



Sustained Impact on Parenting Practices: Year 7 Findings from the Healthy Families New York Randomized Controlled Trial

Kristen Kirkland¹ · Eunju Lee^{2,3} · Carolyn Smith^{2,3} · Rose Greene²

© Society for Prevention Research 2020

Abstract

Prevention of maltreatment and harsh parenting are the primary goals of evidence-based home visiting programs, but rigorous studies demonstrating long-term outcomes are limited despite widespread implementation. The current study examines data from a 7-year follow-up study of a randomized controlled trial of Healthy Family New York (HFNY). Specifically, the study examines whether HFNY participation predicts lower rates of harsh and abusive parenting 7 years after enrollment. The data include both maternal self-report of parenting behaviors as well as the target child's report of harsh parenting. The year 7 sample included 942 mother interviews (83.5% retention from baseline) and 800 child interviews. At the 7-year follow-up, maternal-reported behaviors measured by CTS-PC showed a significantly increased use of positive parenting strategies and lower levels of serious physical abuse in the HFNY group compared with the control group. Significant group differences were observed for the frequency with which mothers engaged in severe or very severe physical assault (control group = .16, compared with .03 in the intervention group, $p < .001$). In addition, fewer children reported that their parents used minor physical assault. There was no intervention impact on indicated child protective service records. The current study indicates that home visiting participation reduces harsh and abusive parenting and promotes positive parenting behaviors that endure and may strengthen later development.

Keywords Home visitation · Child maltreatment · Parenting · Harsh punishment · Conflict Tactics Scale

Home visiting programs have been widely implemented to promote positive child health and development, improve parenting, and reduce risk for child maltreatment in the USA (Green et al. 2020; Olds et al. 1997; Sama-Miller et al. 2017). Currently, at least one home visiting program is offered in 53% of all US counties (National Home Visiting Resource Center 2018). Reauthorization of the Maternal, Infant and Early Childhood Home Visiting Program in 2018 demonstrates continued support for evidence-based home visiting programs, pointing to the ongoing importance of evaluating the impact of these programs over the long term.

Healthy Families America (HFA) is one of the most widely implemented evidence-based home visiting models (Latimore et al. 2017; Sama-Miller et al. 2017). HFA programs have demonstrated short-term impacts on improving parenting behaviors, decreasing parenting stress, improving child health, and reducing child maltreatment among high-risk families (Duggan et al. 2004; DuMont et al. 2008; Green et al. 2020; Jacobs et al. 2016; LeCroy and Lopez 2018). Long-term follow-up of the HFA model, however, is in its early stages as few programs have examined impacts beyond the child's first 3 years of life. To our knowledge, the randomized controlled trial (RCT) of Healthy Families New York (HFNY) is only one of two longitudinal follow-ups of the HFA model, examining outcomes as far out as age 7 (Easterbrooks et al. 2019; Lee et al. 2018). The primary objective of this study is to investigate whether participation in HFNY predicts lower rates of harsh and abusive parenting and child maltreatment 7 years after enrollment. A secondary objective is to examine the impact of HFNY on children's perspectives about harsh parenting using an innovative methodology.

✉ Eunju Lee
elee@albany.edu

- ¹ Bureau of Research, Evaluation and Performance Analytics, New York State Office of Children and Family Services, Rensselaer, NY, USA
- ² Center for Human Services Research, University at Albany, Albany, NY, USA
- ³ School of Social Welfare, University at Albany, Albany, NY, USA

Impact of Home Visiting on Parenting and Maltreatment

By providing in-home services to parents, home visiting models seek to enhance child outcomes and prevent child maltreatment. Home visitors assist parents in enhancing positive and responsive parenting and reducing harsh parenting by providing parenting education and support. Also, linking parents to tangible resources and community services may reduce isolation and promote life skills and opportunities (DuMont et al. 2008; Green et al. 2020).

Documenting the impact of home visiting programs on child maltreatment remains a complex undertaking. There are many challenges in creating a valid and reliable sampling of maltreatment experiences (Drake and Jonson-Reid 2018; Sierau et al. 2018). Child Protective Services (CPS) reports and prospective parent self-reports of maltreating behavior are the primary methods by which studies have attempted to measure this phenomenon. CPS reports have been called the “gold standard” in maltreatment measurement (e.g., Newbury et al. 2018) because of the perceived objectivity of this assessment. However, others have questioned whether such a gold standard exists since CPS reports may be higher for families receiving interventions (i.e., surveillance bias) (Green et al. 2014; Olds et al. 1995; Sama-Miller et al. 2017). Furthermore, they are subject to substantial variability across CPS professionals, agencies, and states (Colman et al. 2010). Given these challenges, home visiting researchers also depend on self-report measures of parent perpetrated maltreatment (Guterman et al. 2013). Prominent among these is the parent-child version of the Conflict Tactics Scales (CTS-PC) which assesses discipline tactics, including severe abuse behaviors (Straus et al. 1998). It maps well onto CPS physical abuse standards and “has been used across multiple ethnic groups in various nations with reported satisfactory psychometric properties” (Guterman et al. 2013, p. 572). Parental self-report measures may, however, be biased due to under-reporting of severe behavior, over-reporting of minor behaviors, and memory lapses. Children as young as 4 can also report on their experiences through self-report methodology, although this is rare and deserving of further study (Sierau et al. 2018; Straus et al. 1998). Each method has advantages and drawbacks, and use of several measurement strategies may facilitate deeper understanding of program outcomes.

Meta-analyses and systematic reviews of the literature demonstrate a consistent impact of home visiting on positive parenting and on parent-reported measures of harsh and abusive parenting but report inconsistent findings on CPS reports, at least in the short term (Levey et al. 2017). No studies have examined comparable child reports.

Healthy Family America’s Impact on Parenting and Maltreatment

A review of home visiting research studies identifies two models, Healthy Families America (HFA) and Nurse Family Partnership (NFP), as having the most positive overall findings (Sama-Miller et al. 2017). The NFP model relies on registered nurses as home visitors and uses a standardized curricula. (Eckenrode et al. 2017; Olds et al. 1997; Olds 2006). It is the most rigorously tested home visiting model and the only model that has, until recently, shown long-term impacts on CPS reports (Eckenrode et al. 2017).

Home visiting programs affiliated with the HFA model adhere to a common set of critical components; however, individual states and programs can establish their own parameters to better address the needs of their communities. For example, only first-time parents are eligible for Healthy Families Massachusetts (HFM) (Jacobs et al. 2016; Easterbrooks et al. 2019) or Healthy Families Oregon (Green et al. 2017), while parity is not part of the eligibility criteria for Healthy Families Arizona (LeCroy and Lopez 2018) or HFNY (DuMont et al. 2008). This variability presents many challenges in interpreting evaluation results and identifying the target populations that are best served by HFA programs.

While overall the HFA model has shown positive outcomes on parenting behaviors and reductions in self-reported child maltreatment, the results vary by study. Findings have been primarily limited to short-term effects, though few longitudinal studies have been conducted. In the first 3 years of life, HFA-based programs show favorable effects on less severe forms of parent-reported negative parenting behaviors such as minor physical assault and psychological aggression (Duggan et al. 2004; LeCroy and Lopez 2018). None have examined child perceptions of parenting as an outcome of home visiting, which is reasonable given the young age of the children studied. RCTs across HFA programs have not generally shown an impact on CPS reports (e.g., DuMont et al. 2008; Duggan et al. 2004; Green et al. 2017).

Earlier findings from the HFNY RCT parallel those of other HFA studies. At the year 1 and 2 follow-ups, HFNY parents reported less neglect and fewer acts of very serious physical abuse, minor physical aggression, and psychological aggression against their children than control group parents, as well as fewer acts of harsh parenting within the past week (DuMont et al. 2008). Importantly, HFNY mothers reported committing one quarter as many acts of serious abuse at year 2 as control mothers. At year 3, an observational study of parenting indicated that HFNY was effective in fostering positive parenting strategies such as maternal responsiveness and cognitive engagement (Rodriguez et al. 2010).

NFP studies suggest that home visiting effects on CPS reports may emerge later in life (Olds et al. 1997). While HFNY showed no early impacts on CPS reports, a recent

study has focused on an understudied subgroup of home-visited parents: those with CPS involvement prior to HFNY enrollment (Lee et al. 2018). The study found a positive long-term impact for this group in contrast to other home-visited mothers. By the child’s seventh birthday, mothers in the home-visited group with prior CPS involvement were half as likely as mothers in the control group to be confirmed subjects for physical abuse or neglect. A recent HFM study found similar effects on subsequent reports, although the timing of the initial report occurred after enrollment in home visiting (Easterbrooks et al. 2019).

Given the relative lack of long-term follow-up of HFA-based programs, an important question in the current study is whether the early impacts on self-reported maltreatment will be sustained and whether new effects will emerge as the target children mature. Longitudinal data from HFNY’s RCT offer an opportunity to explore the program’s impact on maltreatment at age 7 as assessed through both parent and child self-reports as well as CPS reports.

Methods

Randomized Controlled Trial and Procedure for Year 7 Follow-Up Interviews

Study mothers were recruited from three HFA sites in upstate New York. As illustrated in Fig. 1, 1254 new or expectant mothers were deemed eligible for the trial. To be included in the trial, new and expectant mothers had to meet standard HFNY program eligibility requirements (Mitchell-Herzfeld

et al. 2005). A total of 42 cases were excluded from baseline interviews since they did not have a child, a critical condition for the HFNY program enrollment. An additional 39 cases were not included due to refusal. Subsequently, 1173 (93.5%) completed baseline interviews (intervention, $n = 579$; control, $n = 594$). Follow-up interviews were conducted around the time of the target child’s first and second birthdays. For the year 7 follow-up, mothers as well as target children were interviewed. Mothers were eligible if both they and the target child were living and, if in the control group, had never received the intervention. Target children were only interviewed when the mother had custody of the child and could grant consent for the child to be interviewed.

After locating the mother, a research staff member described the interview process and scheduled a meeting. The interviewer then met with the mother and obtained informed consent to conduct the interviews. After receiving the mother’s consent to interview the child, the interviewer obtained the child’s assent. To compensate for their time, mothers were offered a monetary incentive. Target children were offered a musical toothbrush. The research protocol was approved by the Institutional Review Board of the University at Albany (IRB approval #00-246).

The HFNY Intervention

Families randomized to receive HFNY services were assigned to a home visitor who initiated contact and scheduled home visits. Home visitors, who often share a similar background to participants, are expected to make biweekly visits prenatally. Following the child’s birth, visits are increased to weekly until

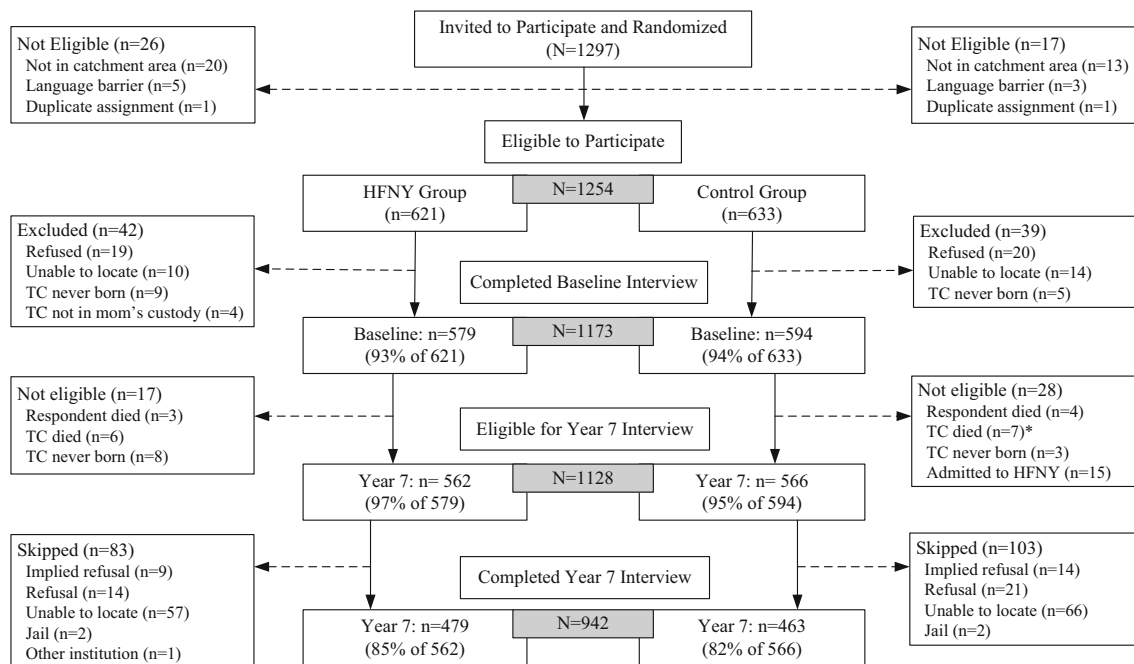


Fig. 1 Consort diagram of biological mothers’ involvement at random assignment (RA), baseline, and year 7

the child is 6 months of age, after which they decrease as the family's needs diminish.

Home visitors use various curricula to promote parent-child attachment, foster safe and nurturing home environments, and encourage positive parenting practices. Home visitors also educate families on child development, help families access community resources and services, connect families with medical providers, assess children for developmental delays, and work with parents to address family challenges such as substance abuse, intimate partner violence, and maternal depression. During the period in which the RCT was conducted, programs primarily used the Partners for a Healthy Baby Home Visiting Curriculum (Florida State University Center for Prevention and Early Intervention Policy 2011).

Data Sources and Measures

Baseline Interviews Mothers were interviewed in their homes by a trained interviewer who was independent of the HFNY program and blind to group assignment. Interview data were collected using laptop computers equipped with a computer-assisted personal interviewing (CAPI) system. The interview took about 60–75 min to complete.

Year 7 Maternal and Child Interviews Following the procedures described above, interviewers used a CAPI system with touch screens and headphones to collect sensitive information such as reports of abusive and neglectful parenting behaviors from both parents and children. The maternal interview took about 60–75 min to complete while the child interview lasted 30–45 min.

Administrative Databases To identify respondents and their target children across the child welfare administrative databases, a master file containing personal information was established. This included respondents' and target children's first and last names, dates of birth, sex, race/ethnicity, and other system-based identifiers. All mothers and children in the study were manually searched using various identifiers at multiple points from random assignment through year 7 in the state administrative child welfare databases.

Measures

Sociodemographic Variables The following sociodemographic information was collected at baseline from participating mothers: race/ethnicity, age, the presence of a partner, and the receipt of at least a high school diploma or equivalent. Data on household composition and number of births were used to identify whether the mother had other children. The target child's gender and age were also assessed at baseline or soon after birth if enrolled prenatally.

Risk Factors The Center for Epidemiologic Studies Depression Scale (CES-D) was used to assess mothers' level of depressive symptoms and psychological well-being at baseline (Radloff 1977). The Kempe Family Stress Inventory (KFSI) was administered as part of the program eligibility assessment. This index assesses the presence of personal and parenting strengths, factors associated with increased risk for child maltreatment, and the need for services or supports. In many HFA studies, a higher KFSI score validly predicted parents' future risk of maltreatment as well as other adverse family functioning outcomes (Korfmacher 2000). Pregnancy status (prenatal versus postnatal) at random assignment was also included in the study. Additionally, a dummy variable was created from administrative data to indicate public assistance receipt at random assignment.

Child Protective Services' Reports Child abuse and neglect investigations were extracted from a state-administered database. Variables were created representing the cumulative rate and cumulative number of indicated reports involving the mother as the confirmed subject against any child and/or the target child as the confirmed victim of any subject from random assignment through the target child's seventh birthday.

Maternal Self-Report of Maltreatment The revised Conflict Tactics Scales: Parent-Child version (CTS-PC) was used at year 7 to measure self-reported parenting practices (Straus et al. 1998). The CTS-PC has the following subscales: neglect, nonviolent discipline, psychological aggression, minor physical assault, severe physical assault, and very severe physical assault in the past year, and harsh parenting in the past week. The instrument measures both "prevalence," whether an event ever occurred, and "frequency," how often it occurred (0–20 times).

Child Report of Maltreatment The Conflict Tactics Scale-Picture Card Version (CTS-PCV, Mebert and Straus 2002) was included in the year 7 child interview. Complementing mothers' reports of parenting practices, the CTS-PCV consists of pictures depicting parenting behavior and acts of maltreatment. In the current study, the pictures were accompanied by an audio description of the act being shown, and a question asking the child if his/her mother has ever treated him/her like the mother is treating the child in the picture. The target child completed the instrument via a CAPI system using headphones and a touch screen. Although mothers were generally in the room during this time, interviewers asked them to complete some administrative paperwork. Due to concerns about exposing children to the more severe pictures, the instrument was restricted to pictures that depict nonviolent discipline strategies, psychological aggression, and minor physical assault, such as spanking and hitting. Scores were created to measure the frequency and prevalence of a child's experiences.

Analysis Plan

Consistent with the intention-to-treat approach, all study respondents with data were included in the analyses (see Fig. 1). In all tests of the program's effectiveness, the intervention condition (1) was the primary independent variable, with the control condition (0) serving as the reference group. Covariates were included as necessary to maximize the equivalence of the two study arms. These included baseline variables with significant or near significant group differences and are indicated on each table. Generalized linear models, SPSS 21, with a binomial distribution and logit link function were used to estimate prevalence rates of the dichotomized parenting outcomes, and generalized linear models with a negative binomial distribution and a log link function were employed to analyze frequency of parenting behaviors.

Results

Study Retention, Group Equivalence, and Participant Characteristics

At the year 7 follow-up, 1128 out of the 1173 women who completed the baseline interview met the participation criteria for interviews (Fig. 1). We excluded 17 cases from the intervention group and 13 cases from the control group. Reasons for exclusion included participant and child deaths or unborn children. We also excluded 15 control group cases, an exception to our intent-to-treat analysis, because these mothers enrolled in the HFNY program for a subsequent live birth.

Out of 1128 eligible participants, 942 completed interviews, resulting in a retention rate of 83.5%. The primary reasons for nonparticipation included the inability to locate participants and implicit or explicit refusals. Out of 1128 target children available for the year 7 child interview, 800 children were interviewed (70.9%). The primary reasons for children's nonparticipation were not being able to interview the mother ($n = 184$), the child not living with the mother ($n = 53$), and out-of-state residence ($n = 48$). Reasons for nonparticipation were consistent across the two groups.

Table 1 presents the characteristics of the control and HFNY groups for each of the three samples including the original baseline sample. The baseline characteristics demonstrate that random assignment secured two equivalent groups. Similar to HFNY participants served statewide, the study sample was ethnically and racially diverse. Women in the study sample were often young and had not yet completed high school or received an equivalent. HFNY's eligibility is extended to all mothers regardless of their parity status, and 45% of study mothers were multiparous at the time of enrollment. Nine percent of the sample had a CPS report prior to the baseline interview. No significant differences were found for

self-reported depressive symptoms, prior CPS report, and other risk and demographic characteristics. However, there were significant group differences in the count of risk items measured by KFSI and target child's gender. For the HFNY group, home visits generally took place in the family's home for about 1 h. Although all families assigned to the home-visited group agreed to receive home visits, 8.6% received no visits. The home-visited group received an average of 31.56 visits, and the average length of enrollment was 1.67 years.

The mother and child samples at year 7 remain remarkably similar to those of the baseline sample for most major risk and sociodemographic factors, indicating that the follow-up largely maintained the integrity of the initial design. However, they did vary on a few characteristics. As in the baseline sample, significantly more mothers of female target children were in the control group than in the treatment group although an equal number of boys and girls participated in the child interview. At year 7, fewer mothers with high school diplomas or the equivalent assigned to the treatment group participated in the interviews compared with the control group. Finally, the two groups differed on the counts of KFSI items rated as moderate or severe, with mothers in the intervention condition being assessed with a slightly higher level of risk than mothers in the control group. Covariates for the subsequent analyses were selected to address these imbalances.

Maternal Report of Nonviolent, Abusive, and Neglectful Parenting

Table 2 examines the potential impact of the intervention on indicators of nonviolent, abusive, and neglectful parenting as reported by study mothers. The top half of the table compares control and HFNY mothers on the prevalence of these parenting behaviors, while the lower half of the table presents the frequency with which mothers in the HFNY and control groups engaged in these behaviors.

As shown in the table, almost all mothers were using nonviolent discipline strategies with their children. However, HFNY mothers were more likely to use those strategies and used those strategies more frequently than control mothers. For example, mean frequency of use of nonviolent discipline was 45.3 for the control group, compared with 49.24 for the intervention group ($p < .05$). There were no differences between the groups for the prevalence or frequency of neglect or psychological aggression.

The prevalence of very severe physical assault was very small at year 7, limited to four cases for the whole sample. In addition, some items of the severe physical assault subscale (e.g., "hit child with fist," "knock child down") are similar in context to an item of the very severe physical assault subscale (e.g., "beat child up"). The two subscales were analyzed separately and then in combination. The percentage of mothers who ever engaged in severe or very severe physical assault was almost double in the control group (5.1% vs. 2.6%,

Table 1 Characteristics of baseline and year 7 samples by group

Characteristic	Baseline (<i>n</i> = 1173)			Y 7 mom sample (<i>n</i> = 942)			Y 7 child sample (<i>n</i> = 800)		
	Control (<i>n</i> = 594) %	HFNY (<i>n</i> = 579) %	<i>p</i>	Control (<i>n</i> = 463) %	HFNY (<i>n</i> = 479) %	<i>p</i>	Control (<i>n</i> = 392) %	HFNY (<i>n</i> = 408) %	<i>p</i>
Mother's race/ethnicity	34.3	34.4		34.6	34.7		33.9	34.3	
White, non-Latina									
African-American, non-Latina	46.5	44.4	.39	49.2	46.6	.49	50.3	47.8	.84
Latina	17.7	18.3		14.9	16.3		14.3	15.9	
Mother < 19 years old	29.8	32.3	.36	29.4	34.0	.13	31	34.1	.23
First-time mother	54.4	56.5	.47	53.1	57.8	.15	54.6	59.1	.20
At least high school diploma or GED	49.3	45.4	.18	50.8	43.6	.03	50.5	43.4	.04
Had partner	65.8	69.2	.22	65.0	69.2	.17	63.0	68.3	.12
Cash assistance at random assignment	35.2	37.8	.35	36.1	39.5	.28	34.9	38.2	.34
Pregnant at random assignment	66.7	62.9	.17	65.0	62.4	.41	66.8	62.0	.15
Target child female	50.0	42.1	.01	49.9	43.2	.04	49.7	44.9	.17
Prior CPS report at random assignment	8.8	9.0	.89	9.7	8.8	.61	8.7	8.3	.86
	Mean (SD)		<i>p</i>	Mean (SD)		<i>p</i>	Mean (SD)		<i>p</i>
Mean maternal age in years	22.53 (5.43)	22.37 (5.56)	.60	22.63 (5.45)	22.22 (5.62)	.26	22.45 (5.36)	21.97 (5.40)	.21
Count of risk items (KFSI)	5.60 (1.37)	5.79 (1.34)	.02	5.68 (1.38)	5.86 (1.37)	.04	5.67 (1.40)	5.83 (1.40)	.11
Count of depressive symptoms (CES-D)	15.61 (10.98)	15.68 (11.30)	.92	15.65 (10.74)	15.57 (11.20)	.90	15.64 (10.71)	15.43 (11.11)	.78

HFNY Healthy Family New York, GED General Educational Development, CPS Child Protective Services, KFSI Kemp Family Stress Inventory

$p = .07$). Significant group differences were present for the frequency with which mothers engaged in severe or very severe physical assault (.16 in the control group compared with .03 in the HFNY group, $p < .001$). Thus, the combined subscale confirmed that the HFNY mothers were less likely to engage in and less frequently engaged in serious acts of physical abuse for disciplining children.

Child Report of Nonviolent and Abusive Parenting

Table 3 presents the impact of the intervention on indicators of nonviolent and harsh parenting as reported by target children. As with maternal self-reports, almost all target children reported that their mothers were using nonviolent discipline strategies. Unlike maternal self-

Table 2 Year 7 maternal self-report of nonviolent, abusive, and neglectful parenting by group

	Control (<i>n</i> = 445)	HFNY (<i>n</i> = 452)	AOR	<i>p</i>
Prevalence	%	%		
Nonviolent discipline	98.6%	100%	—	.01
Psychological aggression	87.1%	88.6%	1.15	.50
Minor physical assault	59.3%	64.6%	1.25	.12
Severe or very severe physical assault	5.1%	2.6%	.50	.07
Neglect	16.8%	15.7%	.92	.66
Harsh parenting in the past week	76.2%	74.4%	.91	.54
Frequency	LS mean (SE)	LS mean (SE)	<i>d</i>	<i>p</i>
Nonviolent discipline	45.30 (1.44)	49.24 (1.43)	.14	.05
Psychological aggression	15.24 (.89)	15.30 (.88)	.00	.96
Minor physical assault	4.61 (.39)	4.36 (.38)	.03	.65
Severe or very severe physical assault	.16 (.02)	.03 (.01)	.38	< .001
Neglect	.59 (.05)	.54 (.05)	.05	.48
Harsh parenting in the past week	3.65 (.20)	3.58 (.20)	.02	.81

^a Measured by Conflict Tactics Scale-PC

^b Analyses control for high school diploma/GED ($p = .04$), target child female ($p = .08$), and KFSI ($p = .08$)

Table 3 Year 7 child self-report of nonviolent and abusive parenting by group

	Control (<i>n</i> = 388)	HFNY (<i>n</i> = 405)	AOR	<i>p</i>
Prevalence	%	%		
Nonviolent discipline	98.0%	98.0%	0.94	0.90
Psychological aggression	84.6%	84.4%	0.99	0.94
Minor physical assault	76.7%	70.6%	0.73	0.05
Frequency	LS mean (SE)	LS mean (SE)	<i>d</i>	<i>P</i>
Nonviolent discipline	4.01 (.09)	4.03 (.09)	0.01	0.90
Psychological aggression	2.68 (.11)	2.78 (.11)	0.05	0.52
Minor physical assault	2.35 (.11)	2.26 (.11)	0.04	0.61

^a Measured by Conflict Tactics Scale-PCV

^b Analyses control for having at least high school diploma/GED ($p = .05$), target child female ($p = .13$), and presence of a partner in the household ($p = .08$)

reports, no group differences were observed between the HFNY and control groups in the prevalence or frequency of use of nonviolent discipline strategies. Similarly, there were no significant differences in the prevalence or frequency of psychological aggression as reported by target children. However, significant differences were observed for the prevalence of minor physical assault. Fewer HFNY target children reported that their mothers engaged in these behaviors than children in the control group (70.6% vs. 76.7%, $p = .05$). This pattern did not extend to the frequency of minor physical assault reported by target children. As mentioned earlier, the study did not include the severe physical assault subscale for the child interview.

Kappa coefficients suggests no to low agreement between mother-reported and child-reported scores on the nonviolent discipline subscale ($\kappa = .076$, $p = .004$, $-.075$ to $.227$ CI), slight agreement on psychological aggression ($\kappa = .161$, $p = .0001$, $.075$ to $.247$ CI), and fair agreement on minor physical assault ($\kappa = .236$, $p \leq .0001$, $.165$ to $.307$) (Viera and Garrett 2005).

CPS Reports

There was no program impact on CPS reports by the target child's seventh birthday for either the baseline sample, the year 7 mother interview sample, or the year 7 child interview sample (Table 4). When compared with their counterparts in the control group, HFNY mothers and/or target children were no less likely to be a confirmed subject or victim in an indicated CPS report for any type of abuse or neglect. Examination of the cumulative number of subsequent indicated CPS reports also indicated no significant group differences. HFNY mothers and/or target children were the confirmed subject or victim in the same number of indicated CPS reports as control group mothers and/or target children.

Discussion and Implications

The current study demonstrated that HFNY's potential to prevent maltreatment, as assessed through parent report of harsh and abusive discipline, was sustained to the child's seventh birthday. Child reports of parents' physical discipline also indicate that HFNY reduced the prevalence of minor physical assault. Key foci of home visiting programs include reducing negative parenting practices such as harsh and abusive discipline; thus, these findings are consistent with program intent. Findings of program impact on use of nonviolent strategies are also consistent with earlier results from HFNY's third-year observational study. To date, we believe that HFNY is the only HFA program to be able to demonstrate and sustain long-term reductions in abusive parenting outcomes for a diverse sample using a rigorous design.

The study did not find a program impact on indicated maltreatment reports for the sample as whole. However, as reported in an earlier study, the intervention was effective in reducing the recurrence of indicated CPS reports among mothers investigated for child maltreatment before enrolling in HFNY (Lee et al. 2018). Results from the year 7 follow-up interviews were not included in this study.

An important question to address is why effects of home visiting are unevenly demonstrated across measurement approaches within the same study or across different subsamples. To situate these findings in context, we mention two issues. First, although the CTS-PC and CPS reports are both designed to capture maltreatment, they may also be assessing some additional dimensions. In contrast to the CTS-PC subscales which focus on parenting behaviors such as harsh discipline and physical assault from the perspective of the perpetrator, CPS reports are subject to additional legal definitions and external perspectives that may change the way that maltreatment is defined (Colman et al. 2010). CPS reports include types of maltreatment other than physical abuse. Even the level of evidence required for the substantiation of a physical abuse allegation may reflect more severe or chronic behaviors than those that are typically self-reported on the CTS-PC.

Table 4 Year 7 administrative indicators of child maltreatment from RA to target child's seventh birthday

	Control	HFNY	AOR	<i>p</i>
Prevalence	%	%		
Baseline sample (1173) mom or target child confirmed subject or victim of CPS report ^a	27.16	29.94	1.15	.30
Y7 sample (942) mom or target child confirmed subject or victim of CPS report ^b	29.34	30.34	1.06	.67
Y7 child interview sample (800) mom or target child confirmed subject or victim of CPS report ^c	25.82	26.57	1.04	.81
Frequency	LS mean (SE)	LS mean (SE)	<i>d</i>	<i>p</i>
Baseline sample (1173) mom or target child confirmed subject or victim of CPS report ^a	.55 (.04)	.55 (.04)	.00	.96
Y7 sample (942) mom or target child confirmed subject or victim of CPS report ^b	.57 (.04)	.54 (.04)	.04	.56
Y7 child interview sample (800) mom or target child confirmed subject or victim of CPS report ^c	.49 (.04)	.42 (.04)	.08	.25

^a Analyses control for high school diploma/GED ($p = .18$), target child female ($p = .01$), and KFSI ($p = .02$)

^b Analyses control for high school diploma/GED ($p = .04$), target child female ($p = .08$), and KFSI ($p = .08$)

^c Analyses control for having at least high school diploma/GED ($p = .05$), target child female ($p = .13$), and presence of a partner in the household ($p = .08$)

CPS reports may also be influenced by structural inequalities that are not explicitly addressed in home visiting models. These can include poverty, racial bias, under-resourced neighborhoods, lack of transportation, and childcare constraints (LeCroy and Lopez 2018; Matone et al. 2018; Guterman et al. 2013). Home visiting might be a limited response to the heterogeneous issues that underlie CPS neglect determinations in particular. It is likely that a more comprehensive, system-level response will be needed to overcome risk factors and bolster protective factors in high-risk families and communities to lower maltreatment reports stemming from these issues (Matone et al. 2018). Parenting behaviors captured in the CTS present narrower and clearer targets for intervention.

Given these complexities, it is important to address how the program might have achieved long-term impacts on maltreatment. We found sustained reductions in self-reported severe or very severe physical assault over time among all participants, and reductions in administrative indicators of physical abuse among mothers with CPS involvement prior to HFNY participation (Lee et al. 2018). Via its focus on child development, and on providing information to families about realistic expectations for children and the use of nonphysical discipline strategies, the intervention may have been able to decrease the use of the more severe parenting behaviors. This is especially important because while harsh physical punishment is not always synonymous with physical abuse, it has been linked to similar long-term developmental damage, including greater externalizing behavior problems, mental health problems, aggression, crime, and intergenerational maltreatment (Levey et al. 2017).

In general, studies have not addressed long-term change mechanisms. However, NFP found that reductions in subsequent births and improvements in self-sufficiency mediated the impact of home visiting on substantiated CPS reports (Eckenrode et al. 2017). A post hoc examination of the HFNY program for the subset of mothers with prior CPS reports also found that participation in home visiting services was associated with reduced subsequent births and subsequent CPS reports 7 years later (Lee

et al. 2018). Time-varying moderators such as changes in family composition and partner violence may also have an impact, but have not been studied over the long term (Easterbrooks et al. 2019). Future research is needed to “unpack” any effects, and observational or qualitative data may help to further our identification and understanding of these unknown mechanisms.

Limitations

HFNY is a multi-site system accredited by HFA, but its implementation is specific to one state. While all HFA-affiliated programs adhere to a common set of standards and critical elements, they vary in target population, duration of service, and implementation practices and quality. Therefore, similar outcomes should be explored by other HFA programs before any generalizations can be made.

Several additional limitations exist. Measurement limitations that have been reported for the CTS-PC include over-reporting of minor behaviors and under-reporting of more serious behaviors. Similarly, concerning parental behaviors on the CTS-PC do not always rise to the level of substantiated abuse, particularly for physical abuse (Drake and Jonson-Reid 2018).

We should also note that the maternal report of CTS-PC was only collected from mothers who had custody of the target child at the time of year 7 interview. It is possible that the low prevalence of very severe physical assault may have resulted from excluding mothers who lost custody of the target child. Indeed, a post hoc analysis indicated that the children of mothers who were not interviewed at year 7 were significantly more likely to have had at least one foster care placement by age 7 than children of interviewed mothers (11.6% compared with 3.5%, $p \leq .001$). However, we also found that there were no significant differences in either the annual or cumulative rates of foster care placement between the treatment and control groups for those that were included in the current study or for those who were not included. Therefore, we are reasonably confident our estimates of CTS-PC outcome differences are not due to chance.

Although target child participation was high, we may have similarly excluded youth who experienced more severe parenting behaviors by requiring them to have been in their mother's custody as a prerequisite to completing an interview. Regarding the child measure, excluding severe or very severe physical assault items in the year 7 child interview made it difficult to compare findings from the maternal report despite fair concordance on the minor physical assault subscale. The low to fair agreement between the parent and target child on the CTS-PC is consistent with previous literature, and may be a result of recall issues, social desirability, or acceptance of the use of violence for discipline (Chan 2012). Nevertheless, having reports from parents and children, as well as administrative reports, can shed additional light on the type and frequency of maltreatment.

Finally, the study was not able to identify the specific program elements associated with HFNY's sustained impact on maternal parenting behaviors. Researchers in the field of home visiting have called for increased understanding of the home visiting process (Eckenrode et al. 2017; Green et al. 2020). This study was not well positioned to determine what elements or program materials were responsible for producing program effects.

Implications for Practice and Future Research

HFNY's sustained effects (infancy through year 7) on harsh parenting, physical abuse, and positive parenting are relevant to advancing home visiting practice and policy in several important ways. First, findings suggest that HFA programs continue to target all mothers at high risk to maltreat, or who live in challenging communities, and depend on their home visitor to connect them with services. Despite the overall success of NFP and some HFA programs targeting young, first-time mothers, there has not been sufficient evidence to support restricting program eligibility based on parity and age. More importantly, by doing so, home visiting programs may exclude mothers at greater risk for maltreatment who can benefit greatly from the program as evidenced in samples of CPS-involved mothers (Lee et al. 2018; Easterbrooks et al. 2019).

A second important implication concerns the effectiveness of different national home visiting models. While weak program effects are sometimes attributed to the use of paraprofessional staff in the HFA model, data from several RCTs of HFA programs do show effects on reducing negative parenting behaviors during the early years of a child's life. Sustained and promising trends have recently been documented for especially high-risk mothers in New York and Massachusetts. Given the large number and diversity of families in need of support, the availability of multiple evidence-based home visiting programs that complement one another will ultimately maximize the delivery of effective, culturally responsive services to meet the complex needs of a broad population of at-risk families.

The study's use of a picture-based child report for parenting behavior is innovative, and indicates the utility that a child's

perspective can have on understanding maltreatment outcomes. Future studies should consider incorporating similar measures. Although the CTS-PCV has not been widely utilized, a recent study affirms the reliability and validity of using a picture-based child report of physical abuse for young children (Sierau et al. 2018). While the concordance between parent and child report even in the context of a CPS investigation is rather low, there is increasing evidence that a child's perspective on parent's treatment predicts future mental health outcomes in ways that may differ from parent reports (Kobulsky et al. 2017).

We recommend that future evaluations of home visiting programs seek to replicate the current findings by incorporating longitudinal follow-up studies into their research designs. Longitudinal data are needed to identify mechanisms for any sustained or sleeper effects on parenting behaviors. We also suggest continuing to use a range of measures to assess parenting behaviors and maltreatment, rather than focusing only on official CPS records, to enhance the validity of any findings. Incorporating child reports will allow for a more comprehensive understanding of the scope of maltreatment and serve as an additional method to assess impact (Sierau et al. 2018).

Despite these limitations and challenges, the current study presents evidence to suggest that involving families in home visiting services early on promotes positive parenting behaviors and reduces harsh and abusive parenting during the early years of life that endure and may strengthen later development. Home visiting continues to present a unique opportunity for trained workers to forge relationships with families at a time when parents are vulnerable and the developmental path of the newborn is particularly malleable.

Acknowledgments We would like to extend our sincere thanks to all families participated in the trial and research interviewers and staff involved in data collection.

Funding Information The study is financially supported by the research, authorship, and/or publication of this article: National Institute of Justice Grant 2006-Mu-Mu-0002 and NYS Office of Children and Family Services grant number 1058555-1-41144.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval The research protocol was approved by the Institutional Review Board at University at Albany, the State University of New York (IRB approval #00-246).

Informed Consent A research staff contacted the mother by phone, described the interview process, and scheduled a time to meet over phone. Once in the home, the interviewer answered mothers' questions about the study and obtained informed consent from the mother to conduct her interview, as well as consent for her child to participate in an interview. When the mother provided consent to interview the child, the interviewer also explained the study and obtained the child's assent to participate.

References

- Chan, K. L. (2012). Comparison of parent and child reports on child maltreatment in a representative household sample in Hong Kong. *Journal of Family Violence, 27*, 11–21.
- Colman, D. L., Dodge, K., & Campbell, S. K. (2010). Where and how to draw the line between reasonable corporal punishment and abuse. *Law and Contemporary Problems, 73*, 107–166.
- Drake, B., & Jonson-Reid, M. (2018). Defining and estimating child maltreatment. In J. Conte & B. Klika (Eds.), *APSAC Handbook of Maltreatment* (4th ed.). Washington DC: Sage Publishing.
- Duggan, A., McFarlane, E., Fuddy, L., Burrell, L., Higman, S. M., & Windham, A. (2004). Randomized trial of a statewide home visiting program: Impact in preventing child abuse and neglect. *Child Abuse & Neglect, 28*, 597–622.
- DuMont, K. A., Mitchell-Herzfeld, C., Greene, R., Lee, E., Lowenfels, A., & Rodriguez, M. (2008). Healthy Families New York randomized trial: Effects on early child abuse and neglect. *Child Abuse & Neglect, 32*, 295–315.
- Easterbrooks, M. A., Kotake, C., & Fauth, R. (2019). Recurrence of maltreatment after newborn home visiting: A randomized controlled trial. *American Journal of Public Health, 109*, 729–735. <https://doi.org/10.2105/ajph.2019.304957>.
- Eckenrode, J., Campa, M. L., Morris, P. A., Henderson, C. J., Bolger, K. E., Kitzman, H., & Olds, D. (2017). The prevention of child maltreatment through the Nurse Family Partnership program: Mediating effects in a long-term follow-up study. *Child Maltreatment, 22*, 92–99.
- Florida State University Center for Prevention and Early Intervention Policy. (2011). *Partners for a healthy baby home visiting curriculum: Baby's first six months*. Tallahassee: Florida State University Center for Prevention and Early Intervention Policy.
- Green, B. L., Tarte, J. M., Harrison, P. M., Nygren, M., & Sanders, M. B. (2014). Results from a randomized trial of the Healthy Families Oregon accredited statewide program: Early program impacts on parenting. *Children and Youth Services Review, 44*, 288–298.
- Green, B. L., Sanders, M. B., & Tarte, J. (2017). Using administrative data to evaluate the effectiveness of the Healthy Families Oregon home visiting program: 2-year impacts on child maltreatment & service utilization. *Children and Youth Services Review, 75*, 77–86.
- Green, B., Sanders, M. B., & Tarte, J. M. (2020). Effects of home visiting program implementation on preventive health care access and utilization: Results from a randomized controlled trial of Healthy Families Oregon. *Prevention Science, 21*, 15–24.
- Guterman, N. B., Tabone, J. K., Bryan, G. M., Taylor, C. A., Napoleon-Hanger, C., & Banman, A. (2013). Examining the effectiveness of home-based parent aide services to reduce risk for physical child abuse and neglect: Six-month findings from a randomized clinical trial. *Child Abuse and Neglect, 37*, 566–577.
- Jacobs, F., Easterbrooks, A., Mistry, J., Bumgarner, E., Raskin, M., Fosse, N., et al. (2016). Improving adolescent parenting: Results from a randomized, controlled trial of a home visiting program for young families. *American Journal of Public Health, 106*, 342–349.
- Kobulsky, J. M., Kepple, N. J., Holmes, M. R., & Hussey, D. L. (2017). Concordance of parent- and child-reported physical abuse following Child Protective Services investigation. *Child Maltreatment, 22*, 24–33. <https://doi.org/10.1177/1077559516673156>.
- Korfmacher, J. (2000). The Kempe Family Stress Inventory: A review. *Child Abuse & Neglect, 24*, 129–140.
- Latimore, A., Burrell, L., Crowne, S., Ojo, K., Cluxton-Keller, F., Gustin, S., et al. (2017). Exploring multilevel factors for family engagement in home visiting across two national models. *Prevention Science, 18*, 577–589.
- LeCroy, C. W., & Lopez, D. (2018). A randomized controlled trial of healthy families: 6-month and 1-year follow-up. *Prevention Science, 21*, 1–11.
- Lee, E., Kirkland, K., Miranda-Julian, C., & Greene, R. (2018). Reducing maltreatment recurrence through home visitation: A promising intervention for child welfare involved families. *Child Abuse & Neglect, 86*, 55–66.
- Levey, E. J., Gelaye, B., Bain, P., Rondon, M. B., Borba, C. P., Henderson, D. C., et al. (2017). A systematic review of randomized controlled trials of interventions designed to decrease child abuse in high-risk families. *Child Abuse & Neglect, 65*, 48–57.
- Matone, M., Kellom, K., Griffiths, H., Quarshie, W., Faerber, J., Gierlach, P., et al. (2018). A mixed methods evaluation of early childhood abuse prevention within evidence-based home visiting programs. *Maternal and Child Health Journal, 22*, 79–91.
- Mebert, C., & Straus, M. A. (2002). *Picture-card version for young children of the parent-to-child conflict tactics scales*. Durham, NH: University of New Hampshire.
- Mitchell-Herzfeld, S., Izzo C., Greene, R., Lee, E., & Lowenfels, A. (2005). *Evaluation of Healthy Families New York (HFNY): First year program impacts*. Rensselaer, NY: New York State Office of Children & Family Services.
- National Home Visiting Resource Center. (2018). *2018 Home visiting yearbook*. Arlington, VA: James Bell Associates and The Urban Institute.
- Newbury, J. B., Arseneault, L., Moffitt, T. E., Caspi, A., Danese, A., Baldwin, J. R., & Fisher, H. L. (2018). Measuring childhood maltreatment to predict early-adult psychopathology: Comparison of prospective informant-reports and retrospective self-reports. *Journal of Psychiatric Research, 96*, 57–64.
- Olds, D. L. (2006). The nurse-family partnership: An evidence-based preventive intervention. *Infant Mental Health Journal, 27*, 5–25.
- Olds, D., Henderson Jr., C. R., Kitzman, H., & Cole, R. (1995). Effects of prenatal and infancy nurse home visitation on surveillance of child maltreatment. *Pediatrics, 95*, 365–372.
- Olds, D. L., Eckenrode, J. J., Henderson Jr., C. R., Kitzman, H., Powers, J., Cole, R., et al. (1997). Long-term effects of home visitation on maternal life course, child abuse and neglect: Fifteen-year follow-up of a randomized trial. *Journal of the American Medical Association, 278*, 637–643.
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- Rodriguez, M. L., Dumont, K., Mitchell-Herzfeld, S. D., Walden, N. J., & Greene, R. (2010). Effects of Healthy Families New York on the promotion of maternal parenting competencies and the prevention of harsh parenting. *Child Abuse & Neglect, 34*, 711–723.
- Sama-Miller, E., Akers, L., Mraz-Espinoza, A., Avellar, S., Paulsell, D., & Del Grosso, P. (2017). *Home visiting evidence of effectiveness review: Executive summary*. Washington, DC: Office of Planning, Research and Evaluation, U.S. Department of Health and Human Services.
- Sierau, S., White, L. O., Klein, A. M., Manly, J. T., von Klitzing, K., & Herzberg, P. Y. (2018). Assessing psychological and physical abuse from children's perspective: Factor structure and psychometric properties of the picture-based, modularized child-report version of the Parent-Child Conflict Tactics Scale-Revised (CTSPC-R). *PLoS One, 13*, e0205401.
- Straus, M. A., Hamby, S. L., Finkelhor, D., Moore, D. W., & Runyan, D. (1998). Identification of child maltreatment with the Parent-Child Conflict Tactics Scales: Development and psychometric data for a national sample of American parents. *Child Abuse & Neglect, 22*, 249–270.
- Viera, A. J., & Garrett, J. M. (2005). Understanding interobserver agreement: The kappa statistic. *Family Medicine, 37*, 360–363.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.