms	blames child	plays by self	bickers	engage in play	supportive	[STYLE]		
listens/attends	crit futr failur	interrupts	inapprop. comnt	null9	incongruous	not used		
shares	criticize failur	not follow child	inapp. bid attn.	null9a	attentive			
	sarcasm	prohibits/stops	bribes/bargains	[Dev. Approp.]		playful	intrusive/contro	

The configuration for the current study divided each task into 10-second segments, which started as soon as the instructions were finished and stopped at the end of every task. The 10 seconds allowed the coder a manageable time frame during which to observe all of the relevant behaviors that occurred. If the coder had trouble remembering what had happened or wanted to review the interaction again, the segment could be replayed. Following each 10-second segment, a 15-second blank screen was introduced during which time coders selected the observed behaviors by using a mouse to click on the appropriate items. The coder was able to select between 0-4 behaviors per segment from the data dictionary, and each coded behavior was automatically stamped with a time reflecting the particular interval or segment selected.

Following the coding session an output file was automatically generated and stored separately. The file included data represented by a stream of lines that contained the time stamp, the observed behavioral classes and behaviors that the coder selected, and the sequence of behaviors as they occurred over time.

Coder training. Each coder received extensive training that spanned several weeks. During the first week with the project, the coders observed tapes and familiarized themselves with the data dictionary. In the second week, coders received a tutorial on how to use Noldus and coded a few practice tapes alongside a trained observer. During the third week coders worked independently to code tapes that had been already coded by other trained coders. A trained coder and the first author then met with each new coder to review the tapes for which there were points of disagreement. These issues were discussed until there was consensus regarding the appropriate code. Coders began coding independently when they reached agreement with the trained coder for at least one behavior per segment for 90% of the coded segments.

Additional quality assurance measures. The individuals selected to code the tapes were diverse in terms of their race/ethnicity, gender, age and professional orientation, and received continuous

monitoring. At least once a month a meeting was devoted to reviewing videotapes jointly with the first author. In addition, the coders continuously checked the quality of the observational assessment procedures and videotapes using a detailed protocol to review each tape. Following their reviews, the coders provided feedback to the survey manager about challenges the interviewers were experiencing. This process continued throughout the Year 3 data collection effort.

Definition of Dependent Measures

Observed parenting behaviors: from theorized constructs to study composites. From the Noldus configuration for each of the three tasks, we obtained frequencies for each parenting behavior. The list of possible parenting behaviors available for coding varied by task and ranged from 121 in the Puzzle Problem Solving and Delay of Gratification Tasks to 133 in the Cleanup Task. To reduce the number of observed behaviors to a size that we could manage for analyses and to identify the structure of relationships between the coded parenting behaviors, we conducted principal components analysis and varimax rotations to obtain maximally orthogonal or statistically unrelated factors. This procedure was performed separately for each task. Items were retained and used as part of a composite if they had a positive loading of .425 or greater, if the factor on which the behaviors loaded aligned with one or more of the theoretical dimensions of parenting, and if the factor emerged for at least two of the three tasks. We created three composites (one positive and two negative) for each of the three tasks, which yielded nine parenting outcomes. These included a positive parenting composite for each task that incorporated elements from the parenting dimensions of cognitive engagement, responsiveness, and structuring the task for the child, and two negative parenting composites for each task, one reflecting harsh parenting and the other role reversal.

Although other factors and potential composites emerged from the different tasks, the composites selected for analysis all had reasonable levels of internal consistency, often shared similar elements or behaviors across tasks, and simultaneously captured behaviors that were specific to the demands and parenting challenges presented by the task at hand. In addition, the composites selected for use were relevant to HFNY's primary program goals, were featured prominently in the parenting literature, and included many of the behaviors that have been evaluated by other trials of home visiting programs. Each composite is described below.

The Positive Parenting composite included parenting behaviors or strategies that occupied, challenged, or stimulated the child's thinking and provided the child with an opportunity to work on the task independently. Although initially conceptualized as three distinct constructs, elements of cognitive engagement, structuring, and responsiveness/sensitivity combined in different ways depending on the task in which they were assessed, to promote the child's competence and engagement in each specific task. Across the three tasks, the positive parenting composite included overlapping behaviors as well as demand-specific behaviors that reflected the unique challenges presented by the different tasks (Table 2). For example, behaviors that overlapped across tasks included mothers' eliciting knowledge that may assist with task completion, guidance through the use of leading questions, offering the child specific strategies such as play, and being empathic to affective signals from the child (e.g., listening or attending, and praising or reassuring the child's actions). In contrast, other elements were very context-dependent. For instance, setting limits was used in the Cleanup Task to keep the child from deviating from the task at hand, and breaking down steps was used in the Puzzle Problem Solving Task to simplify the task and make the child's behavior more effective.

Table 2

Items of the composites that emerged as factors for each of the mother-child interaction tasks

	Puzzle Problem Solving Task (n=522)	Delay of Gratification Task (n=522)	Cleanup Task (n=518)
Positive Parenting	Elicits knowledge Leading questions Describes Provides hints Affirms Leans to help (Factor A) Listens / attends Respects autonomy Breaks down steps (Factor B)	Elicits knowledge Leading questions Uses play strategy Encourages play Praise Keeps child busy	Elicits knowledge Leading questions Uses play strategy Responsive Answer Reassures Manages child Empathic comment Sets Limits Listens / attends Gentle redirecting Shares
Harsh Parenting	Uses threats Physically rough Hits, slaps, pokes Scolds Coerces Shares irritation Shows negative emotion Blames child	Uses threats Physically rough Hits, slaps, pokes Scolds Coerces Shares irritation Shows negative emotion Blames child Raises voice Teases / mocks child Criticizes failures	Uses threats Controls body Strong directive Shows disapproval Inconsistent Shares irritation Raises voice
Role Reversal	Fights over materials Acts like peer Adultifies child Disapproval Colludes with	Fights over materials Acts like peer Inapprop. bid for attention Corrects Inappropriate comment Sarcastic laugh	Bribes or bargains Child structures task Adultifies child Blames child Permissive Incompetent

Of note, because the Puzzle Task contained inherent demands for cognitive engagement, some cognitive strategies such as eliciting knowledge, leading questions, and helpful hints were widely used (see column 2 of Table 2, “Factor A”). In contrast, the promotion of and respect for the child’s autonomy played a subtler role in the Puzzle Task (see column 2 of Table 2, “Factor

B”). The quiet structuring activities of Factor B and the more frequently used verbal stimulation activities of Factor A emerged as different but correlated factors for the puzzle situation ($r=.13$, $p<.01$). However, due to the high percentage of participants who engaged in behaviors captured by Factor A (97.3%), there was insufficient variance to analyze this factor in the Puzzle Task. Therefore, only Factor B represented positive parenting in the Puzzle Task.

Harsh Parenting emerged as a reliable factor in the Puzzle and Cleanup Tasks.

Overlapping items across the two tasks included the mother being physically rough or controlling with the child, showing irritation, using threats, and raising her voice. The harsh parenting composite in the Puzzle Task included more physical parenting practices, while the harsh parenting composite in the Cleanup Task reflected more punitive verbal behaviors.

Although a harsh parenting factor did not emerge in the Delay Task, we created a comparable composite for this situation using a similar set of behaviors (see Table 2).

Role Reversal emerged as a factor with moderate reliability in all three tasks.

Overlapping items included acting inappropriately by fighting over materials or behaving like a peer, adultifying the child, and using inappropriate maternal comments. All of these behaviors reflect the type of boundary dissolution or breakdown of maternal-child roles described by other measures such as the Adolescent-Adult Parenting Inventory (AAPI; Bavolek & Keene, 1999).

Table 3 presents the Cronbach alphas for the composites as constructed for each of the tasks. Each outcome was used separately as a dependent measure. Given that the median for 7 out of the 9 composites was 0, which created highly skewed distributions, we used prevalence of parenting behaviors (i.e., whether the composite index behavior occurred or not) as the outcome. Furthermore, because the primary evaluation questions concerned the program’s ability to promote positive parenting and to prevent negative parenting, our analyses focused on HFNY’s

impact on whether behaviors emerged rather than their frequency or the degree to which the behavior occurred.

Table 3

Cronbach alphas for the factors that emerged in each of the mother-child interaction tasks ^a

	Puzzle Problem Solving Task (n=522)	Delay of Gratification Task (n=522)	Cleanup Task (n=518)
Positive Parenting	0.68	0.66	0.61 ^b
Harsh Parenting	0.78	0.50 ^c	0.74
Role Reversal	0.68	0.66	0.77

^a Factor loadings of .425 or higher were used to construct the factors unless otherwise noted.

^b In the Cleanup Task factor loadings of .40 or greater were used to construct the Positive Parenting as they boosted the reliability. Three behaviors were added to the composite to more fully capture cognitive parenting strategies and further enhanced the reliability to an acceptable level, these included: *eliciting knowledge, leading questions, and using play as a strategy.*

^c In the Delay of Gratification Task a Harsh Parenting composite was created to mirror the harsh parenting factors that emerged in the puzzle and cleanup situations. A factor did emerge from the delay situation that captured mother's efforts to physically constrain her child. However, the maternal parenting behaviors that loaded on this factor were not decidedly negative as it included behaviors such as leaning toward the child, restricting the child's space, or moving the child to prevent access to the temptation, along with being physically rough. Given the ambiguous nature of many of the behaviors and the omission of verbally harsh and coercive behaviors in the factor (as was seen in the other two tasks), we elected to create a harsh parenting composite that more closely paralleled the group of behaviors that emerged from the puzzle and clean up situations.

Definition of treatment variable, covariates, and expected moderator

Random Assignment. Our primary variable of interest was assignment to the treatment group, which was represented by a dummy-coded variable (1=HFNY; 0 = control).

Covariates. Several covariates were used to control for other possible influences on the parenting outcome variables. These included two dummy-coded variables to represent race/ethnicity: White mothers and Latina mothers versus the reference group of African-American mothers, site of participation, membership in the prevention subgroup (described

below), and child's gender and age, the latter of which was represented as at least three years of age versus less than three years.

To further isolate the program's effect on observed parenting behaviors, the mean scores of all five subscales from the Adolescent and Adult Parenting Inventory (AAPI-II, Bavolek & Keene, 1999) were used to control for mother's baseline parenting attitudes. The AAPI-II is a 40-item self-report instrument with 5-point Likert scales (strongly agree to strongly disagree). Subscales include: 1) appropriate expectations of children, 2) empathy toward children's needs, 3) negative beliefs about the use of corporal punishment, 4) adequate parental roles, and 5) beliefs about children's autonomy. Validation studies have shown that parents with a history of engaging in abusive acts express more negative parenting attitudes on the AAPI than non-abusive parents, and the reliability and validity of the measure are well documented (Bavolek & Keene, 1999).

Membership in the prevention subgroup was hypothesized to moderate or qualify program impacts on harsh parenting outcomes. A dummy-coded variable was used to distinguish mothers who were part of the prevention subgroup versus those who were not, as used by DuMont et al., 2008. The prevention subgroup included first-time mothers under the age of 19 years who were randomly assigned at a gestational age of 30 weeks or less. A total of 71 mothers were classified into the prevention subgroup, representing 13.6% of the Year 3 mother and child sample. The mean age of the prevention subgroup was 17.2 (S.D.=1.2) years as compared to 23.6 (S.D.=5.6) years for the non-prevention group, and none of the mothers had prior substantiated CPS reports as compared to 9.5 % of the mothers in the non-prevention group.

Statistical Models and Methods of Analysis

Student t-tests and chi-square tests were used to compare the baseline characteristics of mothers participating in the Year 3 mother and child sample to those who were not included at Year 3, whether by design or lost to follow-up. These bivariate statistics were also used to assess the equivalence of baseline characteristics for Year 3 participants belonging to the HFNY and control groups. Logistic regression analyses were used to examine the effects of HFNY on the prevalence of each of the nine observed parenting outcomes at Year 3 (i.e., positive parenting, harshness and reversed roles in each of the three tasks). Logistic regression models produce an odds ratio that can be used to compare whether the probability of a certain event is the same for two groups, and to generate adjusted means and significance levels for program impacts. All logistic regression analyses included the treatment condition (i.e., assigned to the control group versus the HFNY group), the covariates described earlier, and two dummy codes that represented the propensity strata (described in a subsequent section). The covariates and propensity strata were included together to reduce the residual variability of the outcome. Next, an interaction term that represented the combined effects of the treatment and prevention subgroup was formed by multiplying the treatment and prevention variables (prevention subgroup X treatment group assignment). SAS 9.0 was used to examine the multivariate models.

Sample Retention

Table 4 displays the means and percentages of several baseline characteristics for those retained in the Year 3 mother and child sample as compared to those not included at Year 3. Participants in the Year 3 mother and child sample were comparable to those not included at Year 3 on a number of baseline characteristics, including treatment group assignment, evidence of a prior substantiated CPS report, membership in the prevention subgroup, self-report of childhood maltreatment history, parity, partner status, connections to a primary care provider,

Table 4
Unadjusted baseline characteristics for those participants retained in the Year 3 mother-child sample and those not retained

Baseline Characteristic	Retained at Year 3 (n=522)	Not Retained (n=651)	X^2 or t statistic
Assignment to treatment condition	48.9%	49.7%	ns
Site			84.4***
Erie	36.4%	62.4%	
Rensselaer	29.9%	21.7%	
Ulster	33.7%	16.0%	
Mother's race/ethnicity			29.5***
White, non-Latina	42.0%	28.2%	
African-American, non-Latina	39.1%	50.6%	
Latina	15.9%	19.7%	
Prior substantiated child abuse or neglect reports	8.2%	9.5%	ns
Prevention subgroup	13.6%	15.2%	ns
Self-report of childhood maltreatment history	49.5%	48.1%	ns
First time mother	55.7%	53.0%	ns
Reported having a partner or spouse	68.8%	66.5%	ns
Health care insurance	77.0%	81.1%	2.9 ⁺
Connection to a primary care provider	87.0%	88.8%	ns
Received cash assistance from welfare	23.4%	34.2%	16.2***
Mother <19 years old	29.1%	32.6%	ns
Mean age of mother (Mean, S.D.)	22.7 (5.7)	22.3	ns
Perceived general health (Mean, S.D.)	71.3 (18.2)	70.0 (18.4)	ns
CESD Score (Mean, S.D.)	16.2 (11.2)	15.1	-1.6 ⁺
Adult-Adolescent Parenting Inventory (Mean, S.D.)			
Appropriate expectations for children	20.4 (3.5)	19.8 (3.2)	-3.3**
Empathy towards children's needs	36.4 (4.6)	35.6 (4.7)	-2.9**
Negative beliefs about corporal punishment	38.5 (5.4)	37.4 (5.2)	-3.3**
Adequate view of parental roles (Role Reversal)	22.1 (4.3)	21.5 (4.1)	-2.6*
Positive views about children's autonomy	19.4 (2.3)	18.9 (2.4)	-3.7***

Note: ⁺p < .10; *p < .05; ** p < .01; *** p < .001

age, and perceived health status. By design, however, the Year 3 mother and child sample was selected in a way that changed the proportion of participants included from each site; this difference was significant ($p < .001$). Thus, as compared to those not included at Year 3, the mother and child sample was comprised of fewer study respondents from site A (36.4% versus 62.4%) and more respondents from site B (29.9% versus 21.7%) and site C (33.7% versus 16.0%). The changes to the design of the Year 3 sample also affected the distributions of the racial/ethnic groups ($p < .001$). Participants included at Year 3 were less likely to be African-American (39.1% versus 50.6%) or Latina (15.9% versus 19.7%) and more likely to be White (42% versus 28.2%) than those not included in the videotaped observations.

Significant group differences were also detected for receipt of welfare and baseline parenting attitudes. A smaller percentage of women in the Year 3 mother and child sample reported receiving welfare at baseline as compared to those not included in the Year 3 sample (23.4% versus 34.2%, $p < .001$). The group observed at Year 3 also had healthier parenting attitudes at baseline than those who did not participate at Year 3, a difference that was found for all five AAPI subscales: appropriate expectations (20.5 versus 19.8, $p < .01$), empathy (36.4 versus 35.6, $p < .01$), negative beliefs about corporal punishment (38.5 versus 37.4, $p < .01$), role reversal (22.1 versus 21.5, $p < .05$), and positive views about children's autonomy (19.4 versus 18.9, $p < .001$).

Equivalence of Treatment Conditions

Table 5 displays the equivalence of the HFNY and control groups using baseline characteristics for both the baseline sample (the shaded columns) and the Year 3 mother and child sample (the three unshaded columns on the right). In total, 40 baseline characteristics were tested for equivalence; however, due to space constraints, only key characteristics and covariates

Table 5
Unadjusted baseline and Year 3 characteristics of HFNY and control groups

Baseline Characteristic	Total Sample			Year 3 Mother and Child Sample		
	Total (n=1,173)	HFNY Group (n=579)	Control Group (n=594)	Total (n=522)	HFNY Group (n=255)	Control Group (n=267)
Site						
Erie	50.8%	50.3%	51.3%	36.4%	39.2%	33.7%
Rensselaer	25.3%	25.9%	24.7%	29.9%	27.8%	31.8%
Ulster	23.9%	23.8%	23.9%	33.7%	32.9%	34.5%
Mother's race/ethnicity						
White, non-Latina	34.4%	34.4%	34.3%	42.0%	38.4%	45.3%
African-American, non-Latina	45.4%	44.4%	46.5%	39.1%	41.6%	36.7%
Latina	18.0%	18.3%	17.7%	15.9%	16.1%	15.7%
Prior substantiated child abuse or neglect reports	9.0%	9.0%	8.9%	8.2%	7.5%	9.0%
Prevention subgroup	14.5%	14.9%	14.1%	13.6%	14.9%	12.4%
Self-report of childhood maltreatment history	48.7%	49.2%	48.1%	49.4%	52.0%	47.2%
Reported having a partner or spouse	67.5%	69.2%	65.8%	68.5% ^a	72.9%	64.8%
Received cash assistance from welfare	29.2%	31.1%	27.4%	23.4% ^a	28.2%	18.7%
Mother <19 years old	31.0%	32.3%	29.8%	29.1% ^b	32.5%	25.8%
Mean age of mother(Mean, S.D.)	22.5 (5.5)	22.4 (5.6)	22.5 (5.4)	22.7 (5.7)	22.5 (5.8)	22.8 (5.5)
CESD Score (Mean, S.D.)	15.6 (11.1)	15.7 (11.3)	15.6 (11.0)	16.3 (11.2)	16.2 (11.4)	16.3 (10.9)
Adult-Adolescent Parenting Inventory (Mean, SD)						
Appropriate expectations for children	20.1 (3.4)	20.3 (3.3)	19.9 (3.4)	20.5 (3.5)	20.3 (3.5)	20.6 (3.5)
Empathy towards children's needs	35.9 (4.7)	36.1 (4.6)	35.7 (4.8)	36.4 (4.6)	36.3 (4.6)	36.4 (4.7)
Negative beliefs about corporal punishment	37.9 (5.3)	37.8 (5.3)	38.0 (5.4)	38.5 (5.4)	38.3 (5.3)	38.7 (5.6)
Adequate view of parental roles (Rev Roles)	21.8 (4.2)	21.9 (4.2)	21.7 (4.2)	22.1 (4.3)	22.0 (4.3)	22.3 (4.3)
Positive views about children's autonomy	19.1 (2.4)	19.1 (2.4)	19.1 (2.4)	19.4 (2.3)	19.3 (2.4)	19.5 (2.3)

^a The difference between the groups at Year 3 was significant (p<.05).

^b The difference between the groups at Year 3 was significant (p=.10).

are shown in Table 5. The table includes all variables for which statistically significant differences were detected.

At baseline, there were no significant differences between the characteristics of mothers assigned to the HFNY group as compared to those assigned to the control group, demonstrating that the random assignment procedure was successful in securing the equivalence of the two groups. At Year 3, the integrity of the original random assignment was largely maintained, but statistical differences were detected between the two treatment arms for 2 of 40 baseline characteristics assessed. Significant differences between the groups were noted for receipt of welfare ($p < .05$) and partner status ($p < .05$) at baseline, while the difference for being under 19 years of age at baseline was marginally significant ($p < .10$). As a result of these differences, we created propensity scores to restore the full integrity of the initial random assignment design. The calculation and inclusion of the propensity scores in our statistical models allowed us to examine the influence that differences between the treatment and control groups had on estimates of program impacts. We then compared estimates based on models with propensity scores versus estimates from models not including propensity scores to select the more conservative set of findings, thereby avoiding an overstatement of the program's successes.

Propensity scores were calculated following the steps outlined by D'Agostino (1998). First, as described above, t-tests and chi-square tests were conducted with the Year 3 mother and child sample to determine differences between the HFNY and control groups on a number of baseline characteristics. Next, logistic regression models were used to predict group assignment and to generate a probability that a respondent belonged to the HFNY group given each individual's values on the set of predictors (D'Agostino, 1998; Orwin, et al., 2003). Third, we divided the probabilities or propensities into three different groups or strata and rechecked the balance of the treatment groups within each stratum by repeating the crosstabs and t-tests

described above. Once we achieved a balance that minimized the differences detected initially for the Year 3 sample, we included two dummy variables in our statistical models to represent the first and third stratum of propensity scores. The second stratum served as the reference group. As described previously, the logistic models also included other covariates to reduce the residual variability of the outcome.

Was HFNY effective in promoting positive parenting practices?

Table 6 displays results from the logistic regression analyses that were used to examine HFNY's impact on the positive parenting outcomes for the Puzzle, Delay, and Cleanup Tasks. The top section of Table 6 shows the adjusted percentage of women who were observed using positive parenting strategies by treatment group assignment for each of the three tasks. The lower portion of the table shows the adjusted percentages for the two subgroups analyzed (prevention versus non-prevention). Confidence intervals and significance levels are also presented for all of the analyses.

Results indicate that across all three tasks the program promoted the use of positive parenting skills that support and encourage children's cognitive and social development. A significantly higher percentage of mothers assigned to the HFNY group used positive parenting strategies while interacting with their children during the Puzzle Task (96.5% versus 92.8%; $p < .05$), Delay Task (17.2% versus 10.6%; $p < .05$), and Cleanup Task (85.3% versus 78.3%; $p < .05$) as compared to mothers from the control group. Thus, as hypothesized, HFNY was effective in increasing mothers' capacity to stimulate and engage the child's cognitive skills, sensitively attend to the child's needs, and create a structured environment for the child to explore.

Table 6

Percent of mothers using positive parenting strategies during Year 3 observational assessments ¹

POSITIVE PARENTING	PREVALENCE				
	Cntrl		HFNY		p
Overall Effects	%	CI	%	CI	
Puzzle (n=522)	92.8	87.4-96.0	96.5	92.9-98.3	<.05
Delay (n=522)	10.6	6.8-16.3	17.2	11.6-24.8	<.05
Cleanup (n=518)	78.3	70.8-84.3	85.3	79.0-89.9	<.05
Subgroup Effects	%	CI	%	CI	p
– Puzzle (n=522)					ns
Non-Prevention	93.9	89.6-96.4	96.7	93.4-98.3	
Prevention	90.1	75.5-96.4	97.1	88.1-99.4	
– Delay (n=522)					ns
Non-Prevention	11.6	8.0-16.4	19.6	14.6-25.7	
Prevention	12.6	4.7-29.7	12.5	4.6-29.5	
– Cleanup (n=518)					ns
Non-Prevention	74.7	68.2-80.2	83.9	78.2-88.3	
Prevention	85.5	69.5-93.9	83.5	68.6-92.1	

Note. ¹ All means are adjusted for site of participation, two dummy codes representing race/ethnicity, a dummy coded variable representing membership in the prevention subgroup, a dummy code for gender and age of the child (younger or older than three years), and parenting attitudes as assessed at baseline. In addition, the models included two dummy codes representing assignment to one of three strata based on an individual's propensity score.

Were program effects on positive parenting concentrated within the prevention subgroup? Next we examined whether the program was more effective for women classified as part of the prevention subgroup (i.e., first-time mothers under age 19 who were randomly assigned at a gestational age of 30 weeks or less) than for the remaining group of women, the non-prevention subgroup. No significant interactions were detected for positive parenting, suggesting that the overall pattern of program impacts was not attributable to a particular subgroup of women.

Did HFNY have an effect on negative parenting practices?

In contrast to the consistent program impacts on positive parenting, no overall or main effects by the program were noted for negative parenting behaviors (i.e., harsh parenting and role-reversed parenting) at Year 3 for any of the tasks (see Table 7). The lack of direct effects on observations of harsh parenting and role reversal at Year 3 is consistent with the findings from the first two years of the study based on maternal report. At Year 1, overall program effects were detected for self-reported harsh parenting, minor physical aggression, psychological aggression, and serious abuse, , but by Year 2 only a program impact on serious physical abuse remained.

Were program effects on negative parenting moderated by the prevention subgroup? Table 7 shows that membership in the prevention subgroup moderated the relationship between treatment group assignment and observations of harsh parenting behaviors at Year 3 for both the Puzzle Task ($p < .05$) and the Delay Task ($p < .05$). Specifically, HFNY mothers classified as part of the prevention subgroup were less likely to engage in any harsh parenting behaviors during the Puzzle Task (5.3 % versus 21.5%) and the Delay Task (5.3% versus 23.8%) than their counterparts in the control group. In contrast, no differences in harsh parenting were observed between the treatment and control groups among mothers who belonged to the non-prevention subgroup. This was true for both the Puzzle Task (10% versus 10%) and the Delay Task (14.1% versus 12.3%). The prevention subgroup did not moderate the relationship between treatment group assignment and observation of harsh parenting for the Cleanup Task. Thus, program impacts on observed harsh parenting behaviors at Year 3 were limited to mothers who were classified as part of the prevention subgroup, just as differences between the HFNY and control groups on self-reported harsh parenting and minor physical aggression at Year 2 were found only for the prevention subgroup.

Table 7

Percent of mothers engaging in negative parenting strategies during Year 3 observational assessments¹

NEGATIVE PARENTING	PREVALENCE				
	Cntrl		HFNY		p
Overall Effects	%	CI	%	CI	
Harsh Parenting					
Puzzle (n=522)	12.2	7.9-18.2	9.9	6.2-15.4	ns
Delay (n=522)	13.9	9.3-20.2	13.2	8.7-19.6	ns
Cleanup (n=518)	31.9	25.1-39.6	30.5	23.7-38.2	ns
Subgroup Effects	%	CI	%	CI	p
Harsh Parenting					
– Puzzle (n=522)					<.05
Non-Prevention	10.0	6.6-14.8	10.0	6.6-14.9	
Prevention	21.5	10.3-39.6	5.3	1.6-16.2	
– Delay (n=522)					<.05
Non-Prevention	12.3	8.5-17.3	14.1	9.9-19.6	
Prevention	23.8	11.9-42.0	5.3	1.3-19.3	
– Cleanup (n=518)					ns
Non-Prevention	32.5	26.6-39.0	29.6	23.8-36.2	
Prevention	26.9	14.3-44.8	34.9	21.0-51.8	

*Note.*¹ All means are adjusted for site of participation, two dummy codes representing race/ethnicity, a dummy coded variable representing membership in the prevention subgroup, a dummy code for gender and age of the child (younger or older than three years), and parenting attitudes as assessed at baseline. In addition, the models included two dummy codes representing assignment to one of three strata based on an individual's propensity score.

Table 7 (continued)

Percent of mothers engaging in negative parenting strategies during Year 3 observational assessments¹

NEGATIVE PARENTING	PREVALENCE				
	Cntrl		HFNY		p
Overall Effects	%	CI	%	CI	
Role Reversal					
Puzzle (n=522)	5.2	2.6-10.0	3.5	1.6-7.3	ns
Delay (n=522)	10.0	6.2-15.8	8.7	5.2-14.3	ns
Cleanup (n=518)	25.1	18.8-32.5	25.5	19.0-33.3	ns
Subgroup Effects	%	CI	%	CI	p
Role Reversal					
– Puzzle (n=522)					
Non-Prevention	3.7	1.9-7.2	3.0	1.5-6.2	ns
Prevention	9.4	3.1-24.8	2.7	.6-11.6	
– Delay (n=522)					
Non-Prevention	7.1	4.4-11.2	7.5	4.6-11.9	ns
Prevention	19.4	8.7-37.9	5.4	1.2-20.4	
– Cleanup (n=518)					
Non-Prevention	28.0	22.3-34.5	26.3	20.7-32.8	ns
Prevention	16.0	7.0-32.3	31.0	17.4-49.0	

*Note.*¹ All means are adjusted for site of participation, two dummy codes representing race/ethnicity, a dummy coded variable representing membership in the prevention subgroup, a dummy code for gender and age of the child (younger or older than three years), and parenting attitudes as assessed at baseline. In addition, the models included two dummy codes representing assignment to one of three strata based on an individual's propensity score.

The “prevention subgroup” classification did not moderate the relationship between treatment group assignment and the prevalence of role reversal for any of the three tasks.

Discussion

HFNY and Positive Parenting

The current study used in-home, micro-analytic observational assessments within a randomized trial to examine HFNY’s effectiveness in promoting positive parenting skills and reducing negative parenting behaviors among a group of poor women at risk of committing child abuse and neglect. Data from these micro-analytic assessments suggest that by the child’s third year of life mothers assigned to the HFNY home visitation group were more likely to use positive parenting strategies than mothers in the control group. Similar to results obtained in the Early Head Start evaluation, the HFNY program had significant effects on positive parenting by promoting both cognitive stimulation and maternal responsiveness, although the strategy driving the effect shifted depending on the task. For example, in the Delay of Gratification Task, HFNY mothers were more likely to use positive parenting strategies such as praising the child and encouraging play to distract the child from the snack temptation, and gentle redirecting was used in the Cleanup Task to help the child complete the task.

In addition to the demand-specific behaviors, the positive parenting composite also included behaviors that were common across the tasks, such as mothers’ efforts to elicit knowledge or suggest play strategies. In sum, compared to mothers in the control group, mothers in the home visiting group were more active in engaging the child’s cognitive resources, structuring and supporting the demands of the task, and eliciting strategic behaviors to assist the child with the various challenges presented. HFNY mothers were also more attentive and responsive to their children’s affective cues than mothers in the control group.

The consistent pattern of results observed across all three tasks suggests that the effect of HFNY on positive parenting is quite robust. The messages and/or methods used by HFNY's home visitors were advantageous in helping mothers in the intervention group to become more adept and versatile at using positive parenting skills in everyday settings than mothers in the control group. Now the challenge is to understand how home visitors instilled these maternal parental competencies into mothers' behavioral repertoires. Was it the content of the message, the method of delivery, or a combined effect of both elements that drove the program to success? One possibility is that the specific information and techniques shared by home visitors were not previously part of mothers' behavioral repertoires and reflect the acquisition of new skills. Alternatively, the strategies, knowledge, and behaviors that home visitors impart may reinforce the skills and information that mothers learned from other settings and providers.

Similarly, the methods used by home visitors may be particularly accessible and productive. Home visitors are trained to capitalize on mothers' strengths, identifying and praising healthy parenting behaviors, while avoiding criticism of mothers' mistakes or failures. This approach may serve as a stimulus, reinforcement, and model for use of positive parenting practices across a number of different contexts. Understanding the specific mechanism driving these effects is an important area of research (Chaffin, 2004; Chaffin, 2005; Olds, Sadler, & Kitzman, 2007), and may lead to more effective service delivery strategies for efforts aimed at reducing maladaptive parenting practices.

HFNY and Negative Parenting

Harsh Parenting. The current study examined two early negative parenting behaviors that have been linked to poor child outcomes, parental harshness and role reversal. Although each of these composites emerged as factors in at least two of the tasks and demonstrated adequate levels of internal consistency, the main effects models showed no differences between

the intervention and control groups in their overall rates. However, notable effects on harsh parenting emerged for the prevention subgroup at Year 3 for two of the three tasks. Specifically, young, first-time mothers who were randomly assigned to HFNY during pregnancy were less likely to be observed using harsh parenting practices in both the Puzzle Problem Solving Task and the Delay of Gratification Tasks than their counterparts in the control group, whereas there were no differences between the HFNY and control group in the rates of harsh parenting behaviors for the other mothers in the sample. Thus, replicating earlier results that were based on self-reported data on the use of harsh parenting and minor physical aggression at Year 2 of the HFNY randomized trial (DuMont et al., 2008), the current study confirms that who is offered HFNY matters.

The replication of the Year 2 findings in Year 3 using a different method reinforces the argument that the HFA program is most effective in preventing the initiation of abuse and neglect, and not the recurrence of abuse and neglect after it has already taken place. Offering teenage mothers home visiting services while still pregnant with their first child may provide a needed support at a time when their ability to cope is compromised (George & Lee, 1977; Stevens-Simon & Barrett, 2001; Zuravin, 1988), when they are more open to receiving services (Olds et al., 1999), when their neural systems are particularly malleable or susceptible to change (National Research Council and Institute of Medicine, 2006), and when the program is in a strong position to have sustained, long-term involvement and effects (Olds, Kitzman et al., 2004). Consistent with a recommendation by the U.S. Advisory Board on Child Abuse and Neglect (1991), working with first-time parents to promote healthy parenting practices before harmful patterns become entrenched may be good practice.

HFNY's lack of effectiveness in reducing harsh parenting for women belonging to the non-prevention subgroup may reflect a limitation of the HFA model, which was designed to

prevent child abuse and neglect, and not to intervene with abusive or neglectful parents. Many women have already given birth to the target child or other offspring at the time of their entry into HFA programs, including a sizable number of parents who have engaged in abuse and neglect prior to enrolling in the program. Even if the women in the non-prevention subgroup do not have an administrative record of abuse or neglect, there is still the possibility that they have engaged in abusive or neglectful practices that have not been reported or behaviors that are likely precursors of maltreatment. In such cases, the home visitor's goal shifts from avoiding or preventing negative parenting behaviors to changing an existing pattern of negative behaviors. Curricula designed to avoid the initiation of negative parenting behaviors may not fully address the challenges that home visitors face when working with mothers in the non-prevention subgroup who need to stop negative impulses and behaviors (e.g., hitting or screaming) and replace them with healthier parenting practices. Indeed, MacMillan and colleagues (2005) found limited effects on reducing the recurrence of child abuse and neglect when they used a randomized controlled trial to evaluate the effectiveness of a home visitation program delivered by public-health nurses.

Thus, results from the current study indicate that the usefulness of home visiting as a mechanism for changing the behavior of other more diverse groups of women has not yet reached its potential (MacMillan, et al., 2005).

Role reversal. Despite the promising findings regarding harsh parenting for young, first-time mothers who enter the program during pregnancy, the prevention subgroup did not moderate the relationship between the treatment and the other negative parenting behavior, role reversal.

There are several reasons that may explain the lack of interaction effects in this area. First, adolescent girls may still be struggling to establish their own roles as adults, and may therefore lack the focus and resources to simultaneously master appropriate roles with their children.

Second, the curriculum recommended by HFA may not adequately address or emphasize role-

reversed parenting practices as potentially problematic behaviors, particularly during the early years.

In the current study, several mothers were observed acting inappropriately for an adult, including fighting over materials in the Puzzle Task and making inappropriate bids for attention in the Delay Task. As time passes and the child ages, the maternal behaviors reflective of role reversal may shift to capture actions that reflect mothers' expectations for the child to assume developmentally inappropriate adult roles and responsibilities, including sharing information about adult problems, burdening the child with employment or relationship issues, or conveying other stressors that can lead to mental health or behavioral problems. Thus, if the role-reversed behaviors observed in the current study continue across different situations and over time, their presence at age 3 may reveal a more serious pattern of negative parenting behaviors.

Longitudinal data are needed to assess whether HFNY will play a protective role for the youngest, first-time mothers against these potentially more serious negative role-reversed parenting behaviors. Given the inclusion of large proportions of young mothers in HFA-based programs, the body of research that suggests that role reversal has important implications for later development, and the emergence of an internally consistent role reversal composite within each of the three tasks, additional research in this area is warranted.

Limitations

One well-known disadvantage of observational studies is their costliness. As a result, critical choices are required to work within the constraints of the resources available. In the current study, these choices affected the size and composition of the Year 3 mother-child sample as well as the types of behaviors that were coded and analyzed. In order to incorporate the resource-intensive observational assessments, the sample selected for follow-up at Year 3 included only about half of those who were interviewed at baseline. Although this reduction in

our sample size limited our ability to detect very small effects and to comprehensively examine potential moderators beyond the prevention subgroup, it did not impact the integrity of the random assignment design. The investigation of other possible moderators may provide additional information about the program's success or challenges in serving specific subgroups of women and/or children. Further studies will explore other expected moderator effects.

Resource constraints also caused us to prioritize the types of behaviors to code from the observed mother-child interactions. A decision was made to focus the initial coding schemes on parenting behaviors targeted for change by the HFNY program. Given the time and resources necessary to accomplish detailed and reliable coding, we were not able to code child behaviors, so we do not know how the child was behaving or what he or she was doing at the time when we coded mothers' behaviors, how the child responded to the mother's actions or if the mother's parenting strategies were effective (e.g., Did the child refrain from eating the snack during the Delay of Gratification Task? Did the child comply and pick up the toys in the Cleanup Task?). Fortunately, the data collected during the observational assessments will remain available for coding and analysis until additional resources become available.

Implications for Child Development, Program Changes, and Research

The current study demonstrated that HFNY had an overall impact on positive parenting, as measured by micro-analytic observational assessments of mother-child interactions. This is an especially important finding for the high-risk population targeted for service by HFNY. Positive parenting behaviors such as maternal sensitivity and supportiveness have been shown to be protective factors against the development of childhood aggression and behavior problems in the face of adverse events (Patterson, 1982; Zahn-Waxler, Iannotti, Cummings, & Denham, 1990). When practiced, they also foster the development of self-control and emotion regulation skills among children (Rodriguez, Aber, et al., 2005; Robinson, et al., 1997). Similarly,

providing cognitive stimulation during childhood and engaging the child's use of effective strategies to deal with challenging situations increases the likelihood of a smooth transition to formal schooling (Fagot & Gauvain, 1997; Smith, Landry, & Swank, 2000). In turn, these skills and early successes may decrease the child's risk for severe, negative long-term outcomes such as delinquency, school dropout, and illiteracy.

While our overall findings demonstrate the benefits of providing HFNY services to all women in the sample, our subgroup findings suggest ways in which HFNY resources may be optimized. As we found using self-report data at Year 2, the micro-analytic observational assessments at Year 3 showed that HFNY parents in the "prevention subgroup" experienced an average reduction of about 15-20% in the prevalence rates of harsh parenting as compared to their counterparts in the control group. Mothers in the prevention subgroup may have a "heightened sense of vulnerability" due to the fact that they are about to enter a new role (first-time mothers), are still young, and have not yet started parenting (Olds et al., 1999). This combination provides home visitors with an opportunity to "start right." Thus, we recommend prioritizing home visitation services for young, first-time mothers who enroll into HFA programs during the prenatal period. We feel this approach capitalizes on the strength of a model that was designed to *prevent* child abuse and neglect from occurring in the first place.

Furthermore, to more effectively identify a population that has not yet had the opportunity to abuse or neglect their children, we recommend shifting the HFA model's focus from providing universal screening of all *new mothers* in a community to universal screening of *all pregnant women* in a community. This modification would encourage workers to devote the majority of their outreach and screening efforts to engaging pregnant women at risk for abusive or neglectful parenting.

At the same time, we recommend sustaining program eligibility for women who have already given birth, whether to their first or subsequent child. If referred to the program, women with new babies would continue to be offered home visitation services provided a slot is available. HFNY's effectiveness in promoting positive parenting practices suggests that all high risk mothers, whether they belong to the prevention subgroup or not, have the potential to benefit from home visiting services offered under the model.

Finally, we strongly recommend additional research to investigate the most appropriate strategies to more effectively reduce negative parenting practices among women who fall outside of the confines of the prevention subgroup. For example, developing techniques that help mothers replace harmful or unacceptable behaviors with actions that improve the mother's interactions with the child may be helpful (Chaffin, et al., 2004). In addition, model enhancements such as motivational interviewing (Miller & Rollnick, 1991) may initiate or sustain changes in this challenging area. Developing and utilizing curricula that actively promote clearly defined parental roles is also crucial for preventing potentially negative parenting styles during a critical developmental period. Left unattended, sustained patterns of role-reversed parenting may be detrimental to the child's healthy development.

Conclusion

The current study demonstrated the potential of micro-analytic observational assessments administered in study participants' homes to provide an insightful lens for examining the effects of an HFA-based home visiting program on parenting behaviors. The observational assessments conducted as part of a randomized trial's Year 3 data collection effort allowed us to capture detailed information about specific positive and negative parenting behaviors that have been targeted for change, and to corroborate earlier findings that were assessed using a different methodology (e.g., self-report). In addition, the dynamic data generated from the observational

assessments are expected to continue providing useful information about the program's effectiveness on other dimensions of parenting and child outcomes.

The impacts on positive and negative parenting behaviors suggest that the HFNY program has the potential to make a considerable difference in the lives of families at risk for abuse and neglect. The consistent pattern of results obtained for the positive parenting across the different challenges or tasks attests to the effectiveness of HFNY's home visitors in helping mothers to engage in both cognitive stimulation and maternal responsiveness. And the replication of the prevention subgroup as a moderator of program effects on harsh parenting indicates that HFNY is particularly effective in preventing harsh parenting among young, first-time mothers who are offered services during pregnancy.

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