Mother and Infant Home Visiting Program Evaluation (MIHOPE) Impact Analysis Plan

Appendix A: Maternal and Child Health Outcomes

September 21, 2015

As discussed in the memo to the Committee on the MIHOPE impact analysis, all four national home visiting models strive to improve child health and well-being, and the authorizing legislation for the MIECHV program indicates that home visiting programs should improve outcomes in these areas. This appendix summarizes information that was used to choose confirmatory outcomes in the area of maternal and child health and briefly describes exploratory outcomes that will be analyzed.

Excluded from this list of outcomes are those related to prenatal health and birth outcomes, which will be analyzed in MIHOPE-Strong Start (which includes a larger sample of pregnant women). MIHOPE-Strong Start will present impacts of the Nurse-Family Partnership (NFP) and Healthy Families America (HFA) on prenatal care adequacy, birth outcomes (low birth weight and preterm birth), and neonatal health (for example, spending time in neonatal intensive care). These outcomes will not be presented as confirmatory or exploratory outcomes in the MIHOPE analysis since few families enrolled through Early Head Start—Home-Based Program Option (EHS) or Parents as Teachers (PAT) programs in MIHOPE are early enough in their pregnancies for home visiting to be likely to affect their birth outcomes.

Confirmatory outcomes

The memo on the impact analysis provides details on five confirmatory outcomes in the area of maternal health and child health, as shown in Appendix Table A.1. The proposed confirmatory outcomes in this area include the following:

- New pregnancy after study entry
- Mother has health insurance coverage
- Number of well-child visits
- Child has health insurance coverage
- Any child emergency department (ED) use

Exploratory outcomes

Appendix Table A.1 also shows several proposed exploratory health-related outcomes. These outcomes show some promise, either based on results of studies of the four national models or because they are highly conceptually and policy relevant. Each outcome has drawbacks as well, such as reliance on self-reports with evidence of under-reporting or a limited evidence base, which is why we propose that they should be considered exploratory.

Proposed Confirmatory and Exploratory Outcomes for Maternal and Child Health

Domain and outcome	Number of results from prior studies[a]			Source[b]
	Favorable results	Not favorable results	No significant results	
Confirmatory outcomes				
Maternal health				
New pregnancy after study entry	2	0	7	FFI
Mother has health insurance coverage	0	0	1	MD, FFI
Child health				
Number of well-child visits	1	0	13	MD, FFI
Child has health insurance coverage	2	0	2	MD, FFI
Any child ED use	2	0	10	MD, FFI
Exploratory outcomes				
Maternal health				
Smoking during pregnancy	1	0	0	BC, FFI
Smoking after birth	0	0	2	FFI
Substance use after birth	1	0	15	FFI
Depressive symptoms after birth	0	0	9	FFI (CES-D)
Self-reported health status	0	0	1	FFI
Receipt of behavioral health services	0	0	2	FFI
Child health				
Has primary care provider	0	0	11	FFI
Immunization status	0	0	6	MD, FFI
Hospitalizations	0	0	2	MD, FFI
Child weight and height	0	0	0	IA
Breastfeeding	1	0	2	FFI

SOURCE: U.S. Department of Health and Human Services website HomVEE: http://homvee.acf.hhs.gov/.

NOTES: [a]The evidence base presented in this table includes only findings for the four MIHOPE models and for children 2 years of age and younger.
  [b]FFI = Family follow-up interview; MD = Medicaid files; BC = Birth certificate data; CES-D = Center for Epidemiologic Studies Depression Scale; IA = Interviewer assessment.

Maternal health

- Smoking behavior (during pregnancy and after birth). Although smoking is a well-documented risk factor for poor birth and infant health outcomes, earlier studies have revealed mixed results on tobacco-related outcomes. In the Denver NFP trial, smokers who were visited by nurses showed significantly greater reductions in cotinine levels

during pregnancy than did smokers in the control group.[1] A high-quality study of HFA found no impacts on smoking during pregnancy, whether reported as any smoking or smoking frequency.[2] Smoking behavior has also been examined after birth, and no study of the four national models has found statistically significant impacts on smoking after birth. There are also concerns regarding under-reporting of smoking (because of perceptions or fear of stigma) in both self-reports and birth certificate data. In addition, there is evidence that underreporting is greater among women who participate in an anti-smoking intervention, which could result in estimated effects on smoking that overstate the programs' true effect. Given the limited evidence and under-reporting concerns, we recommend smoking as an exploratory outcome.

- Substance use after birth (problematic alcohol consumption and use of illegal drugs). Because information on substance use is often lacking in administrative health data, almost all prior studies rely on self-reports of the mother, and these reports are subject to the same concerns of under-reporting as smoking behavior. Only one trial has found effects on substance use-related outcomes among mothers within two years after birth: an HFA study conducted in Arizona found reduced prevalence of problematic alcohol use among enrollees at 12 months follow-up.[3]

- Depressive symptoms after birth. Depression has often been measured in prior home visiting evaluations using of scales such as the Center for Epidemiologic Studies Depression (CES-D), the Edinburgh, and the Patient Health Questionnaire (PHQ). High scores on these scales are correlated with a clinical diagnosis of depression. Depression, alone or in combination with other risks, can impede the early development of children, particularly low-income young children.[4] Although a number of home visiting studies have examined depression severity, no study has found statistically significant reductions in depression or depressive symptoms. Nevertheless, we recommend examining depressive symptoms as a secondary outcome because MIECHV includes depression screening as a benchmark area and helping mothers deal with depression has become an increasing focus of home visiting programs.

- Self-reported health status. Although improving maternal health is a MIECHV domain, there is scant evidence that home visiting programs improve maternal health status after birth, and it has rarely been examined in studies of home visiting. It is also not a benchmark construct. In MIHOPE, maternal health status is measured using self-reported health status (for example, excellent, very good, average, fair, poor) at follow-up. Self-reported health status has been found to be highly correlated with health limitations and also is predictive of future health and morbidity. For these reasons, we recommend including maternal health status as an exploratory outcome.

- Receipt of behavioral health services. One NFP study and one HFA study have examined receipt of maternal mental health services as an outcome, but neither found statistically

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[1]Olds et al. (2002).
[2]Mitchell-Herzfeld et al. (2005).
[3]LeCroy and Krysik (2011).
[4]Knitzer, Theberge, and Johnson (2008).

significant impacts.[5] In examinations of other home visiting evidence-based models, two positive findings were found in ChildFIRST evaluations. However, both of these impacts were on measures of access, not referrals. There is thus very little evidence of impacts for receipt of behavioral health services for mothers, although we include this indicator as an exploratory outcome of interest in the domain of maternal health.

Child health

- Has a primary care provider (PCP). The presence of a PCP should promote preventive care and care coordination, and should thus reduce reliance on avoidable urgent or emergency care use. Most of the studies summarized in Appendix Table A.1 have not found evidence of impacts on the presence of a PCP for the child, as reported by parents. However, the Hawaii trial of HFA did find greater likelihoods of parental reports of the presence of a PCP who knows about the child's history and family concerns.

- Immunization status. No high or moderate study of the four national models included in MIHOPE has found statistically significant estimated impacts on immunizations in children's first and second years of life, and the effect sizes documented are small. However, home visiting programs are likely to encourage parents to maintain up-to-date immunizations for their children, given their documented, protective health effects.

- Hospitalizations. No study reviewed in Appendix Table A.1 has found significant reductions in hospitalizations for children, although other evidence-based models, such as The Early Intervention Program for Adolescents, have shown significant reductions in the number of additional days of hospitalization at six weeks postpartum and the total number of days for infant re-hospitalization during the first six weeks of life.[6] Despite the limited evidence, we recommend examining hospitalizations as an exploratory outcome because of the health and cost implications. Furthermore, they can be measured with good accuracy with the use of Medicaid claims and encounter data.

- Child weight and height. MIHOPE will have objective (interviewer-assessed) information on the child's weight and height from in-home data collection at follow-up. No study to our knowledge has examined child weight and height after birth among children under the age of 2. However, we include this indicator as a possible exploratory outcome because MIHOPE will have highly accurate reports, which could be used to assess under-development of infants or excess weight gain in early childhood.

- Breastfeeding. As part of their benchmark data, states are expected to report on breastfeeding. As documented in the MIHOPE Report to Congress, there is some variation in the emphasis placed on breastfeeding across the four national models in MIHOPE: HFA and NFP rate it as a high priority, while EHS and PAT rate it as a medium priority. The Home Visiting Evidence of Effectiveness (HomVEE) review provides thin evidence regarding mothers' breastfeeding. Three studies have examined

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[5]Olds et al. (2002); Anisfield, Sandy and Guterman (2004).
[6]Koniak-Griffin, Anderson, Verzemnieks, and Brecht (2000).

breastfeeding and only one of them found a favorable impact: NFP mothers were statistically significantly more likely to have attempted breastfeeding than mothers in the control group at a two-year follow-up. In light of the fact that breastfeeding is a construct of interest in the MIECHV benchmarks, and given the emphasis that some home visiting models place on child health, we recommend including a measure of breastfeeding as an exploratory outcome. Using maternal reports, we could examine whether the mother ever breastfed, was currently breastfeeding, and length of time spent breastfeeding the target child. Given that rates of breastfeeding initiation tend to be inflated, since many mothers start breastfeeding in the birth hospital but then stop when they return home, our recommendation is to use a measure of breastfeeding duration (number of weeks or months). We suggest limiting the examination of breastfeeding to mothers who enrolled in MIHOPE while pregnant, because it would be difficult to interpret results for mothers who enrolled in MIHOPE after giving birth. We do not recommend including breastfeeding as a confirmatory outcome because, unlike other aspects of infant health (such as child insurance coverage or well-child visits), it is not a high priority for all four national models. As noted, we can only reasonably define the outcome for a subset of the families in the MIHOPE sample (mothers who enrolled prenatally).

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Impact Analysis Plan

Appendix B: Child Development Outcomes

September 21, 2015

As discussed in the memo to the Committee on the MIHOPE impact analysis, all four national home visiting models strive to improve child development and the authorizing legislation for the Maternal, Infant, and Early Childhood Home Visiting Program (MIECHV) indicates that home visiting programs should improve outcomes in this area. This appendix summarizes information that was used to choose confirmatory outcomes in the area of child development and briefly describes exploratory outcomes that will be analyzed.

Confirmatory outcomes

The memo to the Committee provides details on two proposed confirmatory outcomes in the area of child development, as shown in Appendix Table B.1 . The outcomes are:

- Behavior problems total score
- Language skills in normal range

Exploratory outcomes

We also propose eight exploratory outcomes in the area of child development. We propose to include these measures as exploratory outcomes either because they were examined in the Home Visiting Evidence of Effectiveness (HomVEE) review but no statistically significant favorable findings were reported or because the measure has not been used in prior studies of 15-month old children. Each of these measures is described below.

- Social-emotional competence total score. Social-emotional competence encompasses a broad array of behaviors, including attention, compliance, prosocial peer relations, and empathy. Early prosocial behavior has been linked to children's peer acceptance and academic achievement.[1] In addition, children's early attention-related skills have been found to be strong predictors of later school success.[2] All four national models have been examined with regard to their impacts on social competence, but no favorable impacts have been found in the first two years of life. None of these studies used the Brief Infant Toddler Social Emotional Assessment (BITSEA), which is the measure used in MIHOPE. In light of the absence of favorable findings for children's social competence, we propose to include it as an exploratory outcome, using the BITSEA social competence raw score. We considered whether to make social competence a confirmatory outcome since it is the counterpart to the BITSEA behavior problems scale and captures positive

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[1]Ladd, Birch, and Buhs (1999).
[2]Duncan et al. (2007).

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dimensions of children's social-emotional development. However, there is no evidence to suggest that it is sensitive to home visiting, so we think it belongs with outcomes that are examined for exploratory purposes.

We also considered whether to create a total raw BITSEA score, using the behavior problems and social competence scales, which would allow us to include both BITSEA scales as confirmatory outcomes. However, there is no precedent for using a total raw BITSEA score. Furthermore, the total problem and competence scales seem to function differently. For example, they show different patterns of association with other child outcomes and have different levels of internal consistency.[3] As a result, we think it is preferable to use them as separate measures in the impact analysis, with the behavior problems raw score included as a confirmatory outcome and the social competence raw score included as an exploratory outcome.

Appendix Table B.1

Proposed Confirmatory and Exploratory Outcomes for Child Development

Domain and outcome	Number of results from prior studies[a]			Source[b]
	Favorable results	Not favorable results	No significant results	
Confirmatory outcomes				
Behavior problems total score	4	0	10	FFI (BITSEA)
Language skills in normal range	4	0	19	PLS-5
Exploratory outcomes				
Social-emotional competence total score	0	1	8	FFI (BITSEA)
Behavior during semi-structured play with parent				
Engagement of parent	0	0	6	Three Bags
Sustained attention with objects	0	0	1	Three Bags
Negativity toward parent	0	0	1	Three Bags
Behavior during parent-directed task				
Compliance	0	0	0	Clean-up task
Distress	0	0	0	Clean-up task
Sleep habits	0	0	0	FFI (BISQ)
Receipt of early intervention services	0	0	1	FFI

SOURCE: U.S. Department of Health and Human Services website HomVEE: http://homvee.acf.hhs.gov/.

NOTES: [a]The evidence base presented in this table includes only findings for the four MIHOPE models and for children 2 years of age and younger.

[b]FFI = Family follow-up interview; BITSEA = Brief Infant Toddler Social Emotional Assessment; PLS = Preschool Language Scale, Fifth Edition; BISQ = Brief Infant Sleep Questionnaire.

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[3]Briggs-Gowan et al. (2004); Karabekiroglu et al. (2010).

- Children's behavior during semi-structured play with parent. Although there is no evidence of impacts of home visiting programs on the three child behavior constructs captured by the Three Bags task, these behaviors are of interest because they have been linked to parenting behaviors. For instance, parental sensitivity when the child is 2 years old has been found to mediate the impact of Early Head Start—Home-Based Program Option (EHS) on children's engagement with the parent at 3 years.[4] Furthermore, these behaviors provide a direct window into the nature of parent-child interactions, which is of prime importance in a study of home visiting programs. Finally, the Three Bags scales have only been used in EHS, leaving open questions about whether any of the other three national models would affect outcomes that are based on the observational measure. Descriptions of the three subscales are provided below.

  - Child engagement of parent reflects the extent to which the child initiates or maintains interaction with the parent and communicates positive regard or positive affect to the parent.[5] This outcome has been studied in three of the four national models (two of which used observational measures other than the Three Bag scales) but no impacts have been found for children as young as 2 years of age.
  - Child's sustained attention with objects assesses the child's sustained (for example, focused and exploratory) involvement with objects.[6] EHS has looked at this outcome but it failed to find a statistically significant impact.[7]
  - Child negativity toward parent captures the degree to which the child shows anger, hostility, or dislike toward the parent.[8] Only EHS has looked at this outcome and it failed to find a statistically significant impact.[9]

- Behavior during a parent-directed task. Clean-Up tasks have typically been conducted and used in studies with children ages 2 and above, so it is unclear if such a task is appropriate for use with children as young as 15 months of age. If the parenting behaviors captured in the Clean-Up task aren't understood by 15-month-olds in the same way as they are by older children we might not expect parents to elicit the same behaviors from 15-month-olds. In light of this uncertainty, a Clean-Up task was included in MIHOPE as an exploratory measure. We recommend including its two measures of child behavior for exploratory purposes to examine their use in a sample of 15-month-olds. Although there isn't any evidence linking home visiting programs to these dimensions of child behavior, there is an extensive literature on the use of Clean-Up tasks that suggests that measures such as these are sensitive to changes in parental behavior and predictive of other child outcomes. For instance, children whose mothers are more controlling and provide less

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[4]Love et al. (2002).

[5]Ware et al. (2000).

[6]Ware et al. (2000).

[7]Love et al. (2001); Love et al. (2002).

[8]Ware et al. (2000).

[9]Jones-Harden, Chazan-Cohen, Raikes, and Vogel (2012); Love et al. (2001); Love et al. (2002).

guidance have been found to show less compliance, as rated during a Clean-Up task.[10] We describe the two subscales below.

- o Child compliance measures the extent to which children engage in a task at a parent's request.[11] None of the home visiting models has examined impacts on child compliance.
- o Child distress captures the degree to which children show frustration, anger, or signs of being upset when a parent asks them to engage in a task.[12] None of the home visiting models has examined impacts on child distress.

- Sleep habits. The ability to sleep through the night typically develops in the first year of life. However, a substantial share of infants and toddlers do not achieve this goal and their sleep continues to be fragmented.[13] No studies to our knowledge have assessed the impact of home visiting on outcomes related to children's sleep habits in the first two years of life. Nevertheless, we propose to include one measure of sleep habits or more as exploratory outcomes in the impact analysis because anecdotal evidence suggests that local home visiting programs in MIHOPE may be targeting certain aspects of children's sleep habits, perhaps especially regarding getting parents to put infants to sleep in a crib and on their backs. The measure of children's sleep habits included in MIHOPE is the parent-reported Brief Infant Sleep Questionnaire (BISQ), which can be used to create a variety of sleep-related measures, including sleep duration, whether the child's sleep is problematic, where the child sleeps, and the position in which the child sleeps.

- Receipt of early intervention services. Only one prior study of the four national models has examined the use of early intervention services with children under the age of 2 years, and this study of an HFA program did not find statistically significant effects.[14] Studies of EHS have found significant increases on eligibility and receipt of early intervention services for children over age 2 years. This combination of evidence prompted the team to include an indicator of intervention service receipt as an exploratory outcome.

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[10]Braungart-Rieker, Murphy-Garwood, and Stifter (1997).
[11]Morin, Martin, and Brooks-Gunn (2014).
[12]Morin, Martin, and Brooks-Gunn (2014).
[13]Sadeh (2004).
[14]Anisfield, Sandy, and Guterman (2004).

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Appendix C: Child Maltreatment Outcomes

September 21, 2015

As discussed in the memo to the Committee on the MIHOPE impact analysis, the authorizing legislation for the Maternal, Infant, and Early Childhood Home Visiting program (MIECHV) indicates that home visiting programs should aim to improve outcomes related to the prevention of child injuries and maltreatment, and three of the four national models being studied in MIHOPE name the prevention of child maltreatment as their mission or as a program outcome. This appendix describes some of the information that was considered in choosing confirmatory and exploratory outcomes for the MIHOPE impact analysis in the area of child maltreatment.

Appendix Table C.1 summarizes evidence from the Home Visiting Evidence of Effectiveness (HomVEE) review and indicates which outcomes we recommend as confirmatory or exploratory for child maltreatment. The evidence base referred to below is limited to studies of the four MIHOPE national models for children 2 years of age and younger. Most of the studies are of Healthy Families America (HFA) programs, although there is also some evidence from studies of Nurse-Family Partnership (NFP) programs.

Confirmatory outcomes

As discussed in the memo to the Committee on the impact analysis, we recommend three confirmatory child maltreatment outcomes, as shown in the first panel of Appendix Table C.1 and listed below:

- Frequency of minor physical assault
- Frequency of psychological aggression
- Health care encounter for injuries and ingestions

Exploratory outcomes

We recommend including several exploratory child maltreatment outcomes, which are shown in the second panel of Appendix Table C.1. These outcomes are important because they are highly conceptually relevant and frequently included in the home visiting literature. However, each has drawbacks, such as a limited evidence base for favorable impacts or that it is a relatively rare occurrence in children of this age. In particular, there is little evidence in studies using rigorous evaluative methods of impacts on maltreatment reports to child welfare agencies for children under 2 years of age. This is in part because there are typically few reports to child protective services for such young children.

Appendix Table C.1

Proposed Confirmatory and Exploratory Outcomes for Child Maltreatment

| Domain and outcome | Number of results from prior studies[a] | | | Source[b] |
	Favorable results	Not favorable results	No significant results	
Confirmatory outcomes				
Frequency of minor physical assault	3	0	9	FFI (CTSPC)
Frequenc of psychological aggression	2	0	12	FFI (CTSPC)
Health care encounter for injuries or ingestion	4	1	8	MD; FFI
Exploratory outcomes				
Severe or very severe physical abuse	2	0	22	FFI (CTSPC)
Substantiated maltreatment	0	0	7	CWS
Any maltreatment report	0	0	2	CWS; FFI
Loss of custody	0	0	1	CWS

SOURCE: U.S. Department of Health and Human Services website HomVEE: http://homvee.acf.hhs.gov/.

NOTES: [a]The evidence base presented in this table includes only findings for the four MIHOPE models and for children 2 years of age and younger.

[b]FFI = Family follow-up interview; CTSPC = Conflict Tactics Scale —— Parent-Child version; MD = Medicaid files; CWS = Child Welfare files.

- <u>Severe or very severe physical abuse</u>. This indicator is a measure of behaviors such as shaking the child, slapping the child on the face, or hitting with a hard object on a body part besides the buttocks, as derived from the Conflict Tactics Scale — Parent-Child version (CTSPC). Severe physical abuse measures (including more traditional measures such as extreme physical abuse, severe physical abuse, very severe physical abuse and severe or very severe physical assault, and less traditional permutations such as shaking the child and hitting the child with an object) have been examined relatively often in studies of home visiting, but only in studies of HFA programs. Significant favorable impacts were recorded in two cases on outcomes examined in studies of Healthy Families New York.[1] Given the relatively infrequent occurrence of these behaviors, we are leaning toward using a binary measure for this outcome.

- <u>Any substantiated maltreatment report by 15 months of age</u>. Of the studies included in our review of the HomVEE evidence on child maltreatment outcomes, four included substantiated or confirmed cases of child abuse or neglect as an outcome measure in children age 2 years and younger (three HFA and one NFP). Across these four studies, there were no favorable significant program effects on substantiated maltreatment. Our initial recommendation is to include all types of abuse in this measure. If we find an overall impact, it may be worthwhile to conduct additional analyses to determine whether

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[1]DuMont et al. (2008).

reductions in certain types of abuse are driving impacts. Because neglect reports are the most prevalent, many studies look at reports for neglect separately. This approach may be worthwhile, especially if there are significant impacts for all reports combined.

- Any maltreatment report by 15 months of age. HomVEE did not include unsubstantiated maltreatment reports as a confirmatory or exploratory outcome. One of the studies included in our review of the HomVEE evidence did include an outcome measure of any report of child abuse or neglect (regardless of substantiation), however. In this study, no favorable significant program effects were found on any report of the maltreatment measure. We believe it is important to consider all reports (including unsubstantiated reports) because 1) suspected abuse (in addition to substantiated abuse) is included as a MIECHV benchmark indicator and 2) reports, irrespective of disposition, have become the current standard for research. Results from several studies have suggested that substantiated and unsubstantiated cases of abuse may not differ in existing risk factors or in future risk and therefore call into question the utility of the substantiation classification and bolster the viewpoint that unsubstantiated reports should not be excluded from research.[2] A concern with including unsubstantiated reports is that the intervention being tested may increase the detection of maltreatment, a phenomenon referred to as surveillance bias. While little research has been conducted to systematically examine surveillance bias in research using child welfare report outcomes, one recent study has attempted to provide some information about this issue. Using data from two child maltreatment intervention evaluations, this study found that (1) while surveillance bias was substantial during time periods when clients were actively engaged in services, these substantial effects appeared to be washed out in the overall findings due to the fact that clients dropped out of services; (2) surveillance reports were often not unique – about half of cases with surveillance reports also had other nonsurveillance reports; (3) surveillance bias was not greater in home-visiting services than in center-based services; and (4) that surveillance reports (reports made by direct service providers) were as severe as nonsurveillance reports.[3]

- Any loss of custody by 15 months of age. This measure is represented by formal removal of the child from the biological mother as tracked in state Child Protective Services (CPS) records. It is often used in cost-benefit analyses of home visitation because removing children from their home constitutes a large expense to the state, and to the extent that home visiting reduces the prevalence of removal and the days spent in out-of-home placement, these expenses could be substantially reduced. While we expect the prevalence of this outcome to be extremely low by 15 months of age, and existing evidence from one HFA study does not support significant impacts, we recommend including it as an exploratory outcome.

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[2]Hussey et al. (2005); Kohl, Jonson-Reid, and Drake (2009); Leiter, Myers, and Zingraff (1994).
[3]Chaffin and Bard (2006).

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Appendix D: Parenting Outcomes

September 21, 2015

As discussed in the memo to the Committee on the MIHOPE impact analysis, all four national home visiting models strive to improve parenting, and the authorizing legislation for the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program indicates that home visiting programs should improve outcomes in this area. This appendix provides details about the information that was considered in choosing confirmatory and exploratory outcomes for the MIHOPE impact analysis in the areas of parenting.

Confirmatory outcomes

The memo to the Committee on the impact analysis provides details on the two proposed confirmatory outcomes in the area of parenting, which are as shown in Appendix Table D.1 and listed below.

- Quality of the home environment
- Parental supportiveness

Exploratory outcomes

We also propose a number of exploratory outcomes in the area of parenting, namely:

- The seven subscales from the Infant-Toddler Home Observation for Measurement of the Environment (IT-HOME). These subscales include parental warmth, parental verbal skills, parental lack of hostility, learning and literacy, home interior, developmental advance, and activities and outings.
- The three subscales that make up parental supportiveness from the Three Bags task (parental sensitivity, parental positive regard, and parental stimulation of cognitive development).
- The three Three Bags subscales that capture negative dimensions of parenting (parental intrusiveness, negative regard, and detachment).
- Nonviolent discipline from the Conflict Tactics Scale — Parent-Child version (CTSPC).
- The four subscales from the Clean-Up task that capture discipline strategies during a parent-directed task (gentle guidance, control, negative control, and takes over).
- Awareness about health and safety hazards.
- Parenting stress from the Parenting Stress Index — Short Form (PSI-SF).

Proposed Confirmatory and Exploratory Outcomes for Parenting

Domain and outcome	Number of results from prior studies[a]			Source[b]
	Favorable results	Not favorable results	No significant results	
Confirmatory Outcomes				
Quality of home environment	4	0	9	IT-HOME
Parental supportiveness	0	0	8	Three Bags
Exploratory Outcomes				
Parental sensitivity and warmth	2	0	10	
Parental warmth				IT-HOME
Parental sensitivity				Three Bags
Parental positive regard				Three Bags
Parental support for learning and development	2	1	38	
Learning and literacy				IT-HOME
Developmental advance				IT-HOME
Parental stimulation of cognitive development				Three Bags
Parental verbal skills	0	0	1	IT-HOME
Parental lack of hostility	0	1	9	IT-HOME
Home interior	0	0	0	IT-HOME
Activities and outings	0	0	5	IT-HOME
Parental intrusiveness	0	0	1	Three Bags
Parental negative regard	0	0	5	Three Bags
Parental detachment	0	0	1	Three Bags
Nonviolent discipline	2	0	21	FFI (CTSPC)
Discipline strategies during parent-directed task	0	0	0	
Gentle guidance				Clean-Up task
Control				Clean-Up task
Negative control				Clean-Up task
Takes over				Clean-Up task
Awareness about health and safety hazards	1	0	12	FFI
Parenting stress	1	0	5	FFI (PSI-SF)

SOURCE: U.S. Department of Health and Human Services website HomVEE: http://homvee.acf.hhs.gov/.

NOTES: [a]The evidence base presented in this table includes only findings for the four MIHOPE models and for children 2 years of age and younger.

  [b]IT-HOME = Infant-Toddler Home Observation for Measurement of the Environment; FFI = Family follow-up interview; CTSPC = Conflict Tactics Scale — Parent-Child version; PSI-SF = Parenting Stress Index — Short Form.

Evidence for the IT-HOME

Although all four national models have found statistically significant effects using the IT-HOME, there is less consistency in the evidence of the effects of home visiting programs on dimensions of parenting captured by the available observational and self-reported measures in MIHOPE. In this section of the memo, we assess the evidence related to the IT-HOME and implications for identifying of key outcome measures in this domain.

Appendix Table D.1 summarizes the Home Visiting Evidence of Effectiveness (HomVEE) review findings on parenting when children are 2 years old or younger at follow-up. This summary does not account for factors such as the magnitude of the findings. It only captures the number of positive statistically significant impacts ("Favorable findings" versus "Unfavorable findings" and findings that are "Not significant"). It also does not capture sample size and population characteristics, which are additional dimensions that could be used to consider prior research. To handle inconsistencies in the way that dimensions of parenting are defined in the literature, we have grouped conceptually similar constructs together and created names for these constructs, such as "Parental sensitivity and warmth," regardless of how they were measured in previous studies. For the outcomes that correspond to one of the seven IT- HOME subscales or the overall quality of the home environment (HOME total score), the IT-HOME has been used far more frequently than other instruments.[1]

In general, Appendix Table D.1 suggests that there is fairly consistent evidence of home visiting effectiveness for the IT-HOME total score, labeled "Quality of home environment." Four of the 13 studies that examined the IT-HOME total score (one for each of the four national models) found favorable impacts. Furthermore, the IT-HOME total score has been linked to children's cognitive development in the first two years of life, with correlations of small to moderate size, suggesting a possible pathway through which home visiting programs might influence child development.[2] Finally, the IT-HOME is appealing because it is largely an observational measure. When there is empirical evidence to support the use of observational measures, we prioritize their selection over parent-reported measures, as the former provide more objective ratings of parenting and are typically subject to less bias. In light of the above, we recommend including the IT-HOME total score as a confirmatory outcome.[3]

There is less consistent evidence of effectiveness across any of the other parenting outcomes or measures used in prior research. Some of the IT-HOME subscales have also been linked to children's social-emotional development, but the associations are weak.[4] For these reasons, we would present the IT-HOME subscales as exploratory outcomes, which could be examined to

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[1]The IT-HOME is a version of the HOME used for families with infants and toddlers. The HomVEE review, which was this memo's main source on evidence of the prior effects of home visiting, did not always indicate which version of the HOME was used in a study. Since this memo presents evidence from HomVEE only for children 2 years of age and younger, the memo assumes that the studies cited had used the IT-HOME.

[2]Bradley et al. (1989); Holditch-Davis et al. (2000); Totsika and Sylva (2004).

[3]Pending measurement work, we plan to use the set of HOME subscales proposed by Linver, Martin, and Brooks-Gunn (2004) and reflected in the list above.

[4]Linver, Martin, and Brooks-Gunn (2004).

disaggregate an impact on the IT-HOME total score. The following subscales are included in the IT-HOME:

- Parental warmth, which includes the parent's praise and expression of positive feelings toward the child
- Parental verbal skills, which includes whether the parent's speech is distinct and audible and whether the parent converses freely and easily
- Parental lack of hostility, which captures the parent's avoidance of restriction and punishment
- Learning and literacy, which reflects the presence of cognitively stimulating parent-child interactions, toys, books, or equipment
- Home interior, which captures whether the home is dark, overcrowded, and reasonably clean[5]
- Developmental advance, which captures the parent's support of children's developmentally appropriate play and use of relevant materials
- Activities and outings, including regular trips to the grocery store and doctor's office[6]

Evidence for the Three Bags task

The Three Bags task includes six parenting subscales: parental sensitivity, parental positive regard, parental stimulation of cognitive development, parental intrusiveness, parental negative regard, and parental detachment. All of these subscales are thought to be important predictors of children's development. Although the Three Bags task has only been examined in evaluations of Early Head Start — Home Based Option (EHS), many of these subscales are conceptually similar to dimensions of parenting that have been examined in other HomVEE studies that have not used the Three Bags task. In this section, we discuss the positive parenting outcomes that could be defined using the Three Bags task. Later in this appendix, we discuss the negative parenting outcomes.

In prior home visiting evaluations, the most common approach to defining parenting outcomes using the Three Bags task has been to combine the three subscales related to positive parenting — *parental sensitivity, parental stimulation of cognitive development,* and *parental positive regard* — into one measure of **parental supportiveness.**[7] Eight studies have examined this outcome. Only one of these studies used the Three Bags task. According to HomVEE, there is no evidence of effectiveness of home visiting programs on this outcome (as shown in Appendix Table D.1).

Two of the Three Bags subscales related to parental supportiveness — *parental sensitivity* and *parental positive regard* — are also conceptually similar to the dimension of parenting that we refer to as **parental sensitivity and warmth** in Appendix Table D.1. There is some evidence

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[5]Relevant items are from the Early-Childhood HOME, not the IT-HOME, but are being collected in MIHOPE.

[6]Linver, Martin, and Brooks-Gunn (2004) dropped this subscale from their analysis because the alpha was too low.

[7]Other, less common, alternatives to using the Three Bags scales include creating one composite across all six subscales, creating one composite for positive parenting and another for negative parenting, and creating a positive parenting composite using the parental sensitivity and parental positive regard subscales.

that home visiting programs can positively affect this outcome – 2 out of 12 studies show positive impacts on parental sensitivity and warmth. However, all of these prior studies used either the IT-HOME or the observational Nursing Child Assessment Satellite Training (NCAST). No prior evaluations reviewed by HomVEE examined parental sensitivity and warmth using the Three Bags subscales.

Last, the Three Bags subscale of *parental stimulation of cognitive development* is conceptually aligned with the dimension of parenting that we refer to as **parental support for learning and development** in Appendix Table D.1. There is some evidence that home visiting programs can positively affect this outcome; 2 out of 41 studies show positive impacts on parental support for learning and development. However, all of these prior studies used the IT-HOME, the NCAST, or parent-reported measures. There are no prior HomVEE evaluations that defined parental support for learning and development using the Three Bags subscales to our knowledge.

Thus, the prior HomVEE evidence for these outcomes (parental supportiveness, parental sensitivity and warmth, and parental support for learning and development) is fairly weak. This finding raises questions for us about whether the evidence is strong enough to warrant examination of a confirmatory parenting outcome in MIHOPE using the Three Bags scales. We therefore considered other pieces of evidence.

In the prior evaluation of EHS, the null finding for the Three Bags measure of parental supportiveness was of marginal statistical significance ($p < 0.10$) and was based on a sample of 794 families. The impact estimate had an effect size of 0.14. It could be that this impact was too small to be detected with the available sample. Because the MIHOPE sample is much larger, we would have sufficient power to detect an impact of this magnitude, which suggests that MIHOPE might be in a better position to detect potential impacts of home visiting programs on parental supportiveness, as measured by the Three Bags task, than EHS.

Furthermore, parental supportiveness, as measured by the Three Bags task, has been linked to children's cognitive and social-emotional development in the first two years of life, with correlations of small to moderate size.[8] Finally, as an observational measure, use of the Three-Bag task is appealing because it is subject to less bias than self-reported parenting measures.

In light of the above, we propose including a composite measure of parental supportiveness as a confirmatory outcome, and the subscales of parental sensitivity, parental positive regard, and parental stimulation of cognitive development as exploratory outcomes. An examination of these individual subscales as exploratory outcomes would allow for further exploration of why we did or did not find an impact on the supportiveness composite. Measurement work would confirm that the creation of a composite measure of parental supportiveness is warranted. If not, we would consider raising to confirmatory outcomes some or all of the individual subscales (parental sensitivity, parental positive regard, and parental stimulation of cognitive development) from the Three Bags task.

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[8]Cabrera, Fagan, Wight, and Schadler (2011); Ryan, Martin, and Brooks-Gunn (2006). Cabrera, Fagan, Wight, and Schadler (2011) used the Two-Bag task, a shortened version of the Three-Bag task that was scored using the observational rating system for the Three-Bag task.

Other exploratory parenting outcomes

In addition to the subscales from the IT-HOME and Three Bags task mentioned above, we propose including several additional exploratory parenting outcomes with more limited evidence of effectiveness from HomVEE. These are the following:

- The three subscales from the Three Bags that capture negative dimensions of parenting: parental intrusiveness, negative regard, and detachment. A small number of studies have examined these outcomes but have not found significant effects. Furthermore, the EHS evaluation is the only study included in HomVEE that measured these three outcomes using the Three Bags task. We do not propose to make these three outcomes confirmatory, unlike parental supportiveness, because they have been examined less frequently. However, as was the case for the Three Bags measure of parental supportiveness, the null finding for parental detachment in the EHS evaluation was of marginal statistical significance ($p < 0.10$) and was based on a sample of 794 families. The impact estimate had an effect size of –0.15. It could be that this impact was too small to be detected in the EHS sample. Because the MIHOPE sample is much larger, MIHOPE might be in a better position to detect potential impacts of home visiting programs on parental detachment than the EHS evaluation, as measured by the Three Bags task. In light of this possibility, we propose to include parental detachment as an exploratory parenting outcome. We also propose to include parental intrusiveness and negative regard as exploratory outcomes to assess their use in a larger sample and in the context of national home visiting models other than EHS. As already noted, use of the Three Bags task is appealing because it is subject to less bias than self-reported parenting measures. The three negative dimensions of parenting captured by the Three-Bag task are described below.

  - <u>Parental negative regard</u> captures the parent's expression of discontent with, anger toward, disapproval of, and rejection of the child.
  - <u>Parental detachment</u> captures the parent's awareness of, attention to, and engagement with the child (where a detached parent displays low levels of these behaviors).
  - <u>Parental intrusiveness</u> reflects the degree to which the parent exerts control over the child rather than acting in a way that respects the child's perspective.

- <u>Nonviolent discipline</u>. A large number of studies reviewed by HomVEE have looked at nonviolent discipline but only two have found favorable findings.in addition, MIHOPE included only two items on nonviolent discipline that were part of the CTSPC, which is being used to measure confirmatory outcomes in the area of child maltreatment. Because of the limited effects found in prior studies and the inclusion of so few items on this construct in the MIHOPE follow-up survey, we propose to examine nonviolent discipline as an exploratory outcome.

- <u>Discipline strategies during a parent-directed task (the Clean-Up task)</u>. The literature on parental discipline and child development has identified a number of discipline strategies that are associated with young children's compliance and behavior in the context of a

parent-directed task. Four of these are the focus of the Clean-Up task, an observational parent-child interaction rating scale that captures parental strategies to induce children's compliance. The four strategies are gentle guidance, control, negative control, and takes over.

- o <u>Gentle guidance</u> measures the extent to which the parent encourages and motivates the child's clean-up behaviors.
- o <u>Control</u> measures the extent to which the parent tries to control the child's clean-up behavior instead of encouraging the child to do it alone .
- o <u>Negative control</u> measures the extent to which the parent controls the child's clean-up behavior using harsh physical manipulation, punishment, criticism, or power assertion.
- o <u>Takes over</u> measures the extent to which the parent performs the clean-up task herself instead of allowing the child an opportunity to participate.

Although Clean-Up tasks have been used in numerous studies, they have typically been used with children ages 2 and above. This is one of the first instances in which a Clean-Up task is being used with children as young as 15 months of age. As a result, it is unclear whether it is appropriate for use with this age group. For instance, it could be that the parenting behaviors captured in the Clean-Up task aren't understood by 15-month-olds in the same way as they are by older children. In light of this uncertainty, the Clean-Up task was not included in MIHOPE with the intention of using it as a confirmatory outcome measure. We recommend including these measures for exploratory purposes to examine their use in a sample of 15-month-olds. Although none of the home visiting studies reviewed by HomVEE examined these discipline strategies, a Clean-Up task has been used with some success in a study of the Family Check-Up program when children were 3 years old.[9]

- <u>Awareness about health and safety hazards</u>. Each of the four national home visiting models has been assessed on its ability to increase parents' awareness about health and safety hazards. Measures ranged from observed (for example, child play area is safe)[10] to parent reports (for example, presence of syrup of ipecac, poison control number, gates or doors in front of stairs, guards or gates for windows, covers on electrical outlets, working smoke alarm, uses a car seat, and child safety checklist).[11] A favorable impact of Healthy Families America (HFA) was found on observed safety practices but not on parent-reported measures. We recommend making this outcome exploratory because the MIHOPE measure is based on parent reports.

- <u>Parenting stress</u>. A number of studies of EHS and HFA have examined parenting stress but have not found significant impacts. We propose to include parenting stress as an exploratory outcome because it is one of the constructs that is captured in the MIECHV benchmark for improvements in children's school readiness and achievement. The measure of parenting stress included in MIHOPE is the parent-reported PSI-SF.

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[9]Dishion et al. (2008).
[10]Love et al. (2001).
[11]Love et al. (2001); Mitchell-Herzfeld et al. (2005).

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Appendix E: Domestic Violence Outcomes

September 21, 2015

This appendix describes some of the information that was considered in choosing confirmatory and exploratory outcomes for the MIHOPE impact analysis in the area of domestic violence. As discussed in the main memo to the Committee on the impact analysis, the four national home visiting models being studied in MIHOPE place somewhat different emphases on reducing domestic violence, but domestic violence is included in the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program benchmarks.

The MIHOPE 15-month follow-up survey includes a limited set of items for measuring domestic violence outcomes . The specific items available are: the short form of the Women's Experience of Battering (WEB) scale and a shortened version of the Conflict Tactics Scale (CTS) which includes physical perpetration and physical victimization items. Additional items ask respondents about their use of domestic violence services and domestic violence shelter. Appendix Table E.1 summarizes evidence from the Home Visiting Evidence of Effectiveness (HomVEE) review on domestic violence outcomes that could be analyzed in MIHOPE.

Confirmatory outcomes

As noted in the memo to the Committee on the impact analysis, we propose no confirmatory outcomes in the area of domestic violence because there is little evidence from prior studies that home visiting programs would affect these outcomes at such an early stage.

Exploratory outcomes

We recommend five exploratory domestic violence outcomes, which are shown in the second panel of Appendix Table E.1. These outcomes are recommended as exploratory because of their limited evidence base.

- Maternal perpetration — physical assault. Maternal physical perpetration of domestic violence has not been examined in any prior follow-ups when children were two years or younger. Despite the lack of evidence on this outcome, we recommend including it as an exploratory outcome, particularly in light of our finding of high rates of maternal perpetration at baseline.[1]

  The physical perpetration outcome will be created using items from the CTS that capture how many times the respondent threw something at her partner; pushed, shoved, hit,

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[1]Michalopoulos et al. (2015).

slapped or grabbed her partner; used a knife, gun, or weapon on her partner; or choked, slammed, kicked, burned or beat her partner.

Appendix Table E.1

Proposed Confirmatory and Exploratory Outcomes for Domestic Violence

	Results from prior studies[a]			
Domain and outcome	Favorable	Not favorable	Not significant	Source[b]
Confirmatory Outcomes				
	—	—	—	—
Exploratory Outcomes				
Physical assault				
Maternal perpetration	0	0	0	FFI (CTS)
Maternal victimization	0	0	3	FFI (CTS)
Experience with battering				
Maternal victimization	0	0	0	FFI (WEB)
Domestic violence services				
Received any domestic violence services	0	0	1	FFI
Spent time in domestic violence shelter	0	0	0	FFI

NOTES: [a]The evidence base presented in this table includes only findings for the four MIHOPE models and for children two years and younger.

  [b]FFI = Family Follow-Up Interview; CTS = Conflict Tactics Scale; WEB = Women's Experience with Battering

- Maternal victimization — physical assault. Among the four national models in MIHOPE, only four HFA studies have examined physical abuse outcomes, and no statistically significant favorable effects have been found in these three examinations.[2] The physical victimization outcome will be created using items from the CTS that correspond to those used for maternal perpetration, plus an item about the partner using threats or force (like hitting, holding down, or using a weapon) to make the respondent have sex. Though this latter item is generally examined as part of a sexual coercion subscale, we have placed it with the physical assault items in our analysis because we included only one sexual coercion item on our survey. We will note the inclusion of this item when we report results for this measure.

- Maternal victimization — experience with battering. Women's experience with battering is being measured through the WEB . Although the WEB has not previously been used in studies of home visiting programs, it was included in the MIHOPE follow-up survey because of concerns that the CTS does not capture information about context, meanings or motives, and does not allow a distinction to be made between aggressive abuse and

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[2]Duggan et al. (2004b); Landsverk et al. (2002).

acts of self-defense.[3] In addition, the particular CTS items used on the follow-up survey do not capture information about the severity of behaviors and whether injuries were sustained. Though the WEB does not address all of these concerns, it does go beyond counts of behaviors to obtain information about shame, lack of control, and feeling unsafe.

The analysis will also include an exploratory measure to look at the overlap between the measures described above so that we better understand their context.

- Receipt of domestic violence services. Finally, we propose presenting two measures of service receipt as exploratory outcomes: receipt of any domestic violence services (such as counseling) and whether the mother spent time in a domestic violence shelter. We have considered incorporating information from the baseline survey to try to better measure respondents' need for services. For example, these results could be analyzed for the subgroup of mothers who indicated on the baseline survey that they had experienced domestic violence or used domestic violence services prior to entering the program.

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[3]DeKeseredy and Schwartz (1998).

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Appendix F: Family Economic Self-Sufficiency Outcomes

September 21, 2015

As discussed in the memo to the Committee on the MIHOPE impact analysis, all four national home visiting models place a high priority on improving family economic self-sufficiency, and the authorizing legislation for the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program indicates that home visiting programs should improve outcomes in these areas. This appendix describes some of the information that was considered in choosing confirmatory outcomes for the MIHOPE impact analysis in the area of family economic self-sufficiency. We included health insurance under health outcomes, so this appendix focuses on other aspects of economic self-sufficiency.

Appendix Table F.1 summarizes results from the Home Visiting Evidence of Effectiveness (HomVEE) review on economic self-sufficiency for families with children under two years old. Outcomes of interest were restricted to those measured within two years of the child's birth and outcomes that focused on the mother, family, or household as opposed to those that focused on the child, father, or mother's partner. Due to the wide variety of economic measures included, outcomes were classified into the categories presented in Appendix Table F.1. The outcomes are discussed below.

Confirmatory outcomes

The memo to the Committee on the impact analysis notes that we propose one confirmatory outcome in the area of family economic self-sufficiency: whether the caregiver is receiving education or training when they complete the follow-up survey.

Exploratory outcomes

Because other measures — particularly those related to employment and receipt of public assistance — have been extensively examined but have not usually generated statistically significant impacts, we propose including employment and earnings, public assistance receipt, and food sufficiency as exploratory outcomes. Although the Nurse-Family Partnership (NFP) has found increased employment for mothers, these findings have been for families with much older children.

Appendix Table F.1

**Proposed Confirmatory and Exploratory Outcomes for Family
Economic Self-Sufficiency**

| | Number of results from prior studies[a] | | | |
| | Favorable | Not favorable | No significant | |
Domain and outcome	results	results	results	Source[b]
Confirmatory Outcomes				
Receiving education or training	9	0	16	FFI
Exploratory Outcomes				
Receiving public assistance	0	0	31	FFI
Food insecure	0	0	0	FFI
Employed 5 quarters after birth	1	2	23	NDNH
Earnings 5 quarters after birth	0	0	3	NDNH
Used non-parental child care	0	0	5	FFI
Receipt of transportation services	0	0	0	FFI

SOURCE: U.S. Department of Health and Human Services website HomVEE:
http://homvee.acf.hhs.gov/.

NOTE: [a]The evidence base presented in this table includes only findings for the
four MIHOPE models and for children 2 years of age and younger.
  [b]FFI = Family follow-up interview; NDNH = National Database of New Hires.

- Public assistance receipt. Regarding public assistance, prior studies have examined the impacts of home visiting on a wide range of benefits, including AFDC or Temporary Assistance for Needy Families (TANF) (20 estimates); food stamps or the Supplemental Nutritional Assistance Program (SNAP) (3 estimates); Women, Infants, and Children (WIC) (2 estimates); Section 8 vouchers (1 estimate); Medicaid (1 estimate); and unspecified measures of public assistance (3 estimates). In addition, studies of all four national models have examined this area of outcomes. As indicated in Appendix Table F.1, no study has found statistically significant effects on any aspect of public assistance by the time the child is 2 years old. However, because there is substantial policy interest in this outcome, we would present impacts on TANF, SNAP, WIC, and disability benefits (the four measures of public assistance available through the MIHOPE follow-up survey) as exploratory outcomes.

- Food insecurity. As noted in the table, no prior studies of home visiting have looked at the effects of home visiting on food security in the first two years. For that reason, impacts on food security are considered exploratory. One question for discussion is whether to measure impacts on food security ― and perhaps impacts on receipt of food related benefits through SNAP and WIC ― for the group of families who were food insecure at baseline. This comparison may make sense since home visiting programs would presumably help such families obtain any assistance for which they are eligible. In

MIHOPE, families are considered food insecure at baseline if the woman indicated she was worried that food would run out before they had money to buy more or if in the past year food had run out before they could buy more. These two items are a shortened version of a 10-item instrument developed by the U.S. Department of Agriculture (USDA) and have been shown to identify most families who are classified as food insecure using the longer set of questions.

- <u>Employment and earnings five quarters after birth</u>. As shown in Appendix Table F.1, although many studies have examined employment (in particular) over a year after birth of the focal child, there is little evidence to suggest that home visiting programs have impacts on employment or earnings. This may be in part because of mothers' greater need or desire to engage in education and job training services prior to finding employment. Given that measures of employment and earnings are highly relevant for policy, however, we recommend examining these outcomes as exploratory.

- <u>Child care and transportation service receipt</u>. Finally, we would show the effects of home visiting on two areas of services as exploratory outcomes: (1) child care provided by someone other than a parent, and (2) transportation services. We plan to show the latter outcome somewhere, but may move it to a different domain if we examine survey results and find that transportation services were primarily used for services such as health care, rather than for activities related to employment, training, and receipt of public assistance.

One item not listed in the table is household income. In addition to asking about the respondent's earnings and receipt of public assistance, the MIHOPE follow-up survey asks about income of all other household members. At baseline, sample members had difficulty answering this question, and we expect to find the same to be true at follow-up. For that reason, we do not propose to look at household income as either a confirmatory or exploratory measure.

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Appendix G: Family Subgroups

September 21, 2015

This appendix presents information on how family subgroups were chosen for the MIHOPE impact analysis. It provides additional detail and background for material discussed in the last section of the impact analysis memo. First, we describe in detail the process we used to identify subgroups and our findings from this process. Next, we detail our rationale for the proposed set of confirmatory subgroups. We then describe general types of exploratory subgroup analyses.

Identifying Possible Relevant Family Subgroups

We used three different lenses to identify the most relevant subgroups for MIHOPE: (1) subgroup constructs used in prior home visiting research, (2) policy relevance, and (3) national model relevance.

Lens 1: Evidence from Prior Research

The primary sources of evidence included in our review were studies identified in the Home Visiting Evidence of Effectiveness (HomVEE) review. We identified studies rated as "high" or "moderate" for each of the four national models included in MIHOPE. Subgroup findings for an outcome domain were included in the HomVEE review only if they were replicated in at least two different studies using different analytic samples. Only one type of family characteristic subgroup was identified in HomVEE. Thus, we also conducted a literature search focused on moderators of home visiting program impacts, to ensure we collected information on other subgroup analyses as well.

When a study used a subgroup, we extracted the following information, if available (we considered the unit of analysis "the subgroup"):[1]

- Subgroup description or definition
- National model
- Study (author and year)
- Length of follow-up
- Whether study tested for differences across subgroups
- Outcomes reported for the subgroup
- Outcome domain (child maltreatment, child development, domestic violence, parenting, economic self-sufficiency, health, school readiness, academic achievement, school behavior, other)
- Data sources or specific measures

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[1]Subgroups from prior studies were not included if they were (1) related to location (for example, counties, offices) or (2) defined by characteristics observed after baseline (for example, by dosage or quality of home visits).

- p-value (or NS if not statistically significant) for the subgroup impact, against a null hypothesis of zero impact
- Subgroup sample size
- Effect size for subgroup impact
- p-value for differences across subgroup impacts (if available)

We summarized this information by broad subgroup categories examined in prior home-visiting research, and showing the national model, length of follow-up, and outcome domain examined. Appendix Table G.1 shows an example of this further summary for one of the constructs — maternal age — for studies with follow-up periods up to five years. The information is further collapsed in Appendix Table G.2, which shows:

- Broad subgroup category (for example, maternal age, first-time mother)
- Number of studies that used this category alone to define its subgroups
- Number of studies that used this category in combination with others to create a composite subgroup
- Number of outcomes reported in each domain

Some caveats are needed regarding the information in Appendix Tables G.1 and G.2. First, some studies reported results for all initially specified outcomes, whether or not the subgroup's impact was statistically significantly different from zero. Other studies, however, appeared to (or explicitly indicated that they) report only results that were statistically significant. Some studies mention examining a subgroup only briefly in the main report or in a footnote. Thus, the number of outcomes listed in each category *underestimates* the number of times that outcomes in each category have actually been examined in prior research with these follow-up periods. Further, publication biases regarding statistically significant results are likely. Second, while most of the studies defined subgroups with information collected at baseline, not all did. Third, information on subgroup findings from the national evaluation of Early Head Start was available only for the full sample from that study, including families who participated in programs that were not home-based.

With these caveats in mind, we offer observations below with regard to the subgroup evidence from prior research.

Maternal Age Subgroup and Outcome Domains in Home Visiting Research in the First Five Years

Definition used and author	National model	Length of follow-up	H	CD	CM	P	DV	E
Demographic characteristic: maternal age								
Poor, unmarried teenagers (under 19 years of age at registration): Olds (1986)	NFP	10, 22 months	1	2		3		11
Under or over 18: Mitchell (2005)[b]	HFA	1 year	1				1	1
Adolescents (14-16 years old): Olds (1986)[b]	NFP	1 year	5					
Older nonsmokers: Olds (1986)	NFP	1 year	5					
First-time mothers under age 19 who were randomly assigned at a gestational age of 30 weeks or less: DuMont (2008)	HFA	2 years						16
Mothers who varied in age, prenatal status at the time of random assignment presence of other offspring, and prior involvement with CPS: DuMont (2008)	HFA	2 years	3					16
Teen mothers: Duggan (2004)[b]	HFA	3 years						1
Teenage mother (19 or younger) or older mothers (20 or older): Love (2002)[b]	EHS	3 years	17	13	54	22		11
Risk factors (teenage mother, no high school credential, public assistance, not employed or in school or job training, a single mother): Love (2002)	EHS	3 years	17	13	54	22		11
First-time mother, under the age of 19 years, and randomly assigned at a gestational age of 30 weeks or less: Rodriguez (2010)	HFA	3 years				6		
Poor unmarried teenagers (under 19 years at registration) or poor unmarried older women (over 19 years at registration): Olds (1988)	NFP	4 years			6	3		
Low income, unmarried teens: Olds (1994)	NFP	4 years	6	2		6		7
Risk factors (teenage parent, single parent, parent neither employed nor in school, parent receiving cash assistance, parent not completed high school): Raikes (2013)	EHS	5 years	8	34	8	17		6
Total outcomes reported by domain			63	64	122	79	1	80

NOTES: [a]H = Maternal and child health; CD = Child development; CM = Child maltreatment; P = Parenting; DV = Domestic violence; E = family economic self-sufficiency.

   [b]Study used one characteristic alone to define subgroup category.

Appendix Table G.2

Subgroup Categories and Outcome Domains Examined in Home Visiting Research in the First Five Years

Broad subgroup category	How subgroup is defined (number of studies)		Number of outcomes reported in each domain[a]					
	By characteristic alone	By characteristic and others	H	CD	CM	P	DV	E
Demographic characteristic								
Maternal age	4	9	63	64	80	79	1	122
Partner status	2	7	38	51	35	80	0	72
First-time mothers	4	5	32	15	45	31	3	54
Race or ethnicity	4	0	33	91	23	78	0	62
Language spoken	3	0	25	68	15	55	0	54
Socioeconomic status	1	5	14	4	18	15	0	6
Education level	1	3	26	47	17	39	0	68
Employment status	0	2	25	47	17	39	0	62
Receipt of public assistance	0	2	25	47	17	39	0	62
Mental or physical health								
Maternal depression	6	4	71	21	17	36	1	60
Attachment style	4	3	9	8	2	9	4	0
Psychological resources	3	0	6	15	0	3	0	0
Family stress	3	0	0	0	2	3	0	0
Pregnancy status	4	2	26	13	27	28	0	54
Pregnancy-induced hypertension	1	0	4	0	0	0	0	0
Domestic violence and child abuse								
Domestic violence	6	0	1	2	5	6	2	1
Substance use	3	0	8	9	0	4	0	0
Child abuse and neglect	1	1	3	0	23	0	2	0
Total outcomes reported by domain			409	502	343	544	13	677

NOTES: [a]H = Maternal and child health; CD = Child development; CM = Child maltreatment; P = Parenting; DV = Domestic violence; E = family economic self-sufficiency.

1. Many studies form subgroups based on <u>composite</u> categories. For example, one study looked at "poor, unmarried teenagers."[1] Appendix Table G.2 shows separate rows by broad subgroup category (for example, "maternal age" or "first-time mothers"). It also distinguishes between the number of studies that use each of the subgroup categories on its own ("By characteristic alone") and the number that combine the category with others to form a subgroup ("By characteristic and others"). We include a study that uses each category in its composite definition multiple times — that is, in each row for the relevant general category. For example, the study that looked at poor, unmarried teenagers (mentioned above) is counted in rows for maternal age, partner status, and socioeconomic status.

2. A study may have reported only one subgroup within a subgroup category. For example, the study cited above estimated effects for "poor, unmarried teenagers" but not for other subgroups that could be formed using the categories of maternal age, whether the person was a first-time mother, and whether the person was poor.[2] Thus, often there is no direct evidence of differences in impact across relevant subgroups. Most studies estimated impacts for individual subgroups and tested whether the impact for that subgroup was statistically significantly different from zero.

3. Appendix Tables G.1 and G.2 do not present definitive guidance regarding whether a particular subgroup category should be used alone or in a composite. The number of studies listed per subgroup category is small enough overall that the difference of one or two between categories should not be interpreted as definitive. For this reason, and those in the previous point, we do not want to overinterpret the guidance for forming subgroups that can be inferred from these tables: while we know the cell counts are underestimates, we cannot know whether the true counts are greater by a constant percentage or number across all cells. A possible exception to this conclusion would be subgroups formed on the basis of race and ethnicity and language spoken. These characteristics have never been used as part of a composite.

As a check on the subgroups identified through our review of the empirical home visiting evidence, we also reviewed some of the literature on parenting interventions to determine whether any other subgroups should be considered. This review revealed a substantial amount of overlap in the subgroups examined in the home visiting and parenting intervention literatures. Evaluations of parenting programs have often focused on indicators of risk or dysfunction at baseline as potential moderators of program impacts, including parenting stress, depression, poor parenting practices, anger, dysfunctional family environment or marital quality, single-parent family, low socioeconomic status, and substance use.[3] They have also examined baseline demographic characteristics such as maternal education level, maternal age, social class, and family size.[4] Studies of parenting interventions have examined moderation by indicators of child dysfunction, as well (including a larger number of conduct disorder symptoms), but these are less

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[1]Olds, Henderson, Chamberlain, and Tatelbaum (1986).
[2]Olds Henderson, Chamberlain, and Tatelbaum (1986).
[3]Baydar, Reid, and Webster-Stratton (2003); Beauchaine, Webster-Stratton, and Reid (2005); Nock (2003).
[4]Beauchaine, Webster-Stratton, and Reid (2005).

relevant to MIHOPE, since many mothers enrolled during pregnancy.[5] Our review of the parenting intervention literature suggests that we have not overlooked any key subgroups.

Lens 2: Policy Relevance

We interpreted "policy-relevant" as individual or family characteristics that were of particular interest to policy makers and interest groups focused on home visiting and child well-being. We did not interpret "policy-relevant" to mean characteristics that might be more or less "easily" targeted with specific policies or program practices.

The primary source we consulted for policy relevance was the authorizing legislation of Maternal, Infant, and Early Childhood Home Visiting (MIECHV): Section 2951 of the Affordable Care Act.[6] The authorizing legislation is explicit in defining "high-risk" families and individuals, thus clearly conveying the policy significance of these characteristics:[7]

> (A) Eligible families who reside in communities in need of such services, as identified in the statewide needs assessment required under subsection (b)(1)(A).
> (B) Low-income eligible families.
> (C) Eligible families who are pregnant women who have not attained age 21.
> (D) Eligible families that have a history of child abuse or neglect or have had interactions with child welfare services.
> (E) Eligible families that have a history of substance abuse or need substance abuse treatment.
> (F) Eligible families that have users of tobacco products in the home.
> (G) Eligible families that are or have children with low student achievement.
> (H) Eligible families with children with developmental delays or disabilities.
> (I) Eligible families who, or that include individuals who, are serving or formerly served in the Armed Forces, including such families that have members of the Armed Forces who have had multiple deployments outside of the United States.

In addition, we consulted websites (primarily policy priorities sections) of organizations such as Zero to Three, the American Academy of Pediatrics, the Pew Center on the States, the Annie E. Casey Foundation, the Child Welfare League of America, Chapin Hall Center for Children, and the Maternal and Child Health Bureau in the Health Resources and Services Administration, as well as others. Our review of websites indicated that while specific indicators of "high risk" or "vulnerable" families or individuals varied somewhat depending on the particular focus of the organization or group, they were all largely captured by the "high-risk" categories identified in the authorizing legislation.

Lens 3: National model Relevance

We gathered information about the extent to which each of the four national models in MIHOPE emphasized outcomes or target populations that suggested a focus on one or more

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[5]Nock (2003).
[6]www.ssa.gov/OP_Home/ssact/title05/0511.htm.
[7]http://www.ssa.gov/OP_Home/ssact/title05/0511.htm.

family-level subgroups. Because the goal was to identify potential family subgroups that could be examined in the MIHOPE impact analysis, we focused on family characteristics that could be defined for subsets of the MIHOPE sample.

Information was collected from two main sources:

- Tables in the MIHOPE Report to Congress:[8]

    o Table 1.1: Key Components of the Planned Services of the Evidence-based Home Visiting Programs in the Evaluation
    o Table 5.1: Individuals Targeted for Improved Outcomes, According to National Models and Local Programs (focused on national model ratings)
    o Table 5.2: Priority Ratings for Intended Outcomes, by National Models and Local Programs (focused on national model ratings)

- HomVEE review (program model overviews: (three components: theoretical framework, program model components, and target population)

We considered whether each national model's target population, program components, intended outcomes, and theoretical framework explicitly or implicitly targeted one or more specific subgroups. We also considered whether a specific outcome was targeted for any of these subgroups.

Appendix Table G.3 presents information gathered about subgroups that are relevant to each of the four national models included in MIHOPE. The search produced a total of 15 potential subgroups that fall into eight general categories:

- maternal and child health
- partner status
- child abuse and neglect
- domestic violence
- first-time mothers
- pregnancy status
- race and ethnicity
- attachment style

Maternal and child health is the category with the largest number of subgroups. The most fruitful sources of information relevant to subgroups proved to be descriptions of the program goals, intended outcomes, and target populations. No relevant information came from descriptions of the national model components. In addition, none of the information sources mentioned specific outcomes in the context of these potential subgroups.

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[8]Michalopoulos et al. (2015).

Broad Subgroup Categories Relevant to National Program Models

	National models whose…		
Broad subgroup category and description	Goals or intended outcomes emphasize this subgroup	Target population emphasizes this subgroup	Theoretical framework emphasizes this subgroup
Maternal and child health			
Children with developmental delays or health issues	PAT		
Children with disabilities who are eligible for Part C services under IDEA in their state		EHS	
Parents with current or prior mental health concerns		HFA	
Mothers with poor physical health	EHS, NFP, HFA		
Family member smokes	EHS, NFP, HFA		
Parents with current or prior substance abuse problems		HFA	
Partner status			
Single parents		HFA	
Biological father involved in the child's life		PAT, HFA	
Pregnancy status			
Mothers in the first 14-28 weeks of pregnancy		NFP	
Familes who enroll prenatally or within first three months after child's birth		HFA	
Families at risk for child abuse and neglect	PAT	HFA	
Parents who have experienced domestic violence		HFA	
First time, low income mothers		NFP	
Racial and ethnic minorities			EHS, HFA
Mothers who are securely attached, avoidant, anxious, or anxious-avoidant			NFP, HFA

Some subgroups in Appendix Table G.3 are explicitly identified in national model materials, while others are implied. For example, Healthy Families America (HFA) explicitly targets single parents (under "Partner status" in the table). Early Head Start ― Home-Based Program Option (EHS) and HFA explicitly mention cultural competence and sensitivity in their theoretical frameworks, suggesting that racial and ethnic minorities might be a subgroup of interest. As an example of implied subgroups, in all but three cases the national model developers rated the intended outcomes they were asked about as being of "medium" or "high" priority. Parents as Teachers (PAT), however, gave three outcomes — maternal physical health, family planning,

and tobacco use — ratings of "low." This variation in priorities across the national models there might be variation in the extent to which home visiting programs meet the needs of mothers with poor physical health and families with a family member who smokes.

The results suggest several program-relevant subgroups that could be examined in the MIHOPE impact analysis. The large number of subgroups related to maternal and child health suggests that it might be worthwhile to include this category in our selection. The results also reflect that many family subgroups are tied to particular national models — an analytic challenge we must address to draw conclusions about variation in program impacts by subgroup that are not confounded by national model. Finally, some of the national models explicitly allow local programs to set their priorities, indicating that it is difficult to characterize the "program relevance" of family subgroups at the national model level.

Confirmatory Subgroups Constructs

The evidence and information reviewed so far provide many options for subgroups in MIHOPE. If there were no constraints imposed by data availability or resources, many possible subgroups could be included. The text in the impact analysis memo described the criteria we used to consider whether a subgroup construct would be confirmatory. Our process for considering information related to existing empirical evidence, policy and program significance, and sample size is summarized here:

1. With regard to the criterion that the *family subgroup construct must have an empirical base with regard to expecting subgroup impact **differences** for at least one primary outcome in the MIHOPE impact analysis*: This judgment is based on our review described earlier. As noted, the empirical base with regard to subgroup differences is somewhat limited for a number of reasons. Compounding this limited information is the interpretation of statistically significant effects (or lack thereof) in prior research. In particular, the absence of statistically significant differences in subgroup impacts, or statistical insignificance for any particular subgroup impact (against a null hypothesis of zero impact), indicates that "the study provides no direct evidence of an effect for the subgroup." A null finding does *not* "necessarily indicate that the treatment has no effect or a negligible effect for the subgroup."[9] This is especially a concern given the relatively few reported subgroup results, and the general lack of consistent definitions within the construct.

   Still, we used the available information from existing subgroup studies in the following set of questions:
   i. Is there an empirical basis for using any category by itself (that is, defining a subgroup construct based only on this single category)?
      → If yes, specify the category as a potential confirmatory subgroup construct.
      → If no, continue to Step ii.
   ii. Among the remaining possible categories, are there empirical or theoretical arguments for developing a composite construct?

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[9]Bloom and Michalopoulos (2011).

→ If yes, specify the subgroup construct and define the composite.
→ If no, remove from the list.

2. With regard to the criterion that the *family subgroup construct is likely to be of policy interest or program significance*: This judgment is based on our review described earlier in the first section. While a number of characteristics are interesting and actionable or relevant for particular local programs or national models, we tried to focus on those that have broad applicability.

   To assess whether the family subgroup construct met this criterion, we addressed four questions:
   i. Which, if any, of the policy-relevant subgroup categories from the authorizing legislation meet the criterion described in Step 1 above?
   ii. Which, if any, policy-relevant subgroup categories are *not* reflected in the proposed list?
   iii. Which, if any, of the national model-relevant subgroup categories are reflected in the proposed list from Step 1 above?
   iv. Which, if any, program-relevant subgroup categories are *not* reflected in the proposed list?

3. *Each subgroup within the construct has sufficient sample size for analysis*. To estimate subgroup impacts with reasonable precision, a sufficient number of observations must be available for each subgroup. As a rough guide, we set 1,000 as the minimum number of families within each subgroup category; this number is about 25 percent of the total sample. We expect that the recommended subgroups will have a sufficient sample size..

The results of applying these criteria are reported in Table 3 of the memo to the Committee on the MIHOPE impact analysis. It lists each confirmatory subgroup construct, its definition, the specific subgroups that compose it, whether and how the construct reflects policy significance or program significance as defined earlier in the memo, and further notes on the construct. Later in this appendix we discuss constructs that are of interest from a policy or program standpoint but that are not reflected in the confirmatory constructs. We review each of the proposed confirmatory subgroup constructs.

1. <u>Pregnancy status at time of enrollment</u>. This construct was used in the MIHOPE Report to Congress.[10] Its subgroups are: "enrolled up to 28th week of pregnancy," "enrolled after 28th week of pregnancy," and "enrolled after baby's birth." Some confounding with national model will result from this subgroup. The Nurse-Family Partnership (NFP), for example, only enrolls mothers during pregnancy. The Report to Congress also found that the majority of women were pregnant at the time of enrollment. The authorizing legislation reflects part of this this construct when it emphasizes "pregnant women who have not attained age 21."

2. <u>Whether or not the woman is a first-time mother</u>. This construct comprises two subgroups: women who are first-time mothers and those who have had children

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[10]Michalopoulos et al. (2015).

previously. Some confounding with national model will result from this subgroup because NFP only enrolls first-time mothers. First-time mothers may be more receptive to home visiting services than mothers who have an older child. This receptivity may translate to larger impacts for first-time mothers. The Report to Congress indicated that about one-third of women in the sample already had a child living in the home; and just over half of women enrolling after the birth of their child already had an older child in the home. While this characteristic was not mentioned in the authorizing legislation, NFP is the only national model that targets first-time mothers.

3. <u>Whether or not the mother has low psychological resources</u>. This composite measure is based on three dimensions: (1) maternal intelligence, (2) mental health (depression and anxiety), and (3) sense of mastery. It is the only subgroup construct related to family characteristics that is included in the HomVEE review. As noted above, HomVEE only reports subgroup findings if they are replicated in the same outcome domain in at least two studies using different analytic samples (and the studies also had to meet the other HomVEE requirements).[11] Fulfilling this suggests that the empirical evidence is strong for maternal psychological resources related to certain outcomes.

    The low psychological resources subgroup results reported in HomVEE are solely for NFP evaluations. We focus on those that include follow-up points of five years or fewer. In the outcome domain of child development, HomVEE reports results for two studies, each of which demonstrates favorable impacts.[12] For one of these studies, NFP shows favorable statistically significant impacts on the Preschool Language Scales, Third Edition (PLS-3) language delay score at a 21-month follow-up in both the full sample of nurse-visited mothers and the subset of mothers with low psychological resources (effect sizes: –0.45 and –0.65, respectively).[13] It also reports favorable statistically significant impacts on four of eight other outcomes for children of mothers with low psychological resources. HomVEE only reports an impact on one of these eight outcomes for the full sample of nurse-visited mothers and it is not statistically significant. For the other study, HomVEE reports favorable statistically significant impacts of NFP at a four-year follow-up on three of five outcomes for children of mothers with low psychological resources, with effect sizes ranging from 0.31 to 0.47.[14] There were no statistically significant impacts on any of these five outcomes in the full sample of nurse-visited mothers, and all of the effect sizes are close to zero.

    The evidence for larger impacts on mothers with low psychological resources is not entirely consistent. NFP impacts on fertility-related outcomes, including reductions in the number of subsequent births in both the short and long term, have been limited to mothers with initially high levels of psychological resources.[15] The authors of one study argue that lower-resource mothers choose to focus their limited resources on the care of

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[11]http://homvee.acf.hhs.gov/Review-Process/4/Assessing-Evidence-of-Effectiveness/19/7.
[12]Olds et al. (2002); Olds et al. (2004).
[13]Olds et al. (2002).
[14]Olds et al. (2004) Olds et al. (2004).
[15]Kitzman et al. (1997); Kitzman et al. (2000); Olds et al. (2007).

their children, whereas higher-resource mothers have the wherewithal to focus on both economic self-sufficiency (including pregnancy planning) and caring for their children.[16]

While not included in the HomVEE review, other studies of national models have also examined subgroups defined by low versus high psychological resources. More recently, two HFA studies have examined program impacts for subgroups of mothers with low psychological resources. One of these studies measured maternal psychological resources in the same way that the NFP studies did but did not report any impacts for it, suggesting that program impacts did not vary by this subgroup construct.[17] The second HFA study sought to replicate the maternal psychological resources measure used in the NFP evaluations but did not have a measure of intelligence, so the authors created a modified measure of maternal "psychological vulnerability" based on measures of depressive symptoms and mastery.[18] Among women who were psychologically vulnerable, Healthy Families New York mothers were substantially less likely to report engaging in serious abuse and neglect as were control group ;mothers (5 percent versus 19 percent) when their child was 2 years old.

We can create a measure of maternal psychological resources in MIHOPE that is comparable to the NFP measure. The construct would be dichotomous, with subgroups of "low psychological resources" and "higher psychological resources." Its three dimensions are intelligence (based on the Wechsler Adult Intelligent Scale, or WAIS), mental health (based on measures of depression and anxiety), and sense of mastery. This construct was not specifically mentioned in either the authorizing legislation or the national model emphases.

4. <u>Maternal attachment style and depression</u>. A number of home visiting program evaluations have examined moderators based on measures of maternal functioning. Two such measures that have received attention are maternal attachment style and maternal depression, each of which is thought to influence the nature of mothers' relationships with others (including home visitors and family members). Maternal attachment style is thought to tap an adult's "internal working model of attachment," which guides his or her views of others and behaviors in close relationships.[19] Five home visiting program evaluations that we reviewed examined variation in program impacts by maternal attachment style and four of them have also examined maternal depressive symptoms.[20] These four studies examined subgroups defined by one or both measures and often crossed them to capture subgroups of mothers with more or less risky profiles based on the two dimensions. The five studies that examined subgroups defined by maternal attachment style or depression focused on HFA and EHS.

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[16]Olds et al. (2002).

[17]Caldera et al. (2007).

[18]DuMont et al. (2008).

[19]Duggan et al. (2009).

[20]The four studies that examined both maternal attachment style and maternal depression are: Berlin et al. (2011), Duggan et al. (2009), Cluxton-Keller et al. (2014), and Robinson and Emde (2004). The study that examined maternal attachment style on its own is McFarlane et al. (2013).

Neither maternal attachment style nor maternal depression is specifically mentioned in the authorizing legislation. Attachment theory, however, underlies the home visiting model broadly and some specific national models mention its importance. HFA also targets mothers with mental health concerns.

We propose creating two subgroups for this construct, based on two dimensions: relationship insecurity as measured by the Attachment Style Questionnaire (ASQ) and depression as measured by the Center for Epidemiologic Studies Depression Scale (CES-D). One subgroup will be mothers who are at risk for depression and who exhibit relationship insecurity; the other subgroup will be all other mothers. We seek input from the Committee on this subgroup construct: Relationship insecurity encompasses both attachment anxiety and attachment avoidance. However, if we were to further divide the subgroups (there are eight possible groups resulting from two-group splits of depression, attachment anxiety, and attachment avoidance), sample sizes per group will be too small. Further, depression is captured in the "Low psychological resources" measure described above. Even though depression and relationship insecurity have been examined together in recent research, is it advisable to have two different confirmatory subgroup constructs include a construct?

5. Presence of domestic violence. A number of studies have looked at subgroups defined by the presence or absence of domestic violence at baseline. These studies have typically defined domestic violence in one of two ways: (1) any incident of physical assault by either the mother or partner (four studies),[21] or (2) psychological or physical abuse toward the mother by her partner (two studies).[22] These studies have generally found that baseline domestic violence attenuates home visiting program impacts in a number of outcome domains, including parenting, child development, child maltreatment, and measures of father engagement and the quality of the couple's relationship. For instance, one study found that the decrease in poor Home Observation for Measurement of the Environment (HOME) scores and children's externalizing problem behavior and the improved access to center-based parenting services found among Healthy Families Alaska families was limited to those who were not violent at baseline.[23] We can create subgroups in MIHOPE that capture the presence or absence of intimate partner violence (physical violence toward the mother or physical violence perpetrated by the mother). The MIHOPE Report to Congress indicates that 10 percent of MIHOPE families reported the presence of any violence toward the mother and 25 percent reported any violence perpetrated by the mother. The relatively small sample sizes suggest that it might be appropriate to create a measure that captures the presence of any physical violence, either toward the mother or perpetrated by the mother.

6. Whether or not the mother exhibits high demographic risk. This subgroup construct reflects risks associated with demographic characteristics. In prior research, these characteristics have been used either singly or as part of indexes. This construct will be divided into two subgroups initially: "high risk" and "lower risk" (an alternative label

[21]Caldera et al. (2007); Duggan et al. (2007); Duggan et al. (2004a); Duggan et al. (2005).
[22]Duggan et al. (2004b); Mitchell-Herzfeld et al. (2005).
[23]Caldera et al. (2007).

could be "not high risk"). High risk will be defined as having all four of the following characteristics:

- the mother is younger than age 21
- the mother does not live with the child's father
- the mother receives any form of public assistance
- work or education status:
    - if the mother is younger than age 19: the mother is not currently enrolled in school, not working, or not in job training
    - if the mother is at least 19 years old: the mother does not hold a high school diploma

While this measure includes one element (work or school status) that is directly related to one of the primary outcomes, there is strong empirical evidence and theoretical justification for including it as primary subgroup construct. Each of the elements is either specifically mentioned in the authorizing legislation, by one of the national model programs, or both.

We use a cut-off for mother's age of younger than 21 years old, the age specified in the legislation. Being younger (particularly being younger than 20) is associated with greater risk of poor birth outcomes and delays in child development,[24] although these relationships may be driven by differences in socioeconomic factors such as income, marital status, and education.[25]

While some studies have used marital status as an indicator of partner support, others have used the presence of a father figure in the household with the mother. The latter measure could reflect additional resources for the mother in terms of time, income, and emotional support.

Ideally, we would use a reliable measure of family income separately to measure its association with impacts. However, the study's available measure of family income available is not precisely measured. Further, because of possible resource sharing (such as housing) with other adults, we are unable to construct a reliable measure of family resources. Thus, for this measure, we use the mother's receipt of public assistance as a potential risk factor.

The work or education status element is conditioned on the mother's age, using a cut-off age of 19, which would reflect "on-time" high school completion. For mothers age 19 and older, we consider only a high school diploma (not a General Educational Development, or GED, certificate) because GED holders resemble high school dropouts more than high school graduates.[26]

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[24]Chandra et al. (2002); DuPlessis, Bell, and Richards (1997); Sommer et al. (2000).
[25]Chittleborough, Lawlor, and Lynch (2011); Reichman and Pagnini (1997).
[26]Heckman, Humphries, and Kautz (2014).

We will need to check the empirical distribution of the measure after it is constructed to ensure that each subgroup contains a sufficient sample size.

Determining whether which confirmatory outcomes should be included in confirmatory subgroup tests

An issue to consider is whether confirmatory subgroup impact differences should be estimated for every primary outcome (13 outcomes in all); only for those primary outcomes for which empirical support or theoretical relevance of difference in subgroup impacts is sufficiently strong; or for no primary outcomes (that is, all subgroup analyses would be exploratory). Given that confirmatory subgroup tests will be adjusted for multiple comparisons, the more tests that are conducted, the lower the probability that any one will be statistically significant. In addition to this multiple-testing constraint, existing empirical evidence on subgroup effects is somewhat disperse and its interpretation is subject to the caveats discussed in a previous section of this appendix. Finally, only one family subgroup is included in the HomVEE review to date. With these considerations in mind, we seek input from the Committee on specification of confirmatory subgroup specification and outcome tests.

Family subgroups not included or recommended

As noted above, we also wanted to consider constructs identified through our policy and program relevance lenses that were not captured in the proposed confirmatory subgroup constructs. With regard to policy significance, the authorizing legislation mentions three specific categories that are *not* reflected in the confirmatory subgroup constructs we propose:

1. "*Eligible families who reside in communities in need of such services, as identified in the statewide needs assessment required under subsection* (b)(1)(A)." We do not include this category as a primary subgroup because it focuses on a community characteristic, not a family characteristic. Community characteristics will be considered in the analysis that models impacts as a function of program context, inputs, and outputs.

2. "*Eligible families with children with developmental delays or disabilities.*" We do not include this category as a primary subgroup because (a) it is not defined for mothers who enter the program when they are pregnant, (b) developmental delays are often not diagnosed until children are older than 6 months; and (c) the proportion of families with this characteristic in the study is small.

3. "*Eligible families who, or that include individuals who, are serving or formerly served in the Armed Forces, including such families that have members of the Armed Forces who have had multiple deployments outside of the United States.*" We do not include this category as a primary subgroup because just 1 percent of the full sample meets this criterion, which would result in a sample size too small for meaningful analysis.

With regard to national model significance, the following subgroup categories are explicitly or implicitly emphasized by at least one of the four national models in their target populations,

program goals, intended outcomes, or theoretical frameworks, *and are not reflected* in the proposed confirmatory subgroup constructs:

1. *Children with developmental delays or health issues*. We do not include this category as a confirmatory subgroup because (a) it is not defined for mothers who enter the program when they are pregnant, (b) developmental delays are often not diagnosed until children are older than six months; and (c) the proportion of families with this characteristic in the sample is small.

2. *Children with disabilities who are eligible for Part C services under the Individuals with Disabilities Education Act (IDEA) in their state.* We do not include this category as a confirmatory subgroup because (a) it is not defined for mothers who enter the program when they are pregnant, (b) disabilities are often not diagnosed until children are older than six months; and (c) the proportion of families with this characteristic in the sample is small.

3. *Racial and ethnic minorities*. We do not include these constructs as confirmatory subgroups, but we do discuss them and recommend them as exploratory subgroups in the next section of this appendix.

Exploratory Subgroup Constructs

A select set of exploratory subgroup constructs will also be identified. These include subgroup constructs that may be of policy or program significance but that we are not proposing as confirmatory subgroups. Such subgroups may provide promising avenues for research and practice or are of broad interest to the field. For example, race and ethnicity were not mentioned in the authorizing legislation, although they are reflected in some national models' theoretical frameworks. Race and ethnicity may, in part, be proxies for other family characteristics that are reflected in our primary subgroup constructs. Further, they may reflect cultural norms that are associated with particular parenting practices or styles or other outcomes.[27]

Potential exploratory subgroup constructs include the following types:

A. *Subgroup constructs that are included in composite measures of confirmatory subgroup constructs.*

For example, the following primary subgroup constructs are composites:

  o   Whether or not the mother has low psychological resources,
  o   Maternal attachment style and depression, and
  o   Whether or not the mother exhibits high demographic risk.

Each construct's component parts could be examined for differences in impacts on the primary outcomes featured in the confirmatory subgroup analysis. For example, differences in program impacts could be examined for mothers who score higher versus lower on the WAIS, one of the three measures used to construct the low psychological

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[27]For particular parenting practices or styles, see Brooks-Gunn and Markman (2005).

resources subgroup. One consideration is whether these component estimates should be pursued regardless of whether the confirmatory composite impact differences are significant.

B. *Subgroup constructs that are identified as part of the implementation analysis.* If the implementation analysis finds strong associations between particular characteristics of home visitors or families and measures of service delivery (such as dosage), then those characteristics could be examined as exploratory subgroups in the impact analysis.

C. *Subgroup constructs created using prognostic scores (or "risk scores").* Such an analysis would involve the following steps:

   i. For each primary outcome, specify a prediction model. Covariates in the prediction model could include only typical family characteristics observed at baseline. The covariate set could be enriched with other measures available in this study such as maternal depression, anxiety, and so on.
   ii. Estimate the prediction model using (a) a subset of the experimental control group or (b) an external data set drawn from a similar population.
   iii. Using the estimated coefficients from the prediction model mentioned in step (ii), calculate the predicted outcome for each sample member assigned to treatment and control.
   iv. Both program and control group members can then be divided into subgroups based on their *predicted* risk scores (for example, using predicted score quantiles).
   v. Within each subgroup, the experimental effect could be estimated.

To our knowledge, this kind of subgroup construction and estimation has not been pursued in random assignment designs in the home visiting field. We are looking into whether it might be worthwhile to pursue this approach.

Bibliography of Studies that Examined Subgroup Constructs in Home Visiting Research in the First Five Years

Ammerman, Robert T., Frank W. Putnam, Mekibib Altaye, Jack Stevens, Angelique R. Teeters, and Judith B. Van Ginkel. 2013a. "A Clinical Trial of In-Home CBT for Depressed Mothers in Home Visitation." *Behavior Therapy* 44, 3: 359-372.

Ammerman, Robert T., Frank W. Putnam, Mekibib Altaye, Angelique R. Teeters, Jack Stevens, and Judith B. Van Ginkel. 2013b. "Treatment of Depressed Mothers in Home Visiting: Impact on Psychological Distress and Social Functioning." *Child Abuse & Neglect* 37, 8: 544-554.

Ammerman, Robert T., Frank W. Putnam, Jack Stevens, Lauren J. Holleb, Amy L. Novak, and Judith B. Van Ginkel. 2005. "In-Home Cognitive-Behavior Therapy for Depression." *Best Practices in Mental Health* 1, 1: 1-14.

Berlin, Lisa J., Leanne Whiteside-Mansell, Lori A. Roggman, Beth L. Green, JoAnn Robinson, and Susan Spieker. 2011. "Testing Maternal Depression and Attachment Style as Moderators of Early Head Start's Effects on Parenting." *Attachment & Human Development* 13, 1: 49-67.

Caldera, Debra, Lori Burrell, Kira Rodriguez, Sarah Shea Crowne, Charles Rohde, and Anne Duggan. 2007. "Impact of a Statewide Home Visiting Program on Parenting and on Child Health and Development." *Child Abuse & Neglect* 31, 8: 829-852.

Cluxton-Keller, Fallon, Lori Burrell, Sarah S. Crowne, Elizabeth McFarlane, S. Darius Tandon, Philip J. Leaf, and Anne K. Duggan. 2014. "Maternal Relationship Insecurity and Depressive Symptoms as Moderators of Home Visiting Impacts on Child Outcomes." *Journal of Child and Family Studies* 23, 8: 1430-1443.

Drotar, D., J. Robinson, L. Jeavons, and H. Lester Kirchner. 2008. "A Randomized, Controlled Evaluation of Early Intervention: The Born to Learn Curriculum." *Child: Care, Health & Development* 35, 5: 643-649.

Duggan, Anne, Lisa J. Berlin, Jude Cassidy, Lori Burrell, and S. Darius Tandon. 2009. "Examining Maternal Depression and Attachment Insecurity as Moderators of the Impacts of Home Visiting for at-Risk Mothers and Infants." *Journal of Consult Clinical Psychology* 77, 4: 788-799.

Duggan, Anne, Debra Caldera, Kira Rodriguez, Lori Burrell, Charles Rohde, and Sarah Shea Crowne. 2007. "Impact of a Statewide Home Visiting Program to Prevent Child Abuse." *Child Abuse & Neglect* 31, 8: 801-827.

Duggan, Anne, Loretta Fuddy, Elizabeth McFarlane, Lori Burrell, Amy Windham, Susan Higman, and Calvin Sia. 2004a. "Evaluating a Statewide Home Visiting Program to Prevent Child Abuse in at-Risk Families of Newborns: Fathers' Participation and Outcomes." *Child Maltreatment* 9, 1: 3-17.

Duggan, Anne K., Elizabeth C. McFarlane, Amy M. Windham, Charles A. Rohde, David S. Salkever, Loretta Fuddy, Leon A. Rosenberg, Sharon B. Buchbinder, and Calvin C.J. Sia. 1999. "Evaluation of Hawaii's Healthy Start Program." *The Future of Children: Home Visiting, Recent Program Evaluations* 9, 1: 66-90.

Duggan, Anne, Elizabeth McFarlane, Loretta Fuddy, Lori Burrell, Susan M. Higman, Amy Windham, and Calvia Sia. 2004b. "Randomized Trial of a Statewide Home Visiting Program: Impact in Preventing Child Abuse and Neglect." *Child Abuse & Neglect* 28, 6: 597-622.

Duggan, Anne, Kira Rodriguez, Lori Burrell, Charles Rohde, Debra Caldera, and Sara Shea. 2005. *Evaluation of the Healthy Families Alaska Program: Final Report*. Baltimore, MD: The Johns Hopkins University.

DuMont, Kimberly, Susan Mitchell-Herzfeld, Rose Greene, Eunju Lee, Ann Lowenfels, Monica Rodriguez, and Vajeera Dorabawila. 2008. "Healthy Families New York (HFNY) Randomized Trial: Effects on Early Child Abuse and Neglect." *Child Abuse & Neglect* 32, 3: 295-315.

El-Kamary, Samer S., Susan M. Higman, Loretta Fuddy, Elizabeth McFarlane, Calvin Sia, and Anne K. Duggan. 2004. "Hawaii's Healthy Start Home Visiting Program: Determinants and Impacts of Rapid Repeat Birth." *Pediatrics* 114, 3: e317-e326.

King, Tracy M., Leon A. Rosenberg, Loretta Fuddy, Elizabeth McFarlane, Calvin Sia, and Anne K. Duggan. 2005. "Prevalence and Early Identification of Language Delays among at-Risk Three Year Olds." *Development and Behavioral Pediatrics* 26, 4: 293-303.

Kitzman, Harriet, David L. Olds, Charles R. Henderson Jr., Carole Hanks, Robert Cole, Robert Tatelbaum, Kenneth M. McConnochie, Kimberly Sidora, Dennis W. Luckey, and David Shaver. 1997. "Effect of Prenatal and Infancy Home Visitation by Nurses on Pregnancy Outcomes, Childhood Injuries, and Repeated Childbearing." *JAMA* 278, 8: 644-652.

Lee, Helen J., Irma T. Elo, Kelly F. McCollum, and Jennifer F. Culhane. 2009. "Racial/Ethnic Differences in Breastfeeding Initiation and Duratoin among Low-Income, Inner-City Mothers." *Social Science Quarterly* 90, 5: 1251-1271.

Love, John M., Ellen Eliason Kisker, Christine M. Ross, Peter Z. Schochet, Jeanne Brooks-Gunn, Diane Paulsell, Kimberly Boller, Jill Constantine, Cheri Vogel, Allison Sidle Fuligni, and Christy Brady-Smith. 2002. *Making a Difference in the Lives of Infants and Toddlers and Their Families: The Impacts of Early Head Start. Volumes I-III: Final Technical Report [and] Appendixes [and] Local Contributions to Understanding the Programs and Their Impacts*. Washington, DC: U.S. Department of Health and Human Services, Head Start Bureau.

McFarlane, Elizabeth, Lori Burrell, Sarah Crowne, Fallon Cluxton-Keller, Loretta Fuddy, Philip J. Leaf, and Anne Duggan. 2013. "Maternal Relationship Security as a Moderator of Home Visiting Impacts on Maternal Psychosocial Functioning." *Prevention Science* 14, 1: 25-39.

Mitchell-Herzfeld, Susan, Charles Izzo, Rose Greene, Eunju Lee, and Ann Lowenfels. 2005. *Evaluation of Healthy Families New York (HFNY): First Year Program Impacts*. Albany, NY: University at Albany, Center for Human Services Research.

Olds, David, Charles R. Henderson, Harriet Kitzman, and Robert Cole. 1995. "Effects of Prenatal and Infancy Nurse Home Visitation on Surveillance of Child Maltreatment." *Pediatrics* 95, 3: 365-372.

Olds, David, Charles R. Henderson Jr., Robert Cole, John Eckenrode, Harriet Kitzman, Dennis Luckey, Lisa Pettitt, Kimberly Sidora, Pamela Morris, and Jane Powers. 1998. "Long-Term Effects of Nurse Home Visitation on Children's Criminal and Antisocial Behavior: 15-Year Follow-up of a Randomized Controlled Trial." *JAMA* 280, 14: 1238-1244.

Olds, David L., Charles R. Henderson, Robert Chamberlin, and Robert Tatelbaum. 1986. "Preventing Child Abuse and Neglect: A Randomized Trial of Nurse Home Visitation." *Pediatrics* 78, 1: 65-78.

Olds, David L., Charles R. Henderson, and Harriet Kitzman. 1994. "Does Prenatal and Infancy Nurse Home Visitation Have Enduring Effects on Qualities of Parental Caregiving and Child Health at 25 to 50 Months of Life?" *Pediatrics* 93, 1: 89-98.

Olds, David L., Charles R. Henderson, Robert Tatelbaum, and Robert Chamberlin. 1986. "Improving the Delivery of Prenatal Care and Outcomes of Pregnancy: A Randomized Trial of Nurse Home Visitation." *Pediatrics* 77, 1: 16-28.

Olds, David L., Charles R. Henderson Jr., Robert Tatelbaum, and Robert Chamberlin. 1988. "Improving the Life-Course Development of Socially Disadvantaged Mothers: A Randomized Trial of Nurse Home Visitation." *American Journal of Public Health* 78, 11: 1436-1445.

Olds, David L., JoAnn Robinson, Ruth O'Brien, Dennis W. Luckey, Lisa M. Pettitt, Charles R. Henderson, Rosanna K. Ng, Karen L. Sheff, Jon Korfmacher, and Susan Hiatt. 2002. "Home Visiting by Paraprofessionals and by Nurses: A Randomized, Controlled Trial." *Pediatrics* 110, 3: 486-496.

Olds, David L., JoAnn Robinson, Lisa Pettitt, Dennis W. Luckey, John Holmberg, Rosanna K. Ng, Kathy Isacks, Karen Sheff, and Charles R. Henderson. 2004. "Effects of Home Visits by Paraprofessionals and by Nurses: Age 4 Follow-up Results of a Randomized Trial." *Pediatrics* 114, 6: 1560-1568.

Raikes, Helen H., Cheri Vogel, and John M. Love. 2013. "Family Subgroups and Impacts at Ages 2, 3, and 5: Variability by Race/Ethnicity and Demographic Risk." *Monographs of the Society for Research in Child Development* 78, 1: 64-92.

Robinson, JoAnn L., and Robert N. Emde. 2004. "Mental Health Moderators of Early Head Start on Parenting and Child Development: Maternal Depression and Relationship Attitudes." *Parenting* 4, 1: 73-97.

Rodriguez, Monica Larrea, Kimberly Dumont, Susan D. Mitchell-Herzfeld, Nicole J. Walden, and Rose Greene. 2010. "Effects of Healthy Families New York on the Promotion of Maternal Parenting Competencies and the Prevention of Harsh Parenting." *Child Abuse & Neglect* 34, 10: 711-723.

Wagner, Mary, Serena Clayton, Suzanne Gerlach-Downie, and Mary McElroy. 1999. *An Evaluation of the Northern California Parents as Teachers Demonstration*. Menlo Park, CA: SRI International.

Bibliography

American Academy of Physicians. 2014. "What Is the Patient-Centered Medical Home?" Web site: http://www.acponline.org/running_practice/delivery_and_payment_models/pcmh/understanding/what.htm.

Ammerman, Robert T., Frank W. Putnam, Mekibib Altaye, Jack Stevens, Angelique R. Teeters, and Judith B. Van Ginkel. 2013a. "A Clinical Trial of In-Home CBT for Depressed Mothers in Home Visitation." *Behavior Therapy* 44, 3: 359-372.

Ammerman, Robert T., Frank W. Putnam, Mekibib Altaye, Angelique R. Teeters, Jack Stevens, and Judith B. Van Ginkel. 2013b. "Treatment of Depressed Mothers in Home Visiting: Impact on Psychological Distress and Social Functioning." *Child Abuse & Neglect* 37, 8: 544-554.

Ammerman, Robert T., Frank W. Putnam, Jack Stevens, Lauren J. Holleb, Amy L. Novak, and Judith B. Van Ginkel. 2005. "In-Home Cognitive-Behavior Therapy for Depression." *Best Practices in Mental Health* 1, 1: 1-14.

Anisfeld, Elizabeth, James Sandy, and Neil B. Guterman. 2004. *Best Beginnings: A Randomized Controlled Trial of a Paraprofessional Home Visiting Program: Narrative Summary*. Report to the Smith Richardson Foundation and New York State Office of Children and Family Services. New York: Columbia University School of Social Work.

Bair-Merritt, Megan H., Jacky M. Jennings, Rusan Chen, Lori Burrell, Elizabeth McFarlane, Loretta Fuddy, and Anne K. Duggan. 2010. "Reducing Maternal Intimate Partner Violence after the Birth of a Child: A Randomized Controlled Trial of the Hawaii Healthy Start Home Visitation Program." *Archives of Pediatrics & Adolescent Medicine* 164, 1: 16-23.

Baydar, Nazli, M. Jamila Reid, and Carolyn Webster-Stratton. 2003. "The Role of Mental Health Factors and Program Engagement in the Effectiveness of a Preventive Parenting Program for Head Start Mothers." *Child Development* 74, 5: 1433-1453.

Beauchaine, Theodore P., Carolyn Webster-Stratton, and M. Jamila Reid. 2005. "Mediators, Moderators, and Predictors of 1-Year Outcomes among Children Treated for Early-Onset Conduct Problems: A Latent Growth Curve Analysis." *Journal of Consulting and Clinical Psychology* 73, 3: 371-388.

Berlin, Lisa J., Leanne Whiteside-Mansell, Lori A. Roggman, Beth L. Green, JoAnn Robinson, and Susan Spieker. 2011. "Testing Maternal Depression and Attachment Style as Moderators of Early Head Start's Effects on Parenting." *Attachment & Human Development* 13, 1: 49-67.

Bloom, Howard S., and Charles Michalopoulos. 2011. "When Is the Story in the Subgroups? Strategies for Interpreting and Reporting Intervention Effects on Subgroups." *Prevention Science* 14, 2: 179-188.

Bradley, Robert H., Bettye M. Caldwell, Stephen L. Rock, Craig T. Ramey, Kathryn E. Barnard, Carol Gray, Mary A. Hammond, Sandra Mitchell, Allen W. Gottfried, and Linda Siegel. 1989. "HOME Environment and Cognitive Development in the First 3 Years of Life: A Collaborative Study Involving Six Sites and Three Ethnic Groups in North America." *Developmental Psychology* 25, 2: 217-235.

Brady-Smith, Christy, Claudia O'Brien, Lisa Berlin, Anne Ware, Rebecca C. Fauth, and Jeanne Brooks-Gunn. 2000. *Child-Parent Interaction Rating Scales for the Three-Bag Assessment: 36-Month Wave*. New York: Teachers College, Columbia University.

Braungart-Rieker, Julia, Molly Murphy-Garwood, and Cynthia A. Stifter. 1997. "Compliance and Noncompliance: The Roles of Maternal Control and Child Temperment." *Journal of Applied Developmental Psychology* 18, 3: 411-428.

Briggs-Gowan, Margaret J., Alice S. Carter, Julia R. Irwin, Karen Wachtel, and Domenic V. Cicchetti. 2004. "The Brief Infant-Toddler Social and Emotional Assessment: Screening for Social-Emotional Problems and Delays in Competence." *Journal of Pediatric Psychology* 29, 2: 143-155.

Broidy, Lisa M., Richard E. Tremblay, Bobby Brame, David Fergusson, John L. Horwood, Robert Laird, Terrie E. Moffitt, Daniel S. Nagin, John E. Bates, Kenneth A. Dodge, Rolf Loeber, Donald R. Lynam, Gregory S. Pettit, and Frank Vitaro. 2003. "Developmental Trajectories of Childhood Disruptive Behaviors and Adolescent Delinquency: A Six-Site, Cross-National Study." *Developmental Psychology* 39, 2: 222-245.

Brooks-Gunn, Jeanne, and Lisa B. Markman. 2005. "The Contribution of Parenting to Ethnic and Racial Gaps in School Readiness." *The Future of Children* 15, 1: 139-168.

Cabrera, Natasha J., Jay Fagan, Vanessa Wight, and Cornelia Schadler. 2011. "Influence of Mother, Father, and Child Risk on Parenting and Children's Cognitive and Social Behaviors." *Child Development* 82, 6: 1985-2005.

Caldera, Debra, Lori Burrell, Kira Rodriguez, Sarah Shea Crowne, Charles Rohde, and Anne Duggan. 2007. "Impact of a Statewide Home Visiting Program on Parenting and on Child Health and Development." *Child Abuse & Neglect* 31, 8: 829-852.

Centers for Disease Control and Prevention. 2012. *Health Insurance and Access to Care*. Hyattsville, MD: National Center for Health Statistics.

Chaffin, Mark, and David Bard. 2006. "Impact of Intervention Surveillance Bias on Analyses of Child Welfare Report Outcomes." *Child Maltreatment* 11, 4: 301-312.

Chandra, Prasanta C., Henry J. Schiavello, Bala Ravi, Allan G. Weinstein, and F. B. Hook. 2002. "Pregnancy Outcomes in Urban Teenagers." *International Journal of Gynecology & Obstetrics* 79, 2: 117-122.

Chittleborough, Catherine, Debbie A. Lawlor, and John W. Lynch. 2011. "Young Maternal Age and Poor Child Development Predictive Validity from a Birth Cohor." *Pediatrics* 127, 6: e1436-e1444.

Cluxton-Keller, Fallon, Lori Burrell, Sarah S. Crowne, Elizabeth McFarlane, S. Darius Tandon, Philip J. Leaf, and Anne K. Duggan. 2014. "Maternal Relationship Insecurity and Depressive Symptoms as Moderators of Home Visiting Impacts on Child Outcomes." *Journal of Child and Family Studies* 23, 8: 1430-1443.

Culp, Anne McDonald, R. E. Culp, J. W. Anderson, and S. Carter. 2007. "Health and Safety Intervention with First-Time Mothers." *Health Education Research* 22, 2: 285-294.

DeKeseredy, Walter S., and Martin D. Schwartz. 1998. *Measuring the Extent of Woman Abuse in Intimate Heterosexual Relationships: A Critique of the Conflict Tactics Scales*. Washington, DC: National Resource Center on Domestic Violence.

Dishion, Thomas J., Daniel Shaw, Arin Connell, Frances Gardner, Chelsea Weaver, and Melvin Wilson. 2008. "The Family Check-up with High-Risk Indigent Families: Preventing Problem Behavior by Increasing Parents' Positive Behavior Support in Early Childhood." *Child Development* 79, 5: 1395-1414.

Drotar, D., J. Robinson, L. Jeavons, and H. Lester Kirchner. 2008. "A Randomized, Controlled Evaluation of Early Intervention: The Born to Learn Curriculum." *Child: Care, Health & Development* 35, 5: 643-649.

Duggan, Anne, Lisa J. Berlin, Jude Cassidy, Lori Burrell, and S. Darius Tandon. 2009. "Examining Maternal Depression and Attachment Insecurity as Moderators of the Impacts of Home Visiting for at-Risk Mothers and Infants." *Journal of Consult Clinical Psychology* 77, 4: 788-799.

Duggan, Anne, Debra Caldera, Kira Rodriguez, Lori Burrell, Charles Rohde, and Sarah Shea Crowne. 2007. "Impact of a Statewide Home Visiting Program to Prevent Child Abuse." *Child Abuse & Neglect* 31, 8: 801-827.

Duggan, Anne, Loretta Fuddy, Elizabeth McFarlane, Lori Burrell, Amy Windham, Susan Higman, and Calvin Sia. 2004a. "Evaluating a Statewide Home Visiting Program to Prevent Child Abuse in at-Risk Families of Newborns: Fathers' Participation and Outcomes." *Child Maltreatment* 9, 1: 3-17.

Duggan, Anne K., Elizabeth C. McFarlane, Amy M. Windham, Charles A. Rohde, David S. Salkever, Loretta Fuddy, Leon A. Rosenberg, Sharon B. Buchbinder, and Calvin C.J. Sia.

1999. "Evaluation of Hawaii's Healthy Start Program." *The Future of Children: Home Visiting, Recent Program Evaluations* 9, 1: 66-90.

Duggan, Anne, Elizabeth McFarlane, Loretta Fuddy, Lori Burrell, Susan M. Higman, Amy Windham, and Calvia Sia. 2004b. "Randomized Trial of a Statewide Home Visiting Program: Impact in Preventing Child Abuse and Neglect." *Child Abuse & Neglect* 28, 6: 597-622.

Duggan, Anne, Kira Rodriguez, Lori Burrell, Charles Rohde, Debra Caldera, and Sara Shea. 2005. *Evaluation of the Healthy Families Alaska Program: Final Report*. Baltimore, MD: The Johns Hopkins University.

DuMont, Kimberly A., Kristen Kirkland, Susan Mitchell-Herzfeld, Susan Ehrhard-Dietzel, Monica L. Rodriguez, Eunju Lee, China Layne, and Rose Greene. 2010. *A Randomized Trial of Healthy Families New York (HFNY): Does Home Visiting Prevent Child Maltreatment?* Rensselaer, NY: New York State Office of Children and Family Services,The University of Albany, State University of New York.

DuMont, Kimberly A., Susan Mithcell-Herzfeld, Rose Greene, Eunju Lee, Ann Lowenfels, and Monica Rodriguez. 2006. *Healthy Families New York (HFNY) Randomized Trial: Impacts on Parenting after the First Two Years*. Albany, NY: New York State Office of Children and Family Services.

DuMont, Kimberly, Susan Mitchell-Herzfeld, Rose Greene, Eunju Lee, Ann Lowenfels, Monica Rodriguez, and Vajeera Dorabawila. 2008. "Healthy Families New York (HFNY) Randomized Trial: Effects on Early Child Abuse and Neglect." *Child Abuse & Neglect* 32, 3: 295-315.

Duncan, Greg J., Chantelle J. Dowsett, Amy Claessens, Katherine Magnuson, Aletha C. Huston, Pamela Klebanov, Linda S. Pagani, Leon Feinstein, Mimi Engel, and Jeanne Brooks-Gunn. 2007. "School Readiness and Later Achievement." *Developmental Psychology* 43, 6: 1428-1446.

DuPlessis, Helen M., Robert Bell, and Toni Richards. 1997. "Adolescent Pregnancy: Understanding the Impact of Age and Race on Outcomes." *Journal of Adolescent Health* 20, 3: 187-197.

El-Kamary, Samer S., Susan M. Higman, Loretta Fuddy, Elizabeth McFarlane, Calvin Sia, and Anne K. Duggan. 2004. "Hawaii's Healthy Start Home Visiting Program: Determinants and Impacts of Rapid Repeat Birth." *Pediatrics* 114, 3: e317-e326.

Fergusson, David M., L. John Horwood, Hildegard Grant, and Elizabeth M. Ridder. 2005. *Early Start Evaluation Report*. Christchurch, New Zealand: Early Start Project Limited.

Guyer, Bernard, Michael Barth, David Bishai, Margaret Caughy, Becky Clark, Diane Burkom, and Chao Tang. 2003. *The Healthy Steps for Young Children Program National*

Evaluation. Baltimore, MD: Women's and Children's Health Policy Center, Department of Population and Family Health Sciences, Johns Hopkins Bloomberg School of Public Health.

Heckman, James J., John Eric Humphries, and Tim Kautz. 2014. "The Economic and Social Benefits of GED Certification." Pages 171-267 in James J. Heckman, John Eric Humphries and Tim Kautz (eds.), *The Myth of Achievement Tests*. Chicago, IL: University of Chicago Press.

Holditch-Davis, Diane, Esther M. Tesh, Barbara Davis Goldman, Margaret S. Miles, and Jennifer D'Auria. 2000. "Use of the HOME Inventory with Medically Fragile Infants." *Children's Health Care* 29, 4: 257-277.

Hsueh, JoAnn, Erin Jacobs, and Mary Farrell. 2011. *A Two-Generational Child-Focused Program Enhanced with Employment Services*. New York: MDRC.

Hussey, Jon M., Jane Marie Marshall, Diana J. English, Elizabeth Dawes Knight, Anna S. Lau, Howard Dubowitz, and Jonathan B. Kotch. 2005. "Defining Maltreatment According to Substantiation: Distinction without a Difference?" *Child Abuse & Neglect* 29, 5: 479-492.

Jones-Harden, Brenda, Rachel Chazan-Cohen, Helen Raikes, and Cheri Vogel. 2012. "Early Head Start Home Visitation: The Role of Implementation in Bolstering Program Benefits." *Journal of Community Psychology* 40, 4: 438-455.

Karabekiroglu, Koray, Margaret J. Briggs-Gowan, Alice S. Carter, Ayse Rodopman-Arman, and Seher Akbas. 2010. "The Clinical Validity and Reliability of the Brief Infant–Toddler Social and Emotional Assessment (BITSEA)." *Infant Behavior and Development* 33, 4: 503-509.

King, Tracy M., Leon A. Rosenberg, Loretta Fuddy, Elizabeth McFarlane, Calvin Sia, and Anne K. Duggan. 2005. "Prevalence and Early Identification of Language Delays among at-Risk Three Year Olds." *Development and Behavioral Pediatrics* 26, 4: 293-303.

Kitzman, Harriet J., David L. Olds, Robert E. Cole, Carole A. Hanks, Elizabeth A. Anson, Kimberly J. Arcoleo, Dennis W. Luckey, Michael D. Knudtson, Charles R. Henderson, and John R. Holmberg. 2010. "Enduring Effects of Prenatal and Infancy Home Visiting by Nurses on Children: Follow-up of a Randomized Trial among Children at Age 12 Years." *Archives of Pediatrics & Adolescent Medicine* 164, 5: 412-418.

Kitzman, Harriet, David L. Olds, Charles R. Henderson Jr., Carole Hanks, Robert Cole, Robert Tatelbaum, Kenneth M. McConnochie, Kimberly Sidora, Dennis W. Luckey, and David Shaver. 1997. "Effect of Prenatal and Infancy Home Visitation by Nurses on Pregnancy Outcomes, Childhood Injuries, and Repeated Childbearing." *JAMA* 278, 8: 644-652.

Kitzman, Harriet, David L. Olds, Kimberly Sidora, Charles R. Henderson, Carole Hanks, Robert Cole, Dennis W. Luckey, Jessica Bondy, Kimberly Cole, and Judith Glazner. 2000.

"Enduring Effects of Nurse Home Visitation on Maternal Life Course: A 3 Year Follow-up of a Randomized Trial." *JAMA* 283, 15: 1983-1989.

Knitzer, Jane, Suzanne Theberge, and Kay Johnson. 2008. *Reducing Maternal Depression and Its Impact on Young Children: Toward a Responsive Early Childhood Policy Framework.* New York: National Center for Children in Poverty.

Kohl, Patricia L., Melissa Jonson-Reid, and Brett Drake. 2009. "Time to Leave Substantiation Behind: Findings from a National Probability Study." *Child Maltreatment* 14, 1: 17-26.

Koniak-Griffin, Deborah, Nancy L.R. Anderson, Inese Verzemnieks, and Mary-Lynn Brecht. 2000. "A Public Health Nursing Early Intervention Program for Adolescent Mothers: Outcomes from Pregnancy through 6 Weeks Postpartum." *Nursing Research* 49, 3: 130-138.

Ladd, Gary W., Sondra H. Birch, and Eric S. Buhs. 1999. "Children's Social and Scholastic Lives in Kindergarten: Related Spheres of Influence?" *Child Development* 70, 6: 1373-1400.

Landsverk, John, Terry Carrilio, Cynthia D. Connelly, William Ganger, Donald Slymen, Rae Newton, Laurel Leslie, and Carol Jones. 2002. *Healthy Families San Diego Clinical Trial: Technical Report*. San Diego, CA: The Stuart Foundation, California Wellness Foundation, State of California Department of Social Services: Office of Child Abuse Prevention.

LeCroy, Craig Winston, and Judy Krysik. 2011. "Randomized Trial of the Healthy Families Arizona Home Visiting Program." *Children and Youth Services Review* 33, 10: 1761-1766.

Lee, Helen J., Irma T. Elo, Kelly F. McCollum, and Jennifer F. Culhane. 2009. "Racial/Ethnic Differences in Breastfeeding Initiation and Duratoin among Low-Income, Inner-City Mothers." *Social Science Quarterly* 90, 5: 1251-1271.

Lee, Shawna J., Andrew Grogan-Kaylor, and Lawrence M. Berger. 2014. "Parental Spanking of 1-Year-Old Children and Subsequent Child Protective Services Involvement." *Child Abuse & Neglect* 38, 5: 875-883.

Leiter, Jeffrey, Kristen A. Myers, and Matthew T. Zingraff. 1994. "Substantiated and Unsubstantiated Cases of Child Maltreatment: Do Their Consequences Differ?" *Social Work Research* 18, 2: 67-82.

Linver, Miriam R., Anne Martin, and Jeanne Brooks-Gunn. 2004. "Measuring Infants' Home Environment: The IT-HOME for Infants between Birth and 12 Months in Four National Data Sets." *Parenting: Science and Practice* 4, 2-3: 115-137.

Love, John M., Ellen Eliason Kisker, Christine M. Ross, Peter Z. Schochet, Jeanne Brooks-Gunn, and Kimberly Boller. 2001. *Building Their Futures: How Early Head Start Programs Are Enahcning the Lives of Infants and Toddlers in Low-Income Families. Summary Report.* Princeton, NJ: Commissioner's Office of Research and Evaluation, Head Start Bureau, Administration on Children, Youth and Families, and Department of Health and Human Services.

Love, John M., Ellen Eliason Kisker, Christine M. Ross, Peter Z. Schochet, Jeanne Brooks-Gunn, Diane Paulsell, Kimberly Boller, Jill Constantine, Cheri Vogel, Allison Sidle Fuligni, and Christy Brady-Smith. 2002. *Making a Difference in the Lives of Infants and Toddlers and Their Families: The Impacts of Early Head Start. Volumes I-III: Final Technical Report [and] Appendixes [and] Local Contributions to Understanding the Programs and Their Impacts.* Washington, DC: kAdministration for Children and Families, Administration for Child, Youth, and Families, Head Start Bureau.

Lowenstein, Amy E., Noemi Altman, Patricia M. Chou, Kristen Faucetta, Adam Greeney, Daniel Gubits, Jorgen Harris, JoAnn Hsueh, Erika Lundquist, Charles Michalopoulos, and Vinh Q. Nguyen. 2014. *A Family-Strengthening Program for Low-Income Families: Final Impacts from the Supporting Healthy Marriage Evaluation, Technical Supplement.* OPRE Report 2014-09B. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Lundquist, Erika, JoAnn Hsueh, Amy E. Lowenstein, Kristen Faucetta, Daniel Gubits, Charles Michalopoulos, and Virginia Knox. 2014. *A Family-Strengthening Program for Low-Income Families: Final Impacts from the Supporting Healthy Marriage Evaluation.* 2014-09A. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Majerol, Melissa, Vann Newkirk, and Racel Garfield. 2015. *The Uninsured: A Primer—Key Factors About Health Insurance and the Uninsured in America.* Menlo Park, CA: Kaiser Family Foundation.

McClelland, Megan. M., Frederick J. Morrison, and Deborah. L. Holmes. 2000. "Children at Risk for Early Academic Problems: The Role of Learning-Related Social Skills." *Early Childhood Research Quarterly* 15, 3: 307-329.

McConville, Shannon, and Helen Lee. 2008. *Emergency Department Care in California: Who Uses It and Why?* San Francisco, CA: Public Policy Institute of California.

McFarlane, Elizabeth, Lori Burrell, Sarah Crowne, Fallon Cluxton-Keller, Loretta Fuddy, Philip J. Leaf, and Anne Duggan. 2013. "Maternal Relationship Security as a Moderator of Home Visiting Impacts on Maternal Psychosocial Functioning." *Prevention Science* 14, 1: 25-39.

McMorrow, Stacey, Genevieve M. Kenney, and Dana Goin. 2014. "Determinants of Receipt of Recommended Preventive Services: Implications for the Affordable Care Act." *American Journal of Public Health* 104, 12: 2392-2399.

Michalopoulos, Charles, Helen Lee, Anne Duggan, Erika Lundquist, Ada Tso, Sarah Crowne, Lori Burrell, Jennifer Somers, Jill H. Filene, and Virginia Knox. 2015. *The Mother and Infant Home Visiting Program Evaluation: Early Findings on the Maternal, Infant, and Early Childhood Home Visiting Program*. OPRE Report 2015-11. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Mitchell-Herzfeld, Susan, Charles Izzo, Rose Greene, Eunju Lee, and Ann Lowenfels. 2005. *Evaluation of Healthy Families New York (HFNY): First Year Program Impacts*. Albany, NY: University at Albany, Center for Human Services Research.

Morin, Marisa, Anne Martin, and Jeanne Brooks-Gunn. 2014. *Child-Parent Interaction Rating Scales Clean-up Task: 15-Months*. New York: National Center for Children and Families.

Newacheck, Paul W., Jeffrey J. Stoddard, Dana C. Hughes, and Michelle Pearl. 1998. "Health Insurance and Access to Primary Care for Children." *New England Journal of Medicine* 338, 8: 513-519.

Nock, Matthew K. 2003. "Progress Review of the Psychosocial Treatment of Child Conduct Problems." *Clinical Psychology: Science and Practice* 10, 1: 1-28.

Olds, David, Charles R. Henderson, Harriet Kitzman, and Robert Cole. 1995. "Effects of Prenatal and Infancy Nurse Home Visitation on Surveillance of Child Maltreatment." *Pediatrics* 95, 3: 365-372.

Olds, David, Charles R. Henderson Jr., Robert Cole, John Eckenrode, Harriet Kitzman, Dennis Luckey, Lisa Pettitt, Kimberly Sidora, Pamela Morris, and Jane Powers. 1998. "Long-Term Effects of Nurse Home Visitation on Children's Criminal and Antisocial Behavior: 15-Year Follow-up of a Randomized Controlled Trial." *JAMA* 280, 14: 1238-1244.

Olds, David L., John Eckenrode, Charles R. Henderson, Harriet Kitzman, Jane Powers, Robert Cole, Kimberly Sidora, Pamela Morris, Lisa M. Pettitt, and Dennis Luckey. 1997. "Long-Term Effects of Home Visitation on Maternal Life Course and Child Abuse and Neglect: Fifteen-Year Follow-up of a Randomized Trial." *JAMA* 278, 8: 637-643.

Olds, David L., Charles R. Henderson, Robert Chamberlin, and Robert Tatelbaum. 1986. "Preventing Child Abuse and Neglect: A Randomized Trial of Nurse Home Visitation." *Pediatrics* 78, 1: 65-78.

Olds, David L., Charles R. Henderson, and Harriet Kitzman. 1994. "Does Prenatal and Infancy Nurse Home Visitation Have Enduring Effects on Qualities of Parental Caregiving and Child Health at 25 to 50 Months of Life?" *Pediatrics* 93, 1: 89-98.

Olds, David L., Charles R. Henderson, Robert Tatelbaum, and Robert Chamberlin. 1986. "Improving the Delivery of Prenatal Care and Outcomes of Pregnancy: A Randomized Trial of Nurse Home Visitation." *Pediatrics* 77, 1: 16-28.

Olds, David L., Charles R. Henderson Jr., Robert Tatelbaum, and Robert Chamberlin. 1988. "Improving the Life-Course Development of Socially Disadvantaged Mothers: A Randomized Trial of Nurse Home Visitation." *American Journal of Public Health* 78, 11: 1436-1445.

Olds, David L., Harriet Kitzman, Robert Cole, JoAnn Robinson, Kimberly Sidora, Dennis W. Luckey, Charles R. Henderson, Carole Hanks, Jessica Bondy, and John Holmberg. 2004a. "Effects of Nurse Home-Visiting on Maternal Life Course and Child Development: Age 6 Follow-up Results of a Randomized Trial." *Pediatrics* 114, 6: 1550-1559.

Olds, David L., Harriet Kitzman, Carole Hanks, Robert Cole, Elizabeth Anson, Kimberly Sidora-Arcoleo, Dennis W. Luckey, Charles R. Henderson, John Holmberg, and Robin A. Tutt. 2007. "Effects of Nurse Home Visiting on Maternal and Child Functioning: Age-9 Follow-up of a Randomized Trial." *Pediatrics* 120, 4: e832-e845.

Olds, David L., Harriet J. Kitzman, Robert E. Cole, Carole A. Hanks, Kimberly J. Arcoleo, Elizabeth A. Anson, Dennis W. Luckey, Michael D. Knudtson, Charles R. Henderson, and Jessica Bondy. 2010. "Enduring Effects of Prenatal and Infancy Home Visiting by Nurses on Maternal Life Course and Government Spending: Follow-up of a Randomized Trial among Children at Age 12 Years." *Archives of Pediatrics & Adolescent Medicine* 164, 5: 419-424.

Olds, David L., JoAnn Robinson, Ruth O'Brien, Dennis W. Luckey, Lisa M. Pettitt, Charles R. Henderson, Rosanna K. Ng, Karen L. Sheff, Jon Korfmacher, and Susan Hiatt. 2002. "Home Visiting by Paraprofessionals and by Nurses: A Randomized, Controlled Trial." *Pediatrics* 110, 3: 486-496.

Olds, David L., JoAnn Robinson, Lisa Pettitt, Dennis W. Luckey, John Holmberg, Rosanna K. Ng, Kathy Isacks, Karen Sheff, and Charles R. Henderson. 2004b. "Effects of Home Visits by Paraprofessionals and by Nurses: Age 4 Follow-up Results of a Randomized Trial." *Pediatrics* 114, 6: 1560-1568.

Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 (2010).

Prior, Margot, Edith Bavin, and Ben Ong. 2011. "Predictors of School Readiness in Five-to Six-Year-Old Children from an Australian Longitudinal Community Sample." *Educational Psychology* 31, 1: 3-16.

Raikes, Helen H., Cheri Vogel, and John M. Love. 2013. "Family Subgroups and Impacts at Ages 2, 3, and 5: Variability by Race/Ethnicity and Demographic Risk." *Monographs of the Society for Research in Child Development* 78, 1: 64-92.

Reichman, Nancy E., and Deanna L. Pagnini. 1997. "Maternal Age and Birth Outcomes: Data from New Jersey." *Family Planning Perspectives* 29, 6: 268-295.

Robinson, JoAnn L., and Robert N. Emde. 2004. "Mental Health Moderators of Early Head Start on Parenting and Child Development: Maternal Depression and Relationship Attitudes." *Parenting* 4, 1: 73-97.

Rodriguez, Monica Larrea, Kimberly Dumont, Susan D. Mitchell-Herzfeld, Nicole J. Walden, and Rose Greene. 2010. "Effects of Healthy Families New York on the Promotion of Maternal Parenting Competencies and the Prevention of Harsh Parenting." *Child Abuse & Neglect* 34, 10: 711-723.

Ryan, Rebecca M., Anne Martin, and Jeanne Brooks-Gunn. 2006. "Is One Good Parent Good Enough? Patterns of Mother and Father Parenting and Child Cognitive Outcomes at 24 and 36 Months." *Parenting* 6, 2-3: 211-228.

Sadler, Lois S., Arietta Slade, Nancy Close, Denise L. Webb, Tanika Simpson, Kristopher Fennie, and Linda C. Mayes. 2013. "Minding the Baby: Enhancing Reflectiveness to Improve Early Health and Relationship Outcomes in an Interdisciplinary Home-Visiting Program." *Infant Mental Health Journal* 34, 5: 391-405.

Schochet, Peter Z. 2008. *Technical Methods Report: Guidelines for Multiple Testing in Impact Evaluations.* NCEE 2008-4018. Washington, DC: National Center for Education Evaluation and Regional Assistance.

Sommer, Kristen S., Thomas L. Whitman, John G. Borkowski, Dawn M. Gondoli, Jennifer Burke, Scott E. Maxwell, and Keri Weed. 2000. "Prenatal Maternal Predictors of Cognitive and Emotional Delays in Children of Adolescent Mothers." *Adolescence* 35, 137: 87-112.

Stella, M. Yu, Hilary A. Bellamy, Michael D. Kogan, Jennifer L. Dunbar, Renee H. Schwalberg, and Mark A. Schuster. 2002. "Factors That Influence Receipt of Recommended Preventive Pediatric Health and Dental Care." *Pediatrics* 110, 6: 1-6.

Totsika, Vasiliki, and Kathy Sylva. 2004. "The Home Observation for Measurement of the Environment Revisited." *Child and Adolescent Mental Health* 9, 1: 25-35.

Wagner, Mary, Serena Clayton, Suzanne Gerlach-Downie, and Mary McElroy. 1999. *An Evaluation of the Northern California Parents as Teachers Demonstration.* Menlo Park, CA: SRI International.

Wagner, Mary, and Donna Spiker. 2001. *Experiences and Outcomes for Children and Families: Multisite Parents as Teachers Evaluation*. Menlo Park, CA: SRI International.

Ware, Anne M., Christy L. Brady, Claudia O'Brien, Lisa Berlin, and Jeanne Brooks-Gunn. 2000. *Child-Parent Interaction Rating Scales for the Three-Bag Assessment: 14-Month Wave*. New York: National Center for Children and Families.

Westfall, Peter H., Randall D. Tobias, and Russell D. Wolfinger. 2011. *Multiple Comparisons and Multiple Tests using SAS*. Cary, NC: SAS Institute.

Zielinski, David S., John Eckenrode, and David L. Olds. 2009. "Nurse Home Visitation and the Prevention of Child Maltreatment: Impact on the Timing of Official Reports." *Development and Psychopathology* 21, 2: 441-453.