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Healthy Families New York (HFNY) randomized trial: Effects on early child abuse and neglect^{☆,☆☆}

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Abstract

Objective: To evaluate the effects of a home visiting program modeled after Healthy Families America on parenting behaviors in the first 2 years of life.

Methods: A sample of 1173 families at risk for child abuse and neglect who met the criteria for Healthy Families New York (HFNY) was randomly assigned to either an intervention group that was offered HFNY or a control group that was given information and referrals to other services. Data were collected through a review of CPS records, and maternal interviews at baseline and the child's first birthday (90% re-interviewed) and second birthday (85% re-interviewed).

Results: HFNY mothers reported committing one-quarter as many acts of serious abuse at age 2 as control mothers (.01 versus .04, $p < .05$). Two sets of interactions were tested and found to have significant effects ($p < .05$). At age 2, young, first-time mothers in the HFNY group who were randomly assigned at 30 weeks of pregnancy or less were less likely than counterparts in the control group to engage in minor physical aggression in the past year (51% versus 70%) and harsh parenting in the past week (41% versus 62%). Among women who were "psychologically

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^{☆☆} An earlier, expanded version, "Healthy Families New York Randomized Trial: Impacts on Parenting After the First Two Years," was made available at <http://www.ocfs.state.ny.us/main/reports/> to provide prompt feedback to the program on the results of the randomized trial.

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vulnerable,” HFNY mothers were one-quarter as likely to report engaging in serious abuse and neglect as control mothers (5% versus 19%) at age 2.

Conclusions: These findings suggest that who is offered home visitation may be an important factor in explaining the differential effectiveness of home visitation programs. Improved effects may be realized by prioritizing the populations served or by enhancing the model to meet program objectives for hard-to-serve families.

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Introduction

Healthy Families New York (HFNY) is a comprehensive and intensive home visitation program based on the Healthy Families America (HFA) model. Consistent with the HFA model, specially trained paraprofessionals provide home visiting services to new or expectant parents who are deemed to be at risk of abusing or neglecting their children. The goals of HFNY are to: (1) promote positive parenting skills and parent-child interaction; (2) prevent child abuse and neglect; (3) support optimal prenatal care, and child health and development; and (4) improve parent’s self-sufficiency.

Although the HFA model is one of the most broadly recommended and practiced strategies for child abuse prevention in the nation (Harding, Diaz, & Oshana, 2004; Leventhal, 2005), there is considerable debate as to whether the HFA model is an effective means of preventing child abuse and neglect (Chaffin, 2004, 2005; Hahn, Mercy, Bilukha, & Briss, 2005; Oshana, Harding, Friedman, & Holton, 2005). In an article summarizing results from 12 randomized trials that directly measured the child maltreatment outcomes of home visitation programs, Chaffin (2005) reported that only 1 of the 12 studies, a study of a nurse home visitation program, the Nurse Family Partnership (NFP) program in Elmira, New York (Olds, Henderson, Chamberlin, & Tatelbaum, 1986), found a positive effect on child maltreatment; ten revealed no significant improvements; and one showed a negative effect on child maltreatment. While much of the debate regarding the relative effectiveness of the NFP model versus the HFA model has focused on *who delivers* home visitation services (i.e., nurses or paraprofessionals), this paper proposes and tests an alternative framework for reconciling the discrepant findings and shifts the focus to *who is offered* home visitation services.

In their recent letter to the editor of *Child Abuse & Neglect*, Olds, Eckenrode, and Kitzman (2005) reminded readers that the original intent of the NFP home visitation program was to prevent the *initiation* of abuse and neglect, not to prevent the *recurrence* of abuse and neglect after it has already taken place. In keeping with the goals of the NFP model, Olds et al. (1999) recommended targeting a particular group for the prevention effort: young, first-time mothers, who are introduced to the program prior to the birth of their children. The rationale given by David Olds for focusing on this population is threefold (Olds et al., 1999). First, the problems the program is designed to prevent are often concentrated among adolescent, first-time mothers (Maynard, 1997; Stier, Leventhal, Berg, Johnson, & Mezger et al., 1993). For example, teen parenthood may compromise youth’s ability to successfully cope with the stressors that arise from parenting, and may result in more harsh parenting practices than older parents (e.g., Goerge & Lee, 1997; Stier et al., 1993; Zuravin, 1988). Second, first-time mothers may be more receptive to services, instruction and support given their “heightened sense of vulnerability,” as compared to women who have already given birth (Olds et al., 1999, p. 46). In addition, the behaviors of teenage first-time

mothers may be particularly malleable or susceptible to change. Recent research suggests that puberty is a time of significant change in the neural systems responsible for behavior, self-regulation, emotions, and decision-making (National Research Council and Institute of Medicine, 2006). Third, early home visitation provides the opportunity to help plan pregnancies at a pace that allows the young mothers to finish school with as few child care burdens as possible, while also positioning these young women to provide better care to subsequent children (Olds, Kitzman, et al., 2004). Consistent with these ideas, in 1991 the US Advisory Board on Child Abuse and Neglect recommended working with first-time parents to promote healthy parenting practices before harmful patterns become entrenched.

Although HFA, like NFP, was not designed to intervene with abusive or neglectful parents in order to avert further maltreatment, a sizable number of families participating in HFA programs have engaged in abuse and neglect prior to enrolling in the program. Moreover, 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 abusive or neglectful behaviors that have not been reported or behaviors that are likely precursors of maltreatment, such as harsh scoldings or punishments. We hypothesize that the participation of such women in the HFA program is likely to dilute the effect of the program on child maltreatment by introducing the possibility that maltreatment may have already occurred prior to or concurrent with program entry. Indeed, MacMillan et al. (2005) found limited effects when they used a randomized controlled trial to evaluate the effectiveness of a home visitation program delivered by public-health nurses in preventing the recurrence of child abuse and neglect.

In the current study, we use data gathered from a randomized control trial that was designed to evaluate the effectiveness of HFNY in achieving the four goals specified earlier. Given the recent debate regarding the ability of HFA programs to improve maltreatment outcomes, this paper restricts its focus to the goal of preventing child abuse and neglect. Whereas the randomized trials of HFA programs conducted in Hawaii (Duggan et al., 2004) and San Diego (Landsverk et al., 2002) were limited to women who had already given birth, HFNY's evaluation included young women who were randomly assigned to the intervention or control groups *prior* to the birth of their first child, as well as older women who entered the study after the birth of their first child or a subsequent child. This places our evaluation in the unique position of being able to identify a subgroup of our sample that has not yet had the opportunity to abuse or neglect their children. We therefore constructed an analytic subgroup (which we refer to as a prevention subgroup) to resemble the population targeted by the NFP program (Olds et al., 1997): first-time mothers under the age of 19 who were randomly assigned at 30 weeks of pregnancy or less. As approximately 15% of our entire sample falls into this relatively homogeneous subgroup, we are able to contrast HFNY's effectiveness for this prevention subgroup with the remaining women, a more heterogeneous sample that is similar to those used in the other randomized trials of HFA.

We also isolate a second subgroup that is similar to a group for whom NFP was found to be particularly successful, women with "low psychologic resources" (Olds, Robinson, et al., 2004, p. 1561). In work by Olds et al. (2002, p. 487), the low psychological resources group is comprised of women who have "limited intellectual functioning, mental health, and sense of control over their lives." As the NFP sample consisted primarily of first-time mothers under the age of 19 years, the current study is the first to test the generalizability and robustness of the effect of home visitation among women with low psychological resources within a more heterogeneous sample of women. It is hypothesized that this compromised status will make program participants more susceptible and receptive to the messages and services the program offers.

Purpose

In summary, this paper will (1) document HFNY's ability to reduce child abuse and neglect; (2) explore and test one framework for understanding and reconciling the discrepant findings from various randomized trials of home visiting models—prevention versus intervention; and (3) evaluate an additional subgroup for whom home visitation has previously been found to be particularly successful—the psychologically vulnerable.

Healthy Families New York program description

New York State's Office of Children and Family Services (OCFS) established Healthy Families New York in 1995. HFNY currently operates in 29 sites throughout New York State. In 2005, HFNY had an allocated budget of \$17.6 million and the cost per family ranged from \$3000–\$3500 per year.

Screening is used to target expectant parents and parents with an infant under 3 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 a Family Assessment Worker (FAW) assesses parents for risk of engaging in child abuse and neglect using the Kempe Family Stress Checklist (Kempe, 1976). If parents score at or above the pre-established cutoff of 25 on the checklist they are eligible for the program. Participation in the program is voluntary.

Home visits are conducted by Family Support Workers (FSWs), specially trained paraprofessionals who live in the target community and share the same language and cultural backgrounds as program participants. Although home visitors are not required to have any post-secondary education, about 40% have taken courses at the post-secondary level and about one-third are college graduates. All new HFNY staff members attend a 1-week core training designed to teach the basic skills needed to perform home visits and assessments, which is run by a New York State team of approved HFA trainers and sponsored by Prevent Child Abuse New York. FSWs are trained on parent-child interaction, child development, and strength-based service delivery, and FAWs are trained on administering and scoring the Kempe. FSWs practice skills learned in core training with a series of transfer-of-learning exercises, and shadow an experienced home visitor before they are assigned to work with families. In addition, FSWs receive intensive local "wraparound" training on a variety of topics such as domestic violence, substance abuse, abuse and neglect, well-baby care, and communication skills. FSWs meet with their supervisors for at least 1.5 h each week and are observed on one home visit per quarter.

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 5 years old, or enrolls in Kindergarten or Head Start.

The content of the visits is intended to be individualized and culturally appropriate. During the prenatal period, the home visitor uses curricula approved by HFA such as "Partners for a Healthy Baby" to support expectant women in achieving an optimal pregnancy experience. Prenatal visits generally focus on promoting healthy behaviors (e.g., eating nutritious food), discouraging risky behaviors (e.g., tobacco and alcohol use), coping with stress, encouraging compliance with prenatal appointments and medical advice, and educating the expectant mother about the development of the fetus. 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 healthy behaviors, 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, building problem-solving skills, strengthening family support networks, helping parents address issues such as substance abuse, mental illness and domestic violence, and making referrals to treatment providers and other community services as needed.

Methods

Overview of the randomized controlled trial of HFNY

In 2000, the Bureau of Evaluation and Research located within New York State’s OCFS, in collaboration with the Center for Human Services Research (CHSR) at the University at Albany, launched a 3-year evaluation to determine the effectiveness of HFNY. A randomized experimental design was used in which women completed a formal assessment, and those meeting the eligibility criteria for HFNY were randomly assigned to either an intervention or control group. Those assigned to the intervention group were offered HFNY services, and those assigned to the control group were given information and referral to other appropriate services in the community. The research protocol was approved by the Institutional Review Board of University at Albany (IRB Approval # 00-246).

The trial was conducted at three sites with home visiting programs that had been in operation since HFNY’s inception. Site A comprised about half the sample, and Sites B and C each made up approximately a quarter of the sample. The program at Site A targeted families from inner-city neighborhoods and was under the auspices of a community-based agency. The other two sites served their entire counties, which include small cities as well as suburban and rural areas. One was affiliated with a hospital, while the other was associated with a community health center. Site A’s home visiting population consisted primarily of African-American families and Latino families of Puerto Rican origin. Home visited families in Site B were predominantly White, but a sizable percentage were African-American. Participants in Site C were largely White, with an appreciable number of Latinos, many of whom were recent immigrants from Mexico and Central American countries. Although the sites varied on a number of dimensions, they all used the same criteria to determine eligibility for the program.

Recruitment, screening, random assignment, and enrollment

Recruitment for the study began in March 2000 and ended in August 2001. All women were selected for the study following the same screening and assessment procedures used to establish eligibility for HFNY. Informed consent for the study was obtained by the Family Assessment Worker prior to the administration of the Kempe Family Stress Checklist assessment. Random assignment was performed within each site using a computer program. Each participant assigned to the HFNY (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. Meanwhile, the FAWs who conducted the assessment interview provided each participant assigned to the control group with information about other services in the community and made referrals based on the needs identified during the assessment. Women assigned to the control group, however, were not referred to other home visiting programs that were similar in type, duration, and intensity to HFNY. The FAWs did not follow up with members of the control group to determine whether they followed through with the referrals.

Study sample. Over the 18-month sample selection period, 1297 women were randomly assigned to the HFNY program ($n=647$) or the control group ($n=650$). Between the time of random assignment and the baseline interview, a number of women were found to be ineligible for the study due to residing outside the catchment area, speaking a language other than English or Spanish, or duplicate assignment (see Figure 1). As a result, only 1254 of the 1297 women who had been randomly assigned were actually eligible for the study. Baseline interviews were conducted with 1173 (93.5%) of the eligible women (intervention, $n=579$; control, $n=594$).

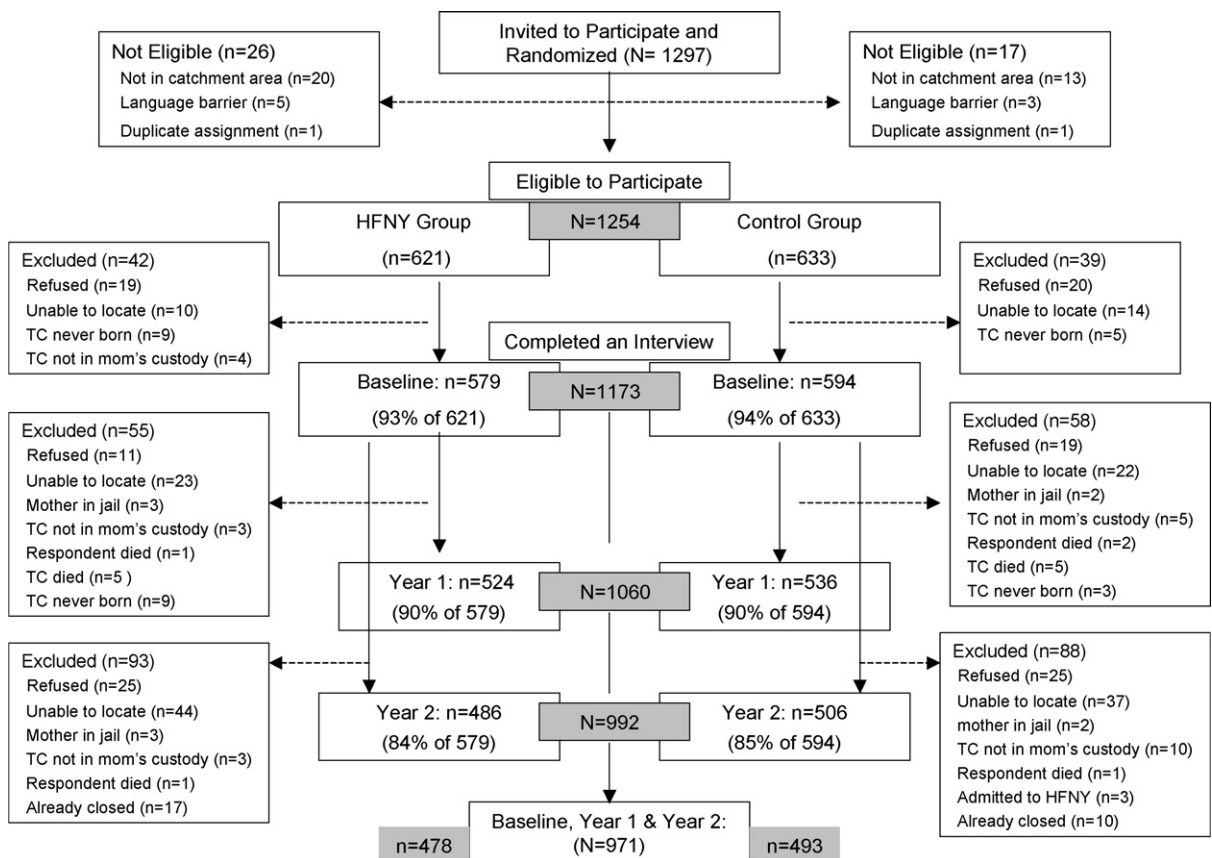


Figure 1. CONSORT diagram: study random assignment, sample, and participation.

About one-third (34%) of the mothers in the study sample were White, non-Latina; 45% were African-American, non-Latina; and 18% were Latina. Like HFNY participants statewide, women in the study sample were often young (31% under 19), first-time mothers (54%), and had not yet completed high school or received a GED (53%), or were never married (82%). For the 1173 women interviewed at baseline, an intention-to-treat approach was adopted. That is, once a woman was randomly assigned and interviewed, she remained in her assigned group for the duration of the study, regardless of whether she ever enrolled in HFNY or dropped out early.

Approximately 10% of the women randomly assigned to and offered the HFNY program did not enroll in the program. By 1 year after baseline 50% of the families who were assigned to the intervention group were still enrolled in the program, and by 2 years, only one-third of HFNY participants remained in the program. The program retention rates for our study participants are consistent with those for other HFA programs reported in the recent HFA national implementation study (Harding, Reid, Oshana, & Holton, 2004). Families who did enroll in HFNY received an average of nearly 22 visits between the time of random assignment and the Year 1 interview, with almost 30% of the families receiving more than 30 visits. Only 8% of the families received just one or two visits. The families who were still participating in the program between the Year 1 and Year 2 interviews received an average of 14 visits, with 42% receiving between 11 and 20 visits during the second year. In keeping with an intention-to-treat approach, all of the women who were randomly assigned to the intervention and control conditions and completed baseline interviews were included in the analyses of program outcomes.

Data collection

Following the baseline interview, participants were interviewed in their homes shortly after the birth of their children (if they entered the study prior to giving birth), at the time of the target children's first and second birthdays, and, for a subsample, again at age 3. This paper uses data from the baseline, Year 1, and Year 2 data collection efforts. Study retention was high: 90% of the parents who completed a baseline interview were re-interviewed at Year 1, and 85% were re-interviewed at Year 2; 2% of the sample completed the Year 2 but not the Year 1 interview. Interviews lasted between 45 min and 1 h and 15 min, and respondents were paid \$40 for their participation. Interviewers were independent of HFNY and blind to group assignment.

At each follow-up we also extracted data from an automated database maintained by OCFS that tracks child abuse and neglect reports and determinations. By drawing upon data from two independent sources, self-report and CPS records, we hoped to create a fairly accurate picture of abusive and neglectful parenting. Self-reports of parenting practices have the benefit of capturing behaviors that may never come to the attention of CPS, but parents may underreport undesirable behaviors like abuse. On the other hand, although the incidents of child abuse and neglect that are substantiated by CPS are likely to have actually occurred, most acts of child abuse and neglect are never reported to CPS, and only a small proportion of those are substantiated. Olds, Henderson, Kitzman, and Cole (1995) found that CPS reports are prone to surveillance bias and cautioned against their use as a single measure of child abuse and neglect in evaluations.

Analytic subgroups

Prior to analyzing the Year 2 data, we constructed two analytic subgroups. The first, which we refer to as the “prevention subgroup,” includes first-time mothers under the age of 19 years who were randomly assigned at a gestational age of 30 weeks or less—a group that closely resembles the population served by NFP. In contrast to this relatively homogeneous group of women, the remaining women, whom we refer to as the “diverse subgroup,” are similar to the majority of women served by HFA programs. The “prevention subgroup” was created to explore the possibility that the program differentially affects those who are at high risk of maltreating, but have not yet had the opportunity to abuse or neglect their own children as compared to a more diverse group of women who varied in age, prenatal status at the time of random assignment, presence of other offspring, and prior involvement with CPS.

The second subgroup, the “psychologically vulnerable,” approximates the “low psychological resources” subgroup identified by Olds et al. (2002, p. 487). The low psychological resources index constructed by Olds included three components: mental health status, mastery, and a measure of limited intellectual functioning (Olds et al., 2002; Olds, Robinson, et al., 2004), while our psychologically vulnerable variable was limited to two components: depressive symptoms (CES-D; Radloff, 1977) and mastery (Mastery of Psychological Coping Resources Scale; Pearlin & Schooler, 1978). In keeping with the procedure used by Olds et al. (2002), we first created an index of psychological vulnerability by combining mean baseline *z* scores for the respondent’s depressive symptoms and a reverse-scored mastery scale, and then standardized the composite to a mean of 100 and a standard deviation of 10. Next, as we did not have information on the intellectual functioning component included in the NFP low psychological resources variable, we compensated for the potential reduction in reliability by dichotomizing our index at the top 10% (113.3) to capture the most psychologically vulnerable women in the sample instead of dividing the sample at the mean (Olds et al., 2002). Those above the cutoff were considered “psychologically vulnerable” and those below it served as the reference group.

Measures

Maternal report of parenting behaviors. We used the revised parent-child Conflict Tactics Scale (CTS-PC) at each follow-up to measure self-reported parenting practices (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). To reduce respondents’ reluctance to disclose negative behaviors to the interviewers, mothers were instructed to fill out a paper-and-pencil version of the CTS-PC, and then place the completed instrument in a sealed envelope. Mothers were asked how often they engaged in 27 different behaviors in the past year as well as five questions about parenting in the past week. The instrument measures both whether an event ever occurred, its “prevalence,” and how often it occurred (0–20 times), which we refer to as “frequency.” Cronbach alphas in our sample ranged from .60 to .95, and were consistent with those reported by Straus (2004) and Straus et al. (1998).

The CTS-PC has a number of subscales: neglect, psychological aggression, nonviolent discipline, minor physical aggression, severe abuse, and very severe abuse in the past year, and harsh parenting in the past week. We excluded the nonviolent discipline subscale because some of the items were over-endorsed, suggesting that punitive parenting styles may exist even within this positively labeled category.

For purposes of comparison with CPS data, we also derived a proxy measure of “official” child abuse and neglect by creating a composite scale consisting of the 11 most serious items from the neglect and severe/very severe physical abuse subscales. The composite scale encompasses acts that likely would

have resulted in a substantiated report had they been brought to the attention of CPS, such as hitting with a fist or object, shaking or burning the child, or leaving the child alone.

Finally, when examining patterns of non-response to individual items on the CTS-PC at Year 2, we noted that the missing data appeared to be non-random. The control group was more likely than the intervention group to skip certain questions, particularly those that involved more serious forms of abusive or neglectful behaviors. In addition, mothers who failed to respond to some of the more serious items were more likely to have CPS reports or to have reported serious abuse or neglect on the Year 1 interview. As a result, we constructed and compared five different methods for replacing missing items, including dropping the items, replacing the missing values with 1s or 0s, and constructing complex algorithms to estimate the likelihood of positive or negative endorsement of an item. Ultimately, we used a listwise deletion method within each subscale because the pattern of results was consistent and robust across the different substitution methods. A full description and comparison of the different substitution methods can be found in an expanded version of this paper that is posted on OCFS' website (see DuMont et al., 2006).

Substantiated CPS reports. We reviewed CPS records of child abuse and neglect reports using data from OCFS' CONNECTIONS database and dating back 5 years prior to study entry to establish a meaningful baseline. In this paper we measured program effects by the percent of women with a substantiated report and the mean number of substantiated reports.

Random assignment. Treatment group assignment was represented with a dummy-coded variable (1 = HFNY intervention; 0 = control).

Covariates used when estimating the treatment effect. A number of variables were included in the analyses to adjust for levels of functioning at baseline and to help isolate the treatment effect. Two dummy-coded variables were used to represent race/ethnicity: non-Latina White women and Latina women versus the reference group of non-Latina African-American women. Other dummy-coded covariates included random assignment at a gestational age of 30 weeks or less, site of participation, history of substantiated neglect or abuse, status as a first-time mother, respondent's age at intake, born in the United States, receipt of cash assistance from welfare in the past year, and psychological vulnerability. Also dummy coded was parents' own history of childhood maltreatment, a single recall item from the Revised Conflict Tactics Scale (CTS2; Straus, Hamby, Bonney-McCoy, & Sugarman, 1996), "my mother swore at me more than twice," that captured harsh or inappropriate treatment of the respondent as a child. A continuous variable from baseline was included to measure physical health status, from the general health subscale of the RAND 36-Item Health Survey 1.0 (Hays, Sherbourne, & Mazel, 1993). In addition, we controlled for the total number of current depressive symptoms as measured by the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) at each of the corresponding follow-ups to adjust for variations in self-reported behaviors that could be attributed to method bias (Dohrenwend, Dohrenwend, Dodson, & Shrout, 1984).

Data analysis

We used student *t*-tests and Chi-square tests to assess the comparability of the intervention and control groups on demographic variables and risk factors for child abuse and neglect at baseline as well as to

test the representativeness of mothers who completed the follow-up interviews at the first and second follow-ups.

Logistic regressions were used to examine the effects of HFNY on the dichotomized prevalence outcomes for the two measures of parenting (self-reported parenting and CPS substantiated reports) at Years 1 and 2. Odds ratios, a way of comparing whether the probability of a certain event is the same for two groups, were calculated to compute the adjusted means and significance levels. A program effect is suggested if the intervention group is significantly less likely to have poor parenting behaviors or substantiated reports relative to the control group. In models where the outcome of interest was a count variable with a large proportion of zero or near-zero values (i.e., the frequency scores and counts of substantiated reports), program effects were analyzed using log-linear regression, assuming a negative binomial distribution, as appropriate (Long, 1997). SAS 8.2 was used for analyses.

In both sets of analyses, the treatment condition (i.e., assigned to the control group versus the HFNY group) was the primary independent variable, and the models controlled for the covariates described above. To test for specific subgroup program effects, two sets of interactions (prevention subgroup \times treatment group assignment and, psychologically vulnerable subgroup \times treatment group assignment) were examined separately. Due to concerns regarding sufficient power to detect interaction effects and/or to produce stable coefficients for the interaction terms, interactions were only evaluated if the prevalence of the maltreatment event was at least 6% for both the treatment and control conditions. The 6% cutoff provided a sufficient number of cases reporting the behavior (over 50) to divide the interaction tests into cell sizes that would generate reasonable and reliable estimates.

Results

Sample description

Table 1 displays means and percentages for demographic variables, covariates, and membership in the subgroups for the entire sample, control group, and HFNY group. There were no significant differences between the HFNY group and control group on any of these measures, demonstrating that the random assignment was successful in securing the equivalence of the two groups at baseline. Despite the fact that over half of the sample was comprised of first-time mothers, approximately 20% of the sample had a prior CPS report and 9% of the sample had a substantiated child abuse or neglect report prior to baseline. Over 40% of these prior CPS reports were still open at the time of random assignment.

With respect to group differences over time, the percentage of HFNY and control group respondents did not differ significantly at either follow-up point. At both follow-up periods, however, participants who remained in the study (regardless of whether they continued to participate in the program) were more likely than those who dropped out of the study to be first-time mothers (Year 1: 55.5% versus 41.8%, $p = .006$; Year 2: 56.1% versus 43.9%, $p = .003$), but less likely to have been randomly assigned at a gestational age of 30 weeks or less (Year 1: 47.4% versus 84%, $p < .001$; Year 2: 47.4% versus 80%, $p < .001$). In addition, at Year 1, follow-up rates for non-Latina White women were slightly higher than those for Latina women and non-Latina African-American women. However, by Year 2 these differences had disappeared. No other significant differences were found between those who continued in the study and those lost to attrition.

Table 1
Baseline characteristics of HFNY and control groups^a

Characteristic	Total (n = 1173)	HFNY group (n = 579)	Control group (n = 594)
Mother's race/ethnicity			
White, non-Latina	34.4%	34.4%	34.3%
African-American, non-Latina	45.4%	44.4%	46.5%
Latina	18.0%	18.3%	17.7%
Prior substantiated child abuse or neglect reports	9.0%	9.0%	8.9%
Prior child abuse or neglect reports (substantiated or unsubstantiated)	20.2%	19.7%	20.7%
Mother's childhood history of child maltreatment	48.7%	49.2%	48.1%
Randomly assigned at a gestational age of 30 weeks or less	48.5%	47.3%	49.7%
Family received cash assistance from welfare	29.2%	31.1%	27.4%
First-time mother	54.2%	55.3%	53.2%
Mother <19 years old	31.0%	32.3%	29.8%
Mean maternal age in years – mean (S.D.)	22.5 (5.5)	22.4 (5.6)	22.5 (5.4)
Mean score on general health status [from RAND] – mean (S.D.)	70.6 (18.3)	70.3 (18.6)	70.9 (18.0)
Psychologically vulnerable subgroup	10.4%	10.2%	10.6%
Prevention subgroup	14.5%	14.9%	14.1%

^a There were no significant differences between the groups at $p < .05$.

Description of analytic subgroups

The psychologically vulnerable subgroup included 122 mothers, comprising 10% of the full sample. As compared to mothers not classified as psychologically vulnerable, mothers in the psychologically vulnerable subgroup were slightly older (23.5 versus 22.3 years), had higher rates of prior substantiated CPS reports (11.5% versus 8.7%), and were less likely to be first-time mothers (45% versus 55%). The mean symptom count for the psychological vulnerable women was 36.9 as compared to 13.2 for the less vulnerable women.

A total of 170 mothers were classified into the prevention subgroup, representing 14% of the overall sample. The mean age of the group was 17.2 as compared to 23.3 years for the more diverse group of women, none of the women had prior substantiated CPS reports as compared to 10.5% of the women in the diverse group, and the average CESD scores for the two groups were nearly equivalent (16 versus 15.6 symptoms).

The overlap between the psychologically vulnerable women and those classified in the prevention subgroup was minimal: approximately 15.6% of the women considered psychologically vulnerable were also included in the prevention subgroup.

Did HFNY have an effect on abusive or neglectful parenting?

As shown in Table 2, for the sample as a whole, no program effects were observed for prevalence (whether an event occurred) of any self-reported subscales at Year 1 or Year 2, although the prevalence of neglect was marginally significant at Year 1 ($p = .07$). Differences were noted, however, for the frequency (how often the event occurred) of several self-reported subscales. At Year 1, compared to mothers in the control group, mothers in the HFNY intervention group reported having engaged in significantly fewer acts of very serious physical abuse, minor physical aggression, and psychological aggression in the past year, and harsh parenting in the past week. At Year 2, HFNY parents reported having committed, on average, one-fourth as many acts of serious physical abuse in the past year (e.g., hitting child with fist, kicking child, slapping on face) than the control group (.01 versus .04) and the frequency of neglect was marginally significant ($p = .08$).

Consistent with findings from other randomized trials of HFA programs (Duggan, Caldera, Rodriguez, Burrell, & Shea, 2005; Duggan et al., 2004), no significant differences were detected between the control and HFNY groups for the prevalence or frequency of substantiated CPS reports of abuse and neglect at Year 1 or Year 2 (Table 2).

Were effects of HFNY concentrated in the prevention subgroup?

Next, we examined whether the “prevention subgroup” (i.e., first-time mothers under age 19 who were randomly assigned at a gestational age of 30 weeks or less) moderated the relationship between treatment group assignment and indicators of abuse and neglect. At Year 2, significant interactions ($p < .05$) showed that compared to their counterparts in the control group, HFNY mothers classified as part of the prevention subgroup were less likely to self-report engaging in minor physical aggression against their children in the past year (51% versus 70%, Figure 2a) and harsh parenting behaviors in the past week (41% versus 62%, Figure 2b). In contrast, the rates of minor physical aggression in the past year and harsh parenting in the past week for the intervention and control groups within the more “diverse group” of mothers were comparable.

As shown in Table 3, the “prevention subgroup” classification did not moderate the relationship between treatment group assignment and the frequency of any self-reported parenting subscales. However, the pattern of non-significant effects at Year 2 for CPS reports and the self-reported maltreatment subscales shown in Table 3, was consistent with the significant effects observed for minor physical aggression and harsh parenting. It should be noted that excluded from Table 3 are the subscales for which we were unable to conduct adequate tests of subgroup effects due to low prevalence rates, including serious and very serious abuse at both years, and neglect and the major abuse and neglect composite at Year 1. Although the interactions for the frequency of the major abuse and neglect composite and neglect subscale were tested at Year 2, no significant interaction effects were detected.

Were effects of HFNY concentrated in the psychologically vulnerable subgroup?

Next, we examined whether being “psychologically vulnerable,” having a low sense of mastery and high levels of depressive symptoms, conditioned relationships between treatment group assignment and indicators of abuse and neglect. At Year 2, compared to their counterparts in the control group, HFNY parents who were psychologically vulnerable were roughly one-fourth as likely to self-report engaging

Table 2

Mother's abusive and neglectful parenting behaviors toward target children by treatment group assignment and year of follow-up: overall sample from the Randomized Trial of Healthy Families New York^{a,b}

Prevalence	Year 1					Year 2				
	Cntrl		HFNY			Cntrl		HFNY		
	%	CI	%	CI	<i>p</i>	%	CI	%	CI	<i>p</i>
Serious abuse & neglect composite scale	7.28	5.3–9.9	5.67	3.9–8.1	<i>ns</i>	7.83	5.6–10.9	6.78	4.7–9.7	<i>ns</i>
Very serious physical abuse	1.33	.6–2.9	.93	.4–2.3	<i>ns</i>	2.85	1.6–4.9	2.62	1.5–4.6	<i>ns</i>
Serious physical abuse	.81	.3–2.1	.85	.3–2.1	<i>ns</i>	1.21	.5–3.1	.60	.2–1.8	<i>ns</i>
Minor physical aggression	44.42	40.0–48.9	39.60	35.3–44.1	<i>ns</i>	64.55	59.9–68.9	64.50	59.8–68.9	<i>ns</i>
Psychological aggression	56.13	51.6–60.5	51.18	46.6–55.7	<i>ns</i>	77.74	73.6–81.4	76.44	72.2–80.2	<i>ns</i>
Neglect	8.27	6.1–11.1	5.52	3.8–7.9	.07	7.18	5.1–10.0	8.09	5.8–11.1	<i>ns</i>
Harsh parenting in the past week	36.12	31.9–40.5	32.67	28.6–37.0	<i>ns</i>	54.58	49.8–59.3	53.12	48.3–57.9	<i>ns</i>
Substantiated abuse or neglect report	5.98	4.3–8.2	7.90	5.9–10.5	<i>ns</i>	4.80	3.3–6.9	5.08	3.5–7.2	<i>ns</i>
Frequency	Count	CI	Count	CI	<i>p</i>	Count	CI	Count	CI	<i>p</i>
Serious abuse and neglect composite scale	.53	.29–.97	.27	.14–.51	<i>ns</i>	.35	.19–.63	.38	.21–.70	<i>ns</i>
Very serious physical abuse	.08	.03–.41	.01	.00–.06	.04	.13	.05–.37	.13	.04–.38	<i>ns</i>
Serious physical abuse	.01	.00–.05	.01	.00–.05	<i>ns</i>	.04	.01–.11	.01	.00–.03	.03
Minor physical aggression	3.46	2.82–4.24	2.40	1.95–2.96	.017	5.86	5.00–6.86	5.67	4.84–6.66	<i>ns</i>
Psychological aggression	4.74	3.99–5.65	3.34	2.80–3.99	.007	9.84	8.56–11.3	9.37	8.16–10.8	<i>ns</i>
Neglect	.21	.12–.35	.21	.12–.35	<i>ns</i>	.46	.27–.76	.22	.13–.38	.08
Harsh parenting in the past week	1.81	1.46–2.24	1.21	.97–1.51	.04	3.13	2.62–3.73	2.76	2.30–3.30	<i>ns</i>
Substantiated abuse or neglect report	.07	.05–.10	.09	.70–.12	<i>ns</i>	.06	.04–.09	.06	.04–.09	<i>ns</i>

^a All means are adjusted for prior substantiated reports of child abuse or neglect, two dummy codes representing race/ethnicity, random assignment at a gestational age of 30 weeks or less, site of participation, status as a first-time mother, born in the United States, mothers' age at intake, welfare receipt, mothers' own history of abuse, physical health status, the psychologically vulnerable index, and current depressive symptoms from the appropriate follow-ups.

^b The results presented are from analysis of CTS-PC data using group means without any substitutions for missing data.

Table 3
 Mother's abusive and neglectful parenting behaviors toward target children by treatment group assignment: prevention subgroup interactions^{a,b}

Prevalence	Year 1					Year 2				
	Cntrl		HFNY			Cntrl		HFNY		
	%	CI	%	CI	<i>p</i>	%	CI	%	CI	<i>p</i>
– Minor physical aggression					<i>ns</i>					.02
Diverse	44.65	39.9–49.5	40.58	35.9–45.5		63.26	58.3–68.0	67.01	62.0–71.7	
Prevention	41.97	30.8–54.0	37.39	27.1–49.0		70.02	57.3–80.3	51.04	38.6–63.4	
– Psychological aggression					<i>ns</i>					<i>ns</i>
Diverse	55.98	51.2–43.4	52.17	47.3–57.0		76.86	72.4–80.8	76.81	72.2–80.9	
Prevention	54.33	42.2–66.0	47.69	36.2–59.5		81.08	69.3–89.1	73.92	61.1–83.7	
– Harsh parenting in past Week					<i>ns</i>					.02
Diverse	35.51	31.1–40.2	34.25	29.8–39.0		53.18	48.1–58.3	55.39	50.2–60.5	
Prevention	39.16	30.4–51.2	25.86	17.2–37.0		61.93	48.7–73.6	40.95	29.2–53.8	
– Substantiated abuse or Neglect					<i>ns</i>					<i>ns</i>
Diverse	6.03	4.3–8.5	8.00	5.9–10.8		4.63	3.1–6.9	5.56	3.8–8.0	
Prevention	6.42	2.7–1.5	8.35	3.9–16.9		7.42	3.3–15.9	3.36	1.1–10.2	
Frequency	Count	CI	Count	CI	<i>p</i>	Count	CI	Count	CI	<i>p</i>
– Minor physical aggression					<i>ns</i>					<i>ns</i>
Diverse	3.67	2.94–4.59	2.42	1.93–3.03		5.72	4.82–6.78	5.90	4.95–7.01	
Prevention	3.04	1.73–5.35	2.24	1.29–3.89		7.13	4.67–10.89	4.35	2.84–6.66	
– Psychological aggression					<i>ns</i>					<i>ns</i>
Diverse	4.99	4.13–6.02	3.55	2.93–4.30		3.37	2.67–4.27	3.19	2.52–4.03	
Prevention	4.28	2.65–6.90	2.39	1.48–3.84		4.80	2.19–10.56	3.69	1.74–7.84	
– Harsh parenting in past week					<i>ns</i>					<i>ns</i>
Diverse	1.94	1.54–2.43	1.30	1.03–1.65		3.06	2.53–3.72	2.88	2.37–3.50	
Prevention	1.47	.83–2.60	.57	.31–1.05		3.55	2.18–5.77	2.19	1.35–3.55	
– Substantiated abuse or neglect					<i>ns</i>					<i>ns</i>
Diverse	.07	.05–.10	.09	.07–.13		.06	.04–.09	.07	.04–.10	
Prevention	.08	.03–.20	.11	.05–.24		.08	.03–.19	.03	.01–.11	

^a All means are adjusted for prior substantiated reports of child abuse or neglect, two dummy codes representing race/ethnicity, random assignment at a gestational age of 30 weeks or less, site of participation, status as a first-time mother, born in the United States, mothers' age at intake, welfare receipt, mothers' own history of abuse, physical health status, the psychologically vulnerable index, and current depressive symptoms from the appropriate follow-ups.

^b The results presented are from analysis of CTS-PC data using group means without any substitutions for missing data.

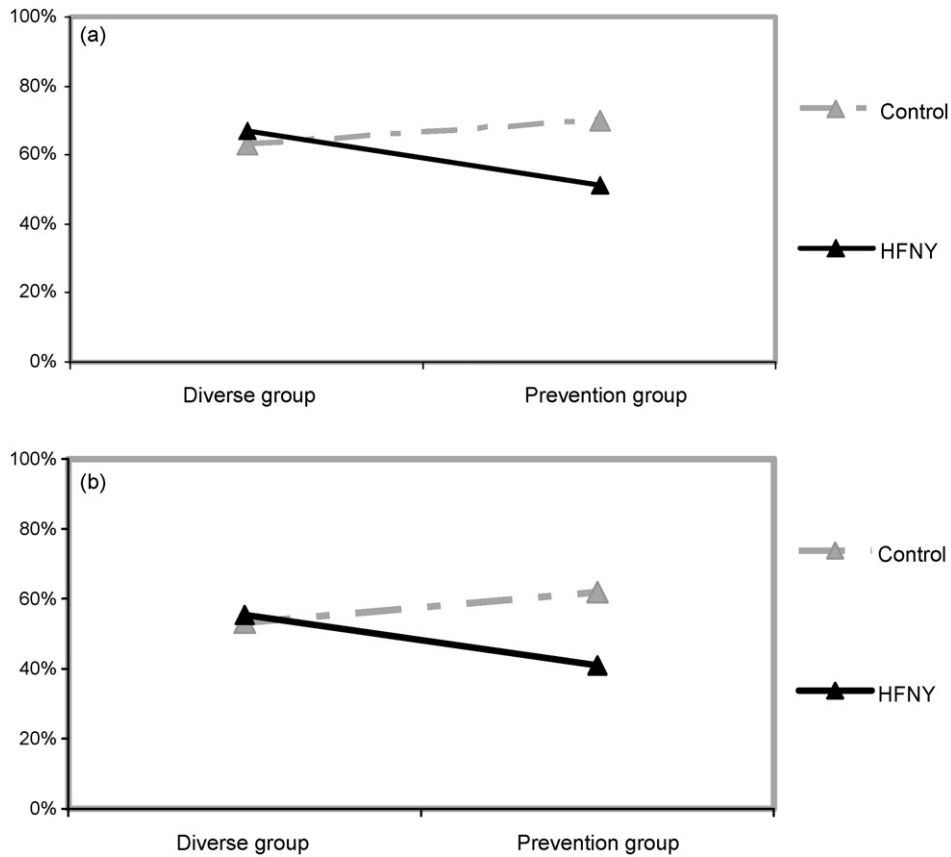


Figure 2. (a) Percentage of parents at Year 2 engaging in minor physical aggression by treatment group assignment and prevention subgroup status. (b) Percentage of parents at Year 2 engaging in harsh parenting during the past week by treatment group assignment and prevention subgroup status. *Note:* All rates are adjusted for covariates and do not rely on a missing substitution method ($n = 908$).

in acts of serious abuse or neglect (5% versus 19%, [Figure 3](#)), while there was no difference in the rates of self-reported serious abuse and neglect for the remaining women. A similar pattern of results was revealed for the *frequency* of serious abuse and neglect at Year 2 ($p < .05$). The average number of self-reported incidents of serious abuse and neglect at Year 2 for psychologically vulnerable women assigned to the HFNY group was .02 (ci: .00, .22) as compared to .62 (ci: .11, 3.38) for their counterparts in the control group. We also found significant group differences in the frequency of psychological aggression at Year 1 (1.95, ci: 1.08–3.54 versus 8.57, ci: 4.87–15.09). Psychological vulnerability did not moderate differences between the HFNY and control groups in substantiated CPS reports.

Discussion

Self-report data from the current study suggest that HFNY may lead to reductions in several types of abusive and neglectful parenting practices during the first 2 years of life. As the target child turned 1, there

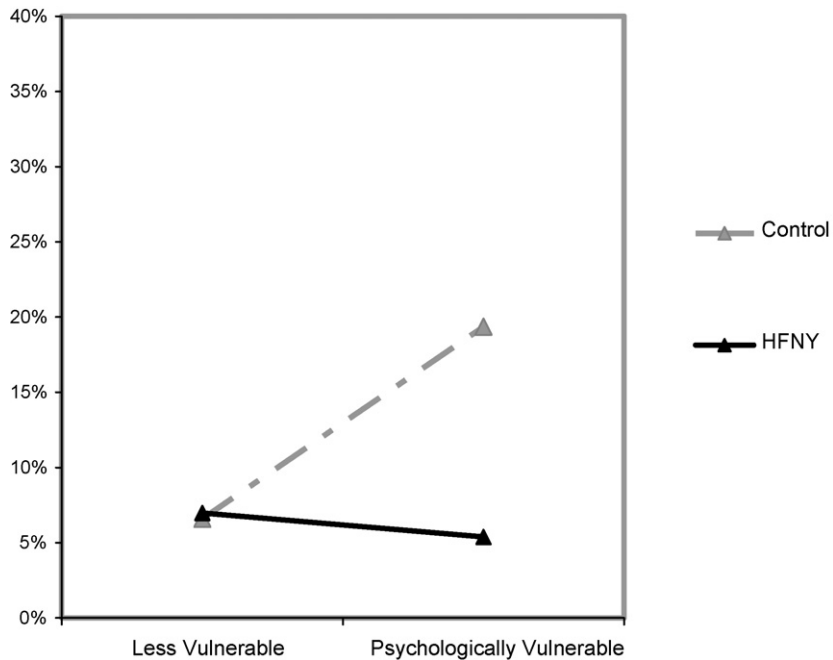


Figure 3. Percentage of parents at Year 2 engaging in serious abuse or neglect by treatment group assignment and psychological vulnerability. *Note:* All rates are adjusted for covariates and do not rely on a missing substitution method ($n = 885$).

was a consistent and significant pattern of reductions in self-reports of the frequency with which HFNY parents committed acts of physical abuse, physical and psychological aggression, and harsh parenting against their children as compared to parents in the control group. The pervasive effects on frequency identified at Year 1 shifted from including both minor and serious offenses to only the more serious acts at Year 2, perhaps due to new or different parenting demands and the developmental age of the child. Alternatively, the effects may be weakening over time due to decreased participation in the program or less intensive visit schedules.

However, notable effects emerged for specific subgroups at Year 2. The difference in effects observed between the prevention analytic subgroup and the more diverse subgroup provides an initial framework for understanding why HFNY shows meaningful effects while other randomized trials of HFA models have revealed no or minimal effects. An important difference between the HFNY randomized trials and the Hawaii and San Diego randomized trials is that this study includes women who were randomized prenatally, whereas the other studies were limited to women who had already given birth. This omission prevented researchers from analyzing the effects of HFA—a program designed to *prevent* child abuse and neglect from occurring in the first place—on a population that has not had the opportunity to abuse or neglect their children, that is, women who have not yet experienced a live birth. In addition, HFNY's effectiveness for the prevention subgroup in the domain of minor physical aggression provides additional support for this argument, suggesting that the program prevents the initiation of minor acts of aggression, a likely starting point for abusive parenting. Additional research is needed to understand the mechanisms through which the home visitation model reduces child maltreatment for this specific subgroup of women.

Another important finding concerns the women who at baseline presented with psychological vulnerabilities, a group that had minimal overlap with the prevention subgroup. For these women, the HFNY program appears to *buffer* the effect of their vulnerabilities. These findings are consistent with those of NFP that showed that the families with low psychological resources benefited the most from home visitation (Olds, Robinson, et al., 2004). Together, the current findings and the NFP findings suggest that home visitation may promote positive program effects for the psychologically vulnerable, regardless of whether or not the woman is a young, first-time mother entering home visitation services during pregnancy.

Despite significant effects on self-reported parenting, we found no program effects on CPS reports, the second indicator of abuse and neglect utilized in this study. One possible explanation for this disparity may be that mothers in the intervention group were more likely to underreport abusive or neglectful parenting behaviors due to concerns that the information would be relayed to the home visiting program, which would then notify CPS. However, our analysis of patterns of non-response to items on the CTS-PC suggests just the opposite—that mothers in the control group were more likely to skip items on the CTS that captured more serious acts of abuse and neglect. It is also possible that mothers' perceptions of their parenting behaviors are influenced by their current mental health (Dohrenwend et al., 1984), although we controlled for current symptom counts in the analyses.

The most likely explanation for the differences in the findings for CPS reports compared to the self-report parenting measures is that home visitation programs are subject to what has been referred to as surveillance bias (Olds et al., 1995). Families receiving home visits may be reported to CPS more often simply because home visitors have more opportunity to observe child maltreatment in the home, or because home visitors often refer families to other providers that are then in a better position to detect abuse and neglect. We previously conducted analyses comparing CPS reports and self-reported abuse and neglect for participants in the randomized trial, which suggested that surveillance bias is indeed operating in the HFNY program (DuMont et al., 2006; Mitchell-Herzfeld, Izzo, Greene, Lee, & Lowenfels, 2005). Among mothers who reported serious abuse or neglect at Year 1, 43% of the HFNY group had CPS reports during the first year as compared to only 18% of the control group. We suspect that the surveillance bias results from both CPS reports made by home visitors or their supervisors (4% of the CPS reports registered during the child's first year of life) and CPS reports called in by other service providers to whom home visitors referred HFNY families. However, we do not have data that would enable us to establish the links between these other reporters and the HFNY programs. If the net for detecting parental transgressions is much wider for HFNY mothers than for control mothers, the rate of CPS reports in the HFNY group may be artificially inflated, making it more difficult to observe reductions in CPS reports as a result of program participation.

Limitations

There are at least two limitations to the data and analyses presented. First, while HFNY intends for services to be provided to families until the target child is 5 years old or enters Kindergarten or Head Start, the current study only reports on effects observed as of the target child's first and second birthdays. As information from the Year 3 follow-up becomes available, we will analyze these data using a generalized estimation technique rather than presenting static snapshots measured at each year. However, given the pronounced differences in developmental tasks and parenting challenges during the first 2 years of life, we felt justified in documenting how the effects unfold during the program's initial years. As the

evaluation moves forward, we anticipate that the strongest benefits of home visitation programs may not become evident for several years (Johnson & Walker, 1991; Olds et al., 1997; Olds, Kitzman, et al., 2004). Similarly, we encourage funders and researchers to extend existing trials to examine effects across different developmental stages and milestones.

Despite high rates of study retention, the effects reported reflect significant levels of program attrition. As described earlier, by 1 year after baseline, 50% of the mothers who were assigned to the intervention group and chose to enroll in HFNY had dropped out of the program, and by 2 years, only one-third of HFNY participants remained in the program. Consequently, most HFNY participants received considerably less treatment than intended by the model, which, given our use of an intention-to-treat approach, probably diluted estimates of the program's effects. In addition, the high rates of program attrition highlight the need to identify barriers to retention in the program and to devise strategies to effectively sustain engagement in the program.

Implications

These results indicate that the HFNY program holds promise for reducing abuse and neglect among at-risk families in New York State. While our overall findings speak to the benefits of providing HFNY services to diverse groups of women at risk for abuse and neglect, our subgroup findings suggest ways in which HFNY resources may be optimized. Specifically, after 2 years, HFNY parents in the “prevention subgroup” showed an average reduction of about 20% in the prevalence rates of self-reported minor physical aggression in the past year and harsh parenting in the past week compared to their counterparts in the control group. Coercive parenting is a prominent risk factor for later behavioral problems in children (Eddy, Leve, & Fagot, 2001; O’Conner, Deater, Rutter, & Plomin, 1998), and can develop into intractable patterns of negative parent-child interaction (Patterson, 1982) that may eventually lead to later abuse. Reducing these types of negative parenting behaviors may create more opportunities for parents to develop a warm, nurturing parenting style, laying the foundation for positive social and emotional development throughout the child’s life (Forgatch & DeGarmo, 1999; MacDonald, 1992). Based on these findings, we recommend *prioritizing home visitation services for young, first-time mothers who enroll into HFA programs during the prenatal period*, preferably at a gestational age of 30 weeks or less. One possible approach to accomplishing this is to shift the focus of the program from universal screening of all *new mothers* in a community to *all pregnant women* in a community. Women who have already given birth would continue to be eligible for HFNY, and if referred to the program, would be offered home visitation services provided a slot is available, but outreach and screening efforts would be devoted primarily to the identification and engagement of pregnant women at risk of abusive or neglectful parenting. This recommendation is consistent with the successes identified by NFP (Olds, Kitzman, et al., 2004; Olds, Robinson, et al., 2004) and with findings from randomized trials of other home visitation programs that showed limited effects in the area of child maltreatment for samples that included women who already had children, entered at or after the child’s birth, or had engaged in prior acts of abuse or neglect (Duggan et al., 2004; Landsverk et al., 2002; MacMillan et al., 2005).

Although we believe the program can maximize its *preventive* benefits by prioritizing services for young, first-time moms enrolled earlier in pregnancy, we do not recommend limiting home visiting services to this group because we found that HFNY reduced the frequency of serious self-reported physical abuse by three-quarters for HFNY mothers overall and played a protective role for the psychologically vulnerable women in the HFNY group. Among the psychologically vulnerable, control mothers were

nearly four times as likely as HFNY mothers to report having committed acts of serious abuse and neglect in Year 2. In contrast, among the non-psychologically vulnerable, the rates of serious abuse and neglect were essentially the same for the HFNY and control mothers, and were comparable to the rate observed for the psychologically vulnerable HFNY mothers, suggesting that HFNY helps to protect psychologically vulnerable mothers from engaging in serious abusive and neglectful behaviors.

For those who do not fall into the successful subgroups specified, we recommend additional research to investigate the most appropriate strategies for effectively serving these women. For example, programs may want to explore model enhancements such as using motivational interviewing (Miller & Rollnick, 1991) to assist mothers who are already engaging in abusive or neglectful parenting practices to initiate or sustain changes in this challenging area. Curriculum shifts or enrichments that focus on unlearning harsh or neglectful parenting behaviors, while also offering concrete suggestions to help replace the unacceptable behaviors with actions to improve the situation could be used to supplement motivational interviewing strategies.

In sum, our findings suggest new ways of thinking about home visitation research. When comparing NFP and HFA-based models of home visitation, discussions have traditionally focused on *who delivers* the services (i.e., nurses or paraprofessionals). While weak program effects are often attributed to the use of paraprofessional staff, our findings suggest that meaningful effects on parenting behavior can be found among programs utilizing paraprofessionals. Furthermore, we observed significant differences in program effects depending on *who was offered* HFNY services. Program effects were more pronounced among those mothers who resembled the type of clients traditionally served by NFP programs (i.e., young mothers enrolled prior to the birth of their first child) and among the psychologically vulnerable. For both of these subgroups the evaluation revealed effects of clinical significance. Given the similarity between these results and those found by the NFP, we propose that *who is offered* home visitation may be a key factor in explaining the differential effectiveness of home visitation programs. We therefore recommend that future evaluations of the HFA model's effectiveness explore issues pertaining to the recipients of home visiting services.

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