# Measuring Child Well-Being in Evaluations of Healthy Marriage and Responsible Fatherhood Programs

White Paper for the Fatherhood, Relationships, and Marriage – Illuminating the Next Generation of Research (FRAMING Research) Project





March 2022 (Updated: August 2022)

OPRE Report Number 2022-80



#### **OPRE Report Number:**

2022-80

#### **Contract Number:**

HHSP233201500035I

#### Submitted to:

Kriti Jain. Proiect Officer Office of Planning Research and Evaluation Administration for Children and Families U.S. Department of Health and Human Services

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Measuring Child Well-Being in **Evaluations of Healthy Marriage** and Responsible Fatherhood **Programs: White Paper for the** Fatherhood, Relationships, and Marriage - Illuminating the Next Generation of Research (FRAMING Research) Project

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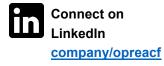
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#### **Overview**

Improving children's well-being is a central motivation of healthy marriage and relationship education (HMRE) and responsible fatherhood (RF) programming. Therefore, it is important to examine the effects of these programs on child well-being. Several studies of HMRE programs have examined these impacts (for example, Lundquist et al. 2014; Wood et al. 2012). Studies of RF programs have also examined impacts on child well-being, mainly by examining program effects on the financial support nonresident fathers provide their children (for example, Knox and Redcross 2000; Schroeder et al. 2011).

This white paper provides an overview of the ways that evaluations of HMRE and RF programs have measured child well-being and offers recommendations for HMRE and RF evaluators who are interested in including child well-being measures in their studies. We begin the paper by defining child well-being and describing how HMRE and RF programs could influence it. We draw on definitions of child well-being from the research literature (Huston 2002; Pollard and Lee 2002). These definitions describe child well-being across five commonly accepted domains: psychological health, social interactions, cognitive skills, physical health, and economic circumstances.

In the second section of the paper, we describe the possible pathways through which HMRE and RF programs' effects on parents' behavior or outcomes might also influence children's well-being. For example, HMRE programs provide relationship skills education to improve communication skills, build conflict resolution and problem-solving skills, reduce intimate partner violence, and improve relationship quality and satisfaction. Improved relationship quality could reduce conflict in the home and provide children with models of positive problem-solving (Carlson and McLanahan 2006). RF programs teach relationship skills aimed at improving relationships with co-parents and others. Better co-parenting relationships could increase fathers' access and involvement with children and reduce children's exposure to parental conflict (Carlson and McLanahan 2006; Carlson et al. 2008). In addition, the employment services offered by RF programs aim to improve fathers' economic circumstances, which could improve their ability to provide financial support for their children (Knox and Redcross 2000; Schroeder et al. 2011).

In the third section of the paper, we describe findings from our review of 32 HMRE evaluations and 23 RF evaluations conducted since 2000. We focused our review on evaluations of programs that primarily served adults who are parents. For both HMRE and RF evaluations, we examined whether the studies measured child well-being and if so, what domains they examined, what measures they included, and what methods they used to collect the measures.

#### Summary findings include:

- Of the 32 HMRE evaluations we reviewed, 12 included a child well-being measure. Among HMRE evaluations that included a child well-being measure, evaluators typically measured children's psychological health through measures of children's adaptive or problem behaviors. Some evaluations also measured social interactions and economic circumstances. Very few—only 2 of the 32 HMRE evaluations we examined—measured cognitive skills or physical health. Regardless of the domain measured, evaluators primarily gathered information about children's well-being through parent surveys.
- Of the 23 RF evaluations we reviewed, 15 included a child well-being measure. These studies primarily examine children's economic circumstances and typically focus on nonresident fathers' financial support of their children. Some evaluations also measured children's psychological health

and a few measured children's social interactions. None of the 23 RF evaluations we reviewed measured children's cognitive skills or physical health. As with the HMRE evaluations, information about children's well-being was primarily gathered through parent surveys.

In the final section of the paper, we offer three recommendations for evaluators of HMRE or RF programs who want to measure child well-being:

- 1. We recommend that evaluators measure multiple aspects of child well-being, with a particular focus on the domains of children's psychological health, social interactions, and economic circumstances. These three domains are relatively straightforward to measure with parent surveys, offering an accessible data collection option for evaluators. They align well with HMRE programs' focus on relationships and RF programs' focus on parenting and economic supports and represent aspects of child well-being that might be influenced by the parent and relationship changes these programs promote (Berger and McLanahan 2015; Conger et al. 2010; Mistry et al. 2002; Newland 2015; Shelton and Harold 2008)
- 2. In addition, evaluators should consider including measures of parenting and parent well-being in their studies to better understand the pathways between HMRE and RF content and child well-being outcomes. Specifically, we recommend measuring co-parenting, parenting behaviors, and parent psychological well-being. Most of the evaluations we reviewed included measures in one of these domains. A likely pathway for HMRE and RF programs to influence child well-being is through their effect on parenting and parent well-being. For this reason, evaluators should measure program effects in these areas to confirm whether this pathway exists and to better understand potential program effects on child well-being.
- 3. Finally, evaluators should consider the cultural validity and cultural relevance of the child well-being measures they select. It is important for HMRE and RF evaluators to consider whether the child well-being measures they select are appropriate for the people who will be served by the programs they are evaluating. Evaluators can take initial steps toward this by determining whether the measures they want to use have been used with populations that are like those who will be included in their study or by pretesting the measure with groups similar to those who will be included in the study. Another best practice for ensuring that the child well-being measures included in a study have cultural validity and relevance is to include measures that document strengths and positive behaviors and to avoid focusing solely on negative outcomes. Selecting measures that provide information about positive behaviors, such as prosocial interactions, problem-solving, or emotion regulation, can help highlight children's resilience and the ways HMRE and RF programs might strengthen this resilience.

#### Introduction

Family stability and ongoing support from both parents are important for children's well-being (Amato 2010; Waldfogel et al. 2010). On average, children who grow up in two-parent households and children who experience fewer household transitions fare better (Craigie et al. 2012; Bachman et al. 2011; Cooper et al. 2011; Osborne and McLanahan 2007; Brown 2010). Children living apart from their fathers are at greater risk of poverty and multiple changes in family structure (Gibson-Davis 2016; Kramer et al. 2016). Some of the adverse consequences of these challenges can be reduced, however, if nonresident fathers are actively involved in their children's lives (Adamsons and Johnson 2013).

Because of the potential benefits to children associated with more stable family environments and greater father involvement, the federal government has invested in supports for families. Since 2006, Congress has funded programs to provide healthy marriage and relationship education (HMRE) services and programs that promote responsible fatherhood (RF). These programs offer relationship, parenting, and economic supports that have the long-term goal of improving children's well-being by increasing the likelihood that children grow up in married and/or stable, two-parent families (in the case of HMRE programs) and that they grow up with engaged and supportive fathers (in the case of RF programs). Providing services designed to promote relationship and economic stability could potentially improve coparenting, parenting skills, financial outcomes, and parental well-being, which may in turn improve children's well-being (Berger and McLanahan 2015; Shelton and Harold 2008; Sandstrom and Huerta 2013).

Improving children's well-being is a central motivation of HMRE and RF programming. Therefore, it is important to examine the effects of these programs on child well-being. Several studies of HMRE programs have examined these impacts. For example, the Supporting Healthy Marriage (SHM) evaluation, which examined the effects of a set of programs for married parents with low income, found that these programs had small favorable effects on children's self-regulation and externalizing behavior problems (Lundquist et al. 2014). The Building Strong Families (BSF) evaluation, which examined a set of HMRE programs for unmarried couples who were expecting a baby or had just had one, found that the programs in the study led to a modest reduction in children's behavior problems; however, they had no overall effect on the stability of children's family situations or their economic well-being (Wood et al. 2012). More recently, an evaluation of the HMRE program Healthy Families/Healthy Children found that it improved the quality of parent-child relationships (Young et al. 2021). In addition, a recent study of the Empowering Families HMRE program found that it improved the economic well-being of the families who participated (Wu et al. 2021).

Studies of RF programs have also examined impacts on child well-being, mainly by examining program effects on the financial support nonresident fathers provide their children. These studies have found mixed effects on financial support. Some studies have found positive effects on child support payments (Knox and Redcross 2000; Schroeder et al. 2011). At least one study found small negative effects on the amount of child support provided (Cancian et al. 2019). Other studies have found no effect of these programs on the financial support that nonresident fathers provide for their children (Avellar et al. 2018; Cramer et al. 2020). Relatively few studies of RF programs have examined impacts on other aspects of child well-being.

This paper, developed as part of the FRAMING Research project (see box on the next page), explores how recent studies of HMRE and RF programs have examined child well-being. To ensure that we had an adequate number of studies to review and summarize, we did not restrict our review to studies of federally

funded HMRE and RF programs. Instead, for HMRE studies, we examined research published since 2000 that examined programs offering relationship education services and primarily serving adult parents. For

#### **About the FRAMING Research project**

This work is part of the Fatherhood, Relationships, and Marriage – Illuminating the Next Generation of Research (FRAMING Research) project, sponsored by the Administration for Children and Families (ACF) in the U.S. Department of Health and Human Services. ACF has partnered with Mathematica and its subcontractor Public Strategies to conduct the FRAMING Research project. The project team collects and synthesizes information by conducting literature reviews, knowledge mapping, stakeholder meetings, expert consultations, and a series of technical work groups focused on HMRE or RF programming. This white paper is part of a series of papers that explores key topics related to HMRE and RF programming. More information about the FRAMING Research project and the associated white papers is available at: <a href="https://www.acf.hhs.gov/opre/project/fatherhood-relationships-and-marriage-illuminating-next-generation-research-framing">https://www.acf.hhs.gov/opre/project/fatherhood-relationships-and-marriage-illuminating-next-generation-research-framing</a>.

RF studies, we reviewed research since 2000 on programs serving fathers and offering parenting, relationship, and employment services. Appendix A includes a description of the sources we used to identify these studies. Our primary goal for this paper is to provide information to evaluators of federally funded RF programs and HMRE programs that primarily serve adult parents on how to examine child well-being as part of their research. However, the information provided here should also be relevant to a broader set of research on programs serving similar populations and offering a similar mix of services.

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We begin the paper by defining child well-being, describing HMRE and RF programs, and exploring how they could influence child well-being. We then present results from our review of how recent HMRE and RF evaluations have measured child well-being. We find that many recent studies of HMRE and RF programs have not examined child well-being. Recent HMRE studies that have examined child well-being have focused primarily on children's behavior, while RF studies have focused primarily on the financial support nonresident fathers provide their children. Those that have examined child well-being typically gather this information through parent surveys and, in the case of RF studies, administrative data on child support payments.

Informed by our review of these studies, in the final section of the paper, we present recommendations for how HMRE and RF evaluators can examine child well-being. We recommend that evaluators measure multiple aspects of child well-being, with a particular focus on children's psychological health, their social interactions, and their economic circumstances. In addition, evaluators should consider including measures of parenting and parent well-being in their studies to better understand the pathways between HMRE and RF content and child well-being outcomes. Finally, evaluators should consider the cultural validity and cultural relevance of the child well-being measures they select.

#### How do HMRE and RF programs aim to influence child well-being?

#### Defining child well-being

Before looking at how HMRE and RF evaluations have examined child well-being, it is important to clarify what we mean by child well-being. Well-being has multiple interdependent parts; it is made up of the types of security and material possessions required for basic living; supports for physical health; and the psychological necessities of self-regulation, emotional wellness, and intellectual growth (Cho and Yu 2020; Fava et al. 2017). Without the material supports needed for basic living, such as food security, it can be challenging to maintain good physical health and difficult to build emotional wellness (Chaudry and Wimer 2016). Children's well-being is important to their life success, including their ability to

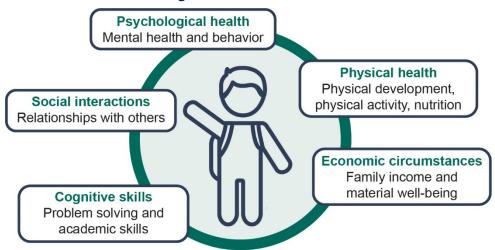
become self-sufficient; to successfully navigate relationships; to succeed in schools and, eventually, the workplace; and to be happy and fulfilled (Conti and Heckman 2012).

For this paper, we draw on definitions of child well-being from the research literature (Huston 2002; Pollard and Lee 2002). These definitions describe child well-being across five commonly accepted domains: psychological health, social interactions, cognitive skills, physical health, and economic circumstances. See Box 1 for a description of each domain.

#### Child well-being in HMRE and RF programs

HMRE and RF programs might influence child well-being through multiple pathways. Because these programs work with parents, and not directly with children, any effects on children's well-being would be through changes in parents' behaviors or outcomes. To test the influence of an HMRE or RF program on child well-being, it is important to understand what changes in parents might affect child well-being.

Box 1. Domains of child well-being



- **Psychological health.** This domain of child well-being includes children's mental health and behavior. Mental health includes emotion regulation, coping, self-efficacy, stress, anxiety, and depression. Behavioral aspects of the psychological domain include self-regulation, attention, internalizing (anxiety and sadness) or externalizing behaviors (acting out), and aggression.
- Social interactions. This domain includes children's relationships with adults and other children.
   This includes the closeness, quality, and stability of their relationships with parents, other family members, and peers.
- **Cognitive skills.** This domain of child well-being includes children's overall cognitive ability, thinking and problem-solving skills, and academic achievement.
- **Physical health.** This domain of child well-being includes aspects of children's health, such as achieving appropriate developmental milestones related to their bodies, accessing regular medical care, and grooming/self-care tasks; physical activity; and nutrition.
- **Economic circumstances.** This domain of child well-being includes the financial context in which children develop, including the family's income, child support paid by a noncustodial parent, material well-being, housing stability, and food security.

Note: These domains are drawn from the literature, including Pollard and Lee (2003) and Huston (2002)

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#### HMRE programs and child well-being

HMRE programs serve couples or individuals, including those with and without children. We focus on HMRE programs that primarily serve parents because of our focus on child well-being. HMRE programs typically teach communication and other relationship skills and, for couples, focus on strengthening the couple relationship (Herman-Stahl et al. 2021). HMRE programs for individuals teach participants how to recognize healthy relationships and make relationship decisions that will promote their own well-being, as well as the well-being of their families (Stanley et al. 2020; Stanley and Rhoades 2009). Some HMRE programs also provide economic stability services as a supplement to their relationship skills instruction, including job and career services and financial education. By improving financial circumstances, couples can better focus on improving romantic and co-parenting relationships (Figure 1). In the longer term, these programs aim to improve relationship and family stability, parenting, mental health, and economic outcomes. Ultimately, these programs aim to improve multiple aspects of child well-being. In Figure 1, we briefly describe the possible pathways by which HMRE programs could affect child well-being. We have theorized these pathways based on literature about how parenting, family functioning, family stability, and family well-being can influence children.

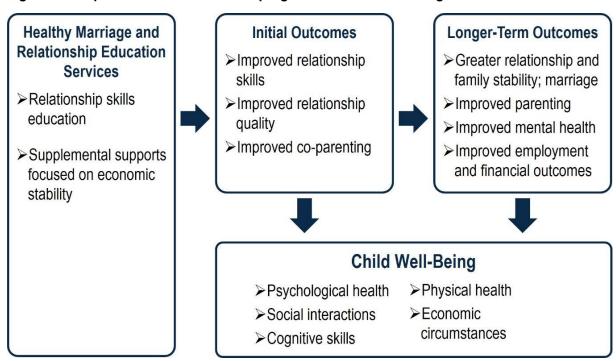


Figure 1. The potential effects of HMRE programs on child well-being<sup>1</sup>

• Improved relationship skills and relationship quality. HMRE programs provide relationship skills education to improve communication skills, build conflict resolution and problem-solving skills, reduce intimate partner violence, and improve relationship quality and satisfaction. Parents' relationship quality is associated with a range of child well-being outcomes, including psychological health, social interactions, and cognitive skills (Cowan and Cowan 2012; Moore et al. 2011). In

<sup>&</sup>lt;sup>1</sup> Figure 1 has been updated. An earlier version of Figure 1 did not include all five domains of child well-being; this has been corrected in the current version.

- addition, improved relationship quality could reduce conflict in the home and provide children with models of positive problem-solving (Carlson and McLanahan 2006).
- Improved co-parenting. HMRE programs support positive communication in the co-parenting relationship, aiming to increase the likelihood that children experience stability and observe constructive—rather than destructive—communication between their parents. Regardless of whether the romantic relationship between parents persists, functional co-parenting relationships are likely to provide children with more parental support, which may be beneficial for children's well-being (Bauserman 2002; Fagan and Barnett 2003). For example, research has found that high levels of supportive co-parenting reduced children's externalizing problem behaviors in toddlerhood (Schoppe et al. 2001).
- Greater relationship and family stability. HMRE programs might influence child well-being by promoting the stability and quality of the couple relationship. By supporting marriage and stable couple relationships, HMRE programs could enable children to experience fewer changes and more consistency in their environment. Stable family environments are associated with better child outcomes (Brown 2016; Brown 2010; Cavanagh and Huston 2008). Data from the Fragile Families and Child Well-Being study suggests that when parents experience fewer romantic partner transitions, their children have better psychological health (Osborne and McLanahan 2007; Karberg and Cabrera 2017).
- Improved parenting skills and parent—child relationship quality. Empirical evidence suggests that when parents improve their communication and co-parenting skills, they engage in healthier parenting strategies (Adler-Baeder et al. 2018; Newland et al. 2015; Peltz et al. 2018). In addition, improvement in couples' relationship skills—such as, communication and conflict resolution—has also been found to improve the quality of the parent—child relationship (Adler-Baeder et al. 2018).
- Improved parental mental health. By focusing on relationships and co-parenting, and by building more harmonious family environments, HMRE programs might help reduce stress, anxiety, or depression and improve parental well-being. Positive effects on mental health have been found in HMRE programs, even when the program does not directly address mental health (Hawkins 2019; Roddy et al. 2020). Reducing stress and depression and improving parental mental health can improve parent—child interactions and child outcomes (Jones et al 2021; Koblinsky et al. 2006; Lovejoy et al. 2000).
- Improved employment and financial outcomes. Economic stability services—including employment and financial-planning supports—are designed to improve the employment and financial outcomes of participants. Greater relationship stability could also improve the economic outcomes of some participants, as it increases the likelihood of financial security through dual incomes (Ribar 2015). As parents' economic outcomes improve, so does the overall financial health of the family, and children can benefit from less material hardship and greater resources (for example, Gershoff et al. 2003; Aber et al 2007). In addition, as parents experience less financial strain, they might be better able to engage in positive parenting practices. A strong research base suggests that income and material wealth primarily affect children through parent processes such as parental stress, parenting behaviors, and parent-child-relationship quality (Conger et al. 2010; Gershoff et al. 2007; Guo and Harris 2000; Kwon et al. 2017).

#### RF programs and child well-being

RF programs offer services aimed at helping fathers find stable jobs, improve their parenting skills, and navigate relationships with the mothers of their children (Cowan et al. 2010). By providing employment

services, these programs have the goal of building stable employment and earnings, which might improve fathers' ability to provide financial support for their children (Figure 2). Services to support parenting and relationship skills can lead to better co-parenting relationships and increase chances of fathers being engaged in their children's lives. Ultimately, these programs aim to improve children's economic circumstances and a range of other aspects of children's well-being. In Figure 2, we briefly describe the possible pathways by which RF programs could affect child well-being.

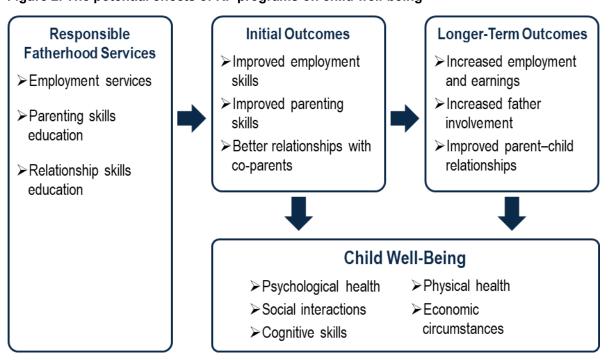


Figure 2. The potential effects of RF programs on child well-being

- Improved employment skills leading to increased employment and earnings. RF programs typically offer services related to job searching which may eventually translate into increased employment and earnings over time. Improvements in the father's economic circumstances can improve his ability to provide financial support, which might lessen material hardship for the child, reduce family stress, and improve child well-being. For instance, lower levels of non-resident fathers' child support arrears are associated with better social and emotional outcomes in children (Nepomnyaschy et al. 2021). Further, through the stability it brings to fathers, increased employment, particularly in jobs that allow for schedule flexibility, might also improve the father's ability to be consistently engaged in his children's lives (Castillo et al. 2012; Cooley and Hernandez 2006).
- *Improved parenting skills*. Most RF programs offer instruction on child development and effective parenting skills. The hope is that this instruction will improve the quality of the father—child relationship and ultimately improve child well-being. For example, fathers' developmentally appropriate play has been shown to be associated with their children's cognitive and language ability (Cabrera et al. 2017).
- Better relationships with co-parents. RF programs teach relationship skills aimed at improving relationships with co-parents and others. Empirical evidence has demonstrated that better co-

- parenting relationships increase fathers' access and involvement with children and reduce children's exposure to parental conflict (Carlson and McLanahan 2006; Carlson et al. 2008).
- Increased father involvement. RF programs focus on teaching participants the importance of fathers in their children's lives, which might increase their level of involvement with their children. Research has found that increased father involvement is linked with positive outcomes for children (Wilson and Prior 2011). A meta-analysis of more than 60 studies found a positive association between father involvement and the educational outcomes of their children (Jeynes 2015). Nonresident fathers' active involvement in their children's lives can protect against some of the adverse consequences of parental separation (Adamsons and Johnson 2013).
- Improved parent—child relationship quality. When parents improve their communication and coparenting skills, they can engage in healthier parenting strategies (Adler-Baeder et al. 2018). In addition, improvement in relationship skills might improve parent—child interactions and ultimately benefit child well-being (Newland et al. 2015; Peltz et al. 2018). For instance, fathers who displayed greater sensitivity when interacting with their infants had children with greater cognitive and language abilities in toddlerhood (Malmberg et al. 2015).

## How has child well-being been measured in the context of HMRE and RF programs?

We reviewed recently published evaluations of HMRE and RF programs to identify whether and how they measured child well-being (see Appendix A). In total, we reviewed 61 articles and reports that represented 55 unique evaluations (32 HMRE and 23 RF). For each evaluation, we documented information about the type of program evaluated (HMRE or RF), the population that the program served, the evaluation design, and the measures used. We categorized child well-being measures into one of five domains of child well-being: psychological health, social interactions, cognitive skills, physical health, or economic circumstances.

#### HMRE evaluations and child well-being measures

Consistent with the central focus of HMRE programs, the HMRE evaluations we reviewed primarily examined relationship outcomes, including couple relationship quality, relationship conflict, couple communication, and intimate partner violence. Among the 32 HMRE evaluations we examined, 12 (38 percent) included a child well-being measure.<sup>2</sup>

Domains of child well-being measured in HMRE evaluations. Across the 12 evaluations that included measures of child well-being, some child well-being domains were measured more often than others (Figure 3). HMRE evaluations most often measured psychological health (for example, measures of children's adaptive or helpful behaviors, or their problem behaviors); seven evaluations measured outcomes in this domain. Social interactions (for example, parent-child relationships or family harmony/lack of conflict in the home) and economic circumstances (for example, material hardship experienced by the family) were the next most commonly measured domains, with each covered by four of the HMRE evaluations we reviewed. Two evaluations measured cognitive skills (child language development) and two evaluations asked parents to respond to one question about the overall quality of their child's health. Across the 32 HMRE evaluations we examined, only one evaluation, the large federal

<sup>&</sup>lt;sup>2</sup> Among the 12 evaluations that measured child well-being, half were programs that served couples (6 evaluations). Three evaluations served individual adults, and three evaluations included both individual adults and couples. For details on each of the 12 studies, see Appendix A, Table 1.

Building Strong Families (BSF) evaluation, included at least one measure in each of the five child well-being domains (see a description of BSF in the box on the next page). See Table 1 for examples of child well-being measures used by the HMRE evaluations we reviewed from each of the five domains.

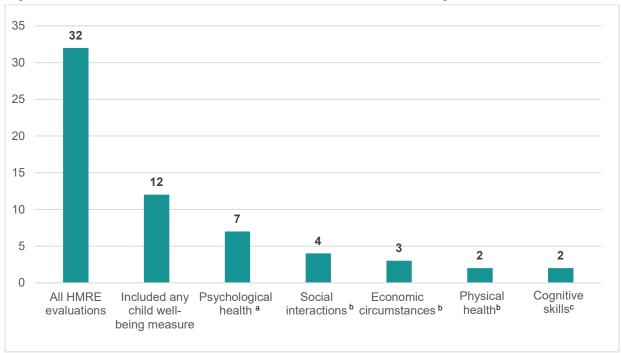


Figure 3. Number of HMRE evaluations that measured child well-being

Note. Eight HMRE studies measured child well-being exclusively with parent surveys; two studies used exclusively teacher surveys; one study used parent surveys and child direct assessment; and one study used parent surveys, child surveys, and child direct assessment to measure child well-being.

Whom do HMRE evaluators gather information from to measure child well-being? The HMRE studies we reviewed primarily gathered information on child well-being through parent surveys. Ten of the 12 HMRE studies that measured child well-being used parent surveys to do so (Figure 4). Eight of these studies used parent surveys exclusively to measure child well-being. When these studies included couples, they gathered child well-being information from both parents. A few studies also measured child well-being through teacher surveys, child surveys, and child direct assessment (Figure 4). Among the HMRE studies we reviewed, direct assessments were used only to measure cognitive skills. None of the HMRE evaluations relied on administrative records to measure child well-being.

<sup>&</sup>lt;sup>a</sup> Four HMRE studies measured psychological health exclusively with parent surveys; two studies exclusively used teacher surveys to measure psychological health; and one study used parent surveys and child surveys to measure this domain.

<sup>&</sup>lt;sup>b</sup> All of the HMRE studies that measured social interactions, economic circumstances, and physical health used parent surveys to do so.

<sup>&</sup>lt;sup>c</sup> The two HMRE studies that measured cognitive skills used child direct assessments to do so.

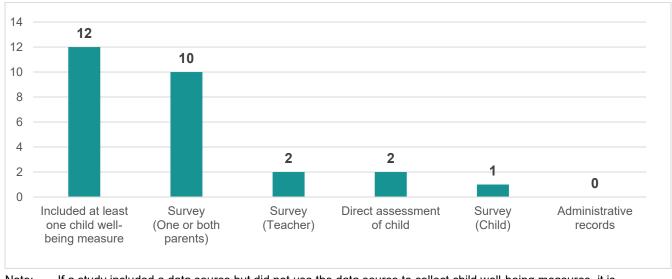


Figure 4. Mode of collecting child well-being measures in HMRE evaluations

Note: If a study included a data source but did not use the data source to collect child well-being measures, it is not included in these counts.

In addition to parent reports of child well-being, one study we reviewed, the SHM evaluation, also surveyed children of study participants so that they could report on their own well-being (Lundquist et al. 2014). To measure self-regulation, internalizing and externalizing behaviors, and cognitive well-being, children aged eight and a half or older were asked about their own behaviors.

Two evaluations collected teacher reports of child behavior. One of these evaluations recruited mothers who were participating in a relationship education program and whose children were enrolled in Head Start (Adler-Baeder et al. 2018). Because study participants were recruited from the same Head Start classrooms, gathering data from teachers (who reported on multiple children) was likely more manageable for evaluators. The other evaluation we reviewed that collected teacher reports, the Schoolchildren and their Families project, is described in the box below.

#### Schoolchildren and their Families Project: Teacher reports of child behavior

The Schoolchildren and their Families Project was a study of 100 couples whose oldest child was within one year of kindergarten entry. Couples were randomly assigned to one of two groups: (1) a program group that was offered a parent-focused relationship education curriculum or (1) a control group that was offered a low-dose couples' relationship education program. Families were followed for 10 years with four data collection assessments: baseline (pre-kindergarten), Time 1 (kindergarten), Time 2 (1st grade), Time 3 (4th grade), and Time 4 (9th grade).

Teachers were asked to report on children's behavior using the Child Adaptive Behavior Inventory (CABI) in the fall and spring of each of the assessment years. The CABI, developed for this study, measured children's social-emotional behaviors in terms of their positive and problematic behaviors. The CABI has 106 items, and evaluators can create six composite scores.

Source: Cowan, C.P., P.A. Cowan, and J. Barry. "Couples' Groups for Parents of Preschoolers: Ten-Year Outcomes of a Randomized Trial." *Journal of Family Psychology*, vol. 25, no. 2, 2011, pp. 240–250.

Two HMRE programs used direct assessments to measure child well-being. Direct assessments involve having trained study team members observe and record the skill or behavior being measured (Haynes and Heiby 2003). The BSF and SHM evaluations used the Peabody Picture Vocabulary Test, a direct assessment that measures children's language skills (Lundquist et al. 2014; Wood et al. 2012). The Peabody Picture Vocabulary Test (PPVT) is a standardized measure of children's language abilities that must be administered through direct assessment by a trained examiner. Both SHM and BSF were large-scale federal evaluations. This type of resource-intensive child assessment might not be feasible for smaller-scale evaluations. In the case of BSF, because couples enrolled in the study when they were expecting a baby or had just had one, the study's focal children were all about 3 years old at the 36-month follow-up, making these direct assessments more feasible because the same assessment tool was appropriate for all children in the study. In the SHM evaluation, children ranged in age from 2 to 17 years but only children who were 2- to 4-years-old completed the PPVT. Evaluators in the SHM evaluation also administered direct assessments of children's self-regulation skills, using different assessments depending on child age.

## The Building Strong Families (BSF) evaluation: An HMRE study that looked at all five dimensions of child well-being

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The BSF evaluation included more than 5,000 unmarried couples who were expecting or had just had a baby. Information about both parents was collected via self-report survey at 15 and 36 months. The evaluation collected information about children's outcomes through parent-reported surveys and direct assessments when the focal children were about 3 years old.

BSF was the one evaluation we reviewed that measured all five domains of well-being. The study examined the following child well-being measures as part of its main analysis:

- Psychological health. Child behavior (internalizing and externalizing problem behaviors were measured using a modified version of the Behavioral Problem Index) and emotional insecurity amid parental conflict (assessed with a scale measuring the frequency of a child's emotionally dysregulated behaviors during parental conflict).
- 2. **Social interactions.** Family stability (assessed whether both parents had lived with the child since birth).
- 3. Economic circumstances. Fathers' financial support (mother reported whether the father was covering at least half of the cost of raising the child), poverty status (family's monthly income was below the poverty threshold), and material hardship (family reported experiencing one of the following three hardships in the past year: unable to pay rent, had utilities cut off, or was evicted).
- 4. **Physical health.** Child health (parents reported on a single item about the quality of the child's health).
- 5. **Cognitive skills.** Child language (direct assessments of children's performance on the Peabody Picture Vocabulary Test 4).

Source: Wood, R.G., Q. Moore, A. Clarkwest, A. Killewald, and S. Monahan. "The Long-Term Effects of Building Strong Families: A Relationship Skills Education Program for Unmarried Parents." OPRE Report #2012-28A. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2012.

Table 1. Illustrative examples of measure details by domain of child well-being for HMRE evaluations

Example measures	Measure description	Mode of data collection	Age of focal child	Population served	Evaluation <sup>a</sup>
Psychological health					
Behavior Problems Index	30 items asking about the frequency of children's internalizing and externalizing behavior. See Zill (1985) for original measure source.	Surveys of mothers and fathers	36 months	Couples	Building Strong Families Wood et al. 2012
Social Competence and Behavior Evaluation	10 items asking about the frequency of children's social competence behaviors. See LaFreniere and Dumas (1996) for original measure source.	Teacher surveys	3–5 years	Individual adults	Together We Can Adler-Baeder et al. 2018
Economic circumstances					
Parent-reported financial support for child	5 items asking about financial support for the baby, including court-ordered child support and informal financial support paid by the father.	Surveys of mothers and fathers	3 months	Individual adults	Strong Start- Stable Families Pearson and Davis 2009
Economic Hardship Questionnaire	11 items asking about the degree of financial worry experienced in the last six months. See Lempers et al. (1989) for original measure source.	Survey of mothers and fathers	Wide range of ages	Couples	Fatherhood, Relationship, and Marriage Education Wadsworth et al. 2011
Social interactions					
Paternal Assessment Scale <sup>b</sup> Closeness	13 items asking about how close the respondent felt to their child. See Kingsley (2007) for original measure source.	Survey of mothers and/or fathers; average score reported for couples	Wide range of ages	Individual adults and couples	Healthy Families/Healthy Children Delivered by The Jewish Family and Children's Service of the Suncoast Young et al. 2021
Family Harmony	3 items asking about harmony in the household, such as feelings of contentment and happiness in the house. See Halberstadt et al. (1995) for original measure source.	Survey of mothers and fathers	Wide range of ages	Couples	Basic Training for Black Marriages, Mastering the Mysteries of Love, Together We Can, and Smart Steps: Embrace the Journey McGill et al. 2016

#### Measuring Child Well-Being in Evaluations of Healthy Marriage and Responsible Fatherhood Programs

Example measures	Measure description	Mode of data collection	Age of focal child	Population served	Evaluation <sup>a</sup>	
Family Environment Scale	9 items asking about the ability to work out conflicts and fighting in the household or family. See Moos and Moos (2009) for original measure source.	Survey of mothers and/or fathers; average score reported for couples	Wide range of ages	Individual adults and couples	Healthy Families/Healthy Children Delivered by The Jewish Family and Children's Service of the Suncoast Young et al. 2021	
Physical health						
Parent report of child's health	1 item asking about the quality of the child's health, ranging from excellent health to less than very good health.	Survey of mothers and fathers	15 months, 36 months	Couples	Building Strong Families Wood et al. 2012	
Cognitive skills						
Peabody Picture Vocabulary Test	A direct assessment of child language skills in which children identify pictures that correspond to words spoken by the assessor.	Direct assessment of the child	36 months	Couples	Supporting Healthy Marriages Initiative Lundquist et al. 2014 Building Strong Families Wood et al. 2012	

<sup>&</sup>lt;sup>a</sup> For information about characteristics of the people included in the evaluations please see Appendix A.

<sup>&</sup>lt;sup>b</sup> Although the name of the measure is the Paternal Assessment Scale, this evaluation asked both mothers and fathers to report on the parent–child relationship using this measure.

#### RF evaluations and child well-being measures

Consistent with the focus of RF programs, the RF evaluations we reviewed primarily focused on measuring father's self-sufficiency, relationship skills, and parenting. However, many of these studies also examined child well-being measures. Among the 23 RF evaluations we reviewed, 15 (65 percent) included a child well-being measure. For more detail on these 15 evaluations, see Appendix A, Table 2.

Domains of child well-being measured in RF evaluations. The most common child well-being measures examined in studies of RF programs were those in the economic domain (Figure 5). Ten of the 23 RF evaluations included a measure in the economic domain. These studies typically measured fathers' financial support of their children. Of the 23 RF evaluations we reviewed, four included measures of children's psychological health. Two of these evaluations served resident and nonresident fathers, another exclusively served nonresident fathers, and the remaining study primarily served resident fathers. See the DAD MAP box for an example of an evaluation that measured psychological health. Two evaluations included measures of children's social well-being. None of the 23 RF evaluations we examined measured child well-being outcomes in either the physical or cognitive domains. See Table 2 for examples of child well-being measures used in the RF evaluations we reviewed.

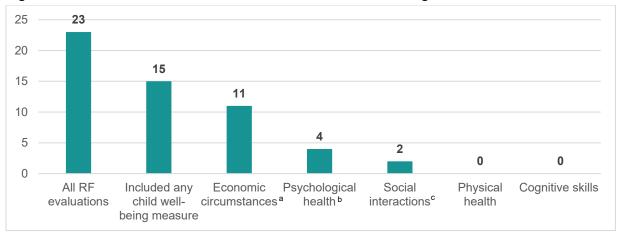


Figure 5. Number of RF evaluations that measured child well-being

Note. Eight RF studies measured child well-being exclusively with parent surveys; four studies used only administrative records; two studies used parents surveys and administrative records; and one study measured child well-being with both parent and child surveys.

<sup>&</sup>lt;sup>a</sup> Five of the RF studies that measured economic circumstances did so exclusively with parent surveys; five studies used exclusively administrative records; one study used both parent surveys and administrative records.

<sup>&</sup>lt;sup>b</sup> Three of the RF studies that measured psychological health did so exclusively with parent surveys; one study used both parent surveys and child surveys.

<sup>&</sup>lt;sup>c</sup> The two RF studies that measured social interactions did so exclusively with parent surveys.

## DAD MAP Evaluation: An RF study that measured multiple aspects of child well-being

The DAD MAP evaluation included 164 fathers with low incomes who participated in an RF program in Baltimore, Maryland. A core objective of this evaluation was to determine the value of adding a parent skill-building curriculum into a more typical RF curriculum to improve child well-being and other outcomes. All fathers were older than 18 and had at least one child who was younger than 12. About 40 percent of fathers lived with any of their children. Fathers responded to three- and six-month follow-up surveys, which asked about father involvement, co-parenting relationship quality, child well-being, and financial contributions they made to the support their children.

To measure child well-being, while accounting for fathers having children of different ages, the study team used two different measures of child behavior (psychological health domain) that were administered based on the child's age. Fathers responded to the Brief Infant Toddler Social and Emotional Assessment (BITSEA) problem behaviors subscale if their youngest child was younger than 3. Fathers completed a measured called the Behavioral Problems Checklist if their youngest child was 3 or older. The measures included internalizing behaviors (feelings such as sadness or self-destructive behaviors) and externalizing behaviors (acting out). The evaluators calculated a score for each subscale of behaviors for younger children (BITSEA) and older children (Behavior Problems Checklist). Scores for each subscale ranged from 1 to 4. The evaluators averaged these scores to create one child well-being score across younger and older children.<sup>a</sup>

This evaluation also included measures of the child's economic circumstances. Fathers reported how much formal child support they paid, as well as informal support they provided for their children, including in-kind support.

<sup>a</sup> Evaluators considering such an approach should determine if it is psychometrically appropriate. There is not enough information available in the published version of this study to determine how they confirmed the validity of combining data from different assessments into the same measure.

Source: Sarfo, B. "The DAD Map Evaluation Report: A Randomized Controlled Trial of a Culturally Tailored Parenting and Responsible Fatherhood Program." Philadelphia, PA, and Denver, CO: Fatherhood Research and Practice Network, 2017. Available at <a href="https://mefassociates.com/wordpress/wp-content/uploads/2018/03/The-DAD-MAP-Evaluation-Final-Report.pdf">https://mefassociates.com/wordpress/wp-content/uploads/2018/03/The-DAD-MAP-Evaluation-Final-Report.pdf</a>.

Whom do RF evaluators gather information from to measure child well-being? Most of the RF evaluations we reviewed (15 of 23) measured child well-being by surveying participating fathers (Figure 6). Eight of these studies measured child well-being exclusively with parent surveys. Three of the RF studies we reviewed surveyed the child's co-parent about child well-being measures, such as financial support received from the father or other measures, such as father's contact with their child (Cowan et al. 2020; Davis et al. 2010; Knox and Redcross 2000). One evaluation (see box about the Fathers and Sons program evaluation below) also relied on surveys of the children of the fathers who were participating in the program. The children included in the study were all boys who ranged in age from 8 to 12 years and were asked about their communication with their fathers, their aggressive behavior, and intentions to avoid violence in frustrating situations. In addition, six of the RF studies we reviewed relied on administrative data on fathers' child support payments and arrears. None of the RF studies we reviewed used direct assessments with children to measure child well-being.

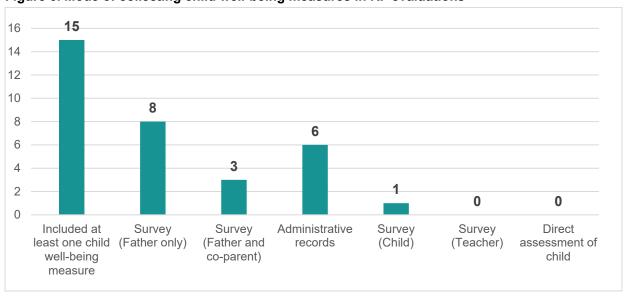


Figure 6. Mode of collecting child well-being measures in RF evaluations

Note: If a study included a data source but did not use the data source to collect child well-being measures, it is not included in these counts

#### Fathers and Sons program: An RF study that included youth self-reports

The Fathers and Sons program was a random assignment study of 287 nonresident fathers and their sons (ages 8 to 12). The inclusion of fathers and sons was unique among the evaluations we reviewed (only one other evaluation, TRUE Dads—see Table 2, used a similar approach). The Fathers and Sons program aimed to enhance the parenting skills of nonresident African American fathers to promote positive health behaviors of their preadolescent sons.

Fathers and their sons who were enrolled in the study responded to surveys at baseline and two months after the 15 sessions of the intervention. The surveys asked about several parenting behaviors of the fathers as well as behavioral outcomes of the youth. The child well-being measures included the following:

- Social interactions. Parent—child communication (fathers and sons were asked eight questions
  about their ability to communicate with each other; for example, sons were asked about their
  ability to communicate with their father, "I can share how I feel about anything with my father,"
  and fathers were asked a different set of questions about their ability to communicate with their
  son, "I think my son finds it easy to discuss problems with me"; fathers were also asked about
  whether they talked with their sons about risky behaviors, such as son's alcohol use).
- Psychological health. Intentions to avoid violence (sons were asked about their intentions to
  use nonviolence in future anger-provoking situations) and aggressive behavior (sons were asked
  about the frequency of their aggressive behavior in the last two months—for example, if they had
  been in a physical fight)

Sources: Caldwell, C.H., C.L. Antonakos, S. Assari, D. Kruger, E.H. De Loney, and R. Njai. "Pathways to Prevention: Improving Nonresident African American Fathers' Parenting Skills and Behaviors to Reduce Sons' Aggression." Child Development, vol. 85, 2014, pp. 308–325.

Table 2. Illustrative examples of measure details by domain of child well-being for RF evaluations

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Example measures	Measure description	Mode of data collection	Age of focal child	Residential status	Evaluation <sup>a</sup>	
Economic circumstances						
Father report of in-kind support	9 items asking about the degree to which fathers contributed various resources toward the care of their child.	Survey of fathers	Birth to 12 years	Nonresident and resident	Developing all Dads for Manhood (DAD MAP) Sarfo 2017 Parents Fair Share Knox and Redcross 2000	
Father report of monthly child support payments	1 item asking fathers about the average dollar amount of monthly child support payments	Survey of fathers	Birth to 18 years	Nonresident and resident	Parents and Children Together- Responsible Fatherhood Avellar et al. 2019 Fathers Advancing Community Together Program Cramer et al. 2020	
State database records of child support payments	Evaluators extracted information from the state automated child support system to gather information on open child support cases, monthly support order, monthly arrears payment, balances, and any employer-related information.	State records	Birth to 18 years	Nonresident	Child Support Noncustodial Parent Employment Demonstration (CSPED) Cancian et al. 2019 Tennessee Parenting Project Davis et al. 2010	
Psychological health						
Child Adaptive Behavior Inventory	54 items asking about four dimensions of child behavior, including aggression, hyperactivity, shy/withdrawn, and anxiety/depression. See Cowan et al. (1995) for original measure source.	Survey of fathers	Birth to 12 years	Resident	TRUE Dads Cowan et al. 2020	
Brief Infant Toddler Social and Emotional Assessment	23 items assessing the frequency of children's social and emotional behavior problems in children from 12 to 36 months. See Briggs-Gowan et al. (2004) for original measure source.	Survey of fathers	Birth to 12 years	Nonresident and resident	DAD MAP Sarfo 2017	

#### Measuring Child Well-Being in Evaluations of Healthy Marriage and Responsible Fatherhood Programs

Example measures	Measure description	Mode of data collection	Age of focal child	Residential status	Evaluation <sup>a</sup>		
Child Behavior Check List – Aggressive Behavior Subscale	20 items assessing the degree to which each item describes children's behavioral and emotional problems on a three-point scale. They used the age-and gender-specific scores (and standardized z-scores) to compare across child ages and genders. See Achenbach and Rescorla (2000) for original measure source.	Survey of fathers	Birth to 16 years	Nonresident and resident	New Pathways to Responsible Fatherhood Family Formation Program King et al. 2020		
Social interactions							
Parent-Child Communication Scale	8 items asking fathers and sons about their perceived ability to communicate well with each other. See Barnes and Olson (1985) for original measure source.	Survey of fathers and sons	8 to 12 years	Nonresident	Fathers and Sons Program Caldwell et al. 2014		

<sup>&</sup>lt;sup>a</sup> For information about characteristics of the people included in the evaluations please see Appendix

#### **Recommendations for Measuring Child Well-Being**

Because HMRE and RF programs seek to benefit children's well-being, it is important to design evaluations of these programs that can examine their effects on children. However, several factors make it challenging to measure child well-being in studies of HMRE and RF programs. First, best practices on assessing child well-being, particularly for younger children, include using multiple sources of evidence, such as direct observations and assessments, reports from parents and teachers, and information on school performance (National Education Goals Panel Early Childhood Assessments Resource Group 1998). This multi-source data collection can be expensive and logistically complex, and particularly challenging when access to children or other informants may be limited for evaluators of HMRE or RF programs.

Second, another best practice when assessing children's well-being is to tailor the measures to the age of the child (White and Sabarwal 2014). However, HMRE and RF programs typically serve parents with children of different ages, making it challenging to select child well-being measures that work for the children of all sample members in the study. Evaluations of RF programs face additional challenges because they often serve primarily nonresident fathers who may have limited or irregular contact with their children (Cheadle et al. 2010). This limited contact can make it difficult for nonresident fathers to report on the status of their children on follow-up surveys. The father's limited access to the child can also hinder the study team's efforts to gain access to these children to assess their development directly.

Our review showed that despite these challenges, some HMRE and RF evaluations have successfully measured child well-being. In this section of the paper, we present three recommendations for measuring child well-being in HMRE and RF program evaluations. The recommendations are based on the evaluations we reviewed, the input of two experts in HMRE and RF program evaluation (see Appendix A), and our team's experience and expertise.

#### 1) Design the evaluation to measure multiple aspects of child well-being

Because improving children's well-being is an important goal of HMRE and RF programs, evaluations of these programs should examine effects on child well-being measures, ideally across multiple domains. Three domains: (1) psychological health, (2) social interactions, and (3) economic circumstances are particularly promising areas for evaluators to capture. As we described earlier, these three domains were the most commonly examined in recent HMRE and RF evaluations and are relatively straightforward to measure with parent surveys, offering an accessible data collection option for evaluators. The domains align well with HMRE programs' focus on relationships and RF programs' focus on parenting and economic supports and represent aspects of child well-being that might be influenced by the parent and relationship changes these programs promote. A strong research base supports the interconnection of the relationship, parenting, and economic outcomes addressed by HMRE and RF programs and child outcomes in each of these domains. For example, increases in family income and decreases in economic hardship are associated with improvements in child behavior problems and child-parent relationships (Conger et al. 2010). These improvements in children's well-being might be due, in part, to improved relationships between parents and parenting skills (Conger et al. 2010; Mistry et al. 2002; Newland 2015). Research also supports connections between parental relationship quality, positive parenting behaviors and children's psychological and social development (Berger and McLanahan 2015; Carlson et al. 2011; Goldberg and Carlson 2014; Marchand-Reilly and Yaure 2019).

When selecting specific child well-being measures, evaluators should consider what aspects of child well-being are most likely to be influenced by the program they are evaluating, as well as the characteristics of the people the program serves, and select measures that align with those aspects. In addition, not all child well-being measures are sensitive enough to detect small changes, particularly over a short period of time. Sample size constraints might also limit evaluators' ability to detect effects. HMRE and RF evaluators might want to consult the results from prior evaluations that have used the child well-being measures they are considering to get a sense of the likely size of potential effects and whether their evaluation could detect an effect of that size within their follow-up period.

The considerations for evaluators measuring child well-being are somewhat different for HMRE programs and RF programs. In the following sections, we describe these considerations first for evaluations of HMRE programs and then for RF programs.

#### Measuring child well-being in evaluations of HMRE programs serving parents

**Psychological health.** Some measures of children's behavior can only be used with children in a narrow age range, making it challenging to select appropriate measures for use in programs serving participants with children of varying ages. Although administering measures of children's psychological well-being can be challenging when children range in age, some measures that fall into the psychological domain can be used across a broad range of children's ages. For example, the Child Behavior Checklist (Achenbach 2001) surveys parents about children's emotions and behavior and is appropriate for children as young as 18 months and as old as 18 years. Other examples of measures in the psychological domain are available in Tables 1 and A.1.

Social interactions. Parent—child relationships are highly relevant to the types of relationship skills that HMRE programs teach. For example, one HMRE evaluation used a scale about parent-child closeness (subscale of the Paternal Assessment Scale, see findings section), which includes 13 items about how close parents felt to their children (Young et al. 2021). One challenge with measuring parent—child relationships is that parents feel social pressure to report highly positive relationships, even if that is inaccurate. One way to help reduce this challenge is to measure broader aspects of the family environment. For example, some of the evaluations we reviewed included measures of family harmony or family strengths. McGill and colleagues (2016) used the Family Harmony scale (Halberstadt et al. 1995), which contains three items asking about feelings of happiness, contentment, and (lack of) disagreements in the household. Although these types of measures can also be influenced by participants' desire to report positive relationships, by including broader items that are not directly focused on the parent—child relationship, evaluators might see more variability in responses.

Economic circumstances. When surveying parents who share the same household as their children, which is often the case in evaluations of HMRE programs serving parents, measuring material hardship is a useful way to capture children's economic well-being. Material hardship is defined as the inability to obtain essential goods. Rather than relying on reports of parental income or earnings, which can be difficult to measure accurately, material hardship measures represent a more holistic picture of available family resources and household living conditions that might be easier to capture reliably. In the BSF evaluation (Wood et al. 2012), material hardship was measured by composite of: (1) inability to pay rent or mortgage, (2) utilities being cut off, and (3) being evicted. More recently, the Empowering Families study conducted as part of the Strengthening Relationship Education and Marriage Services (STREAMS) evaluation used the Family Economic Hardship Scale to measure the frequency of material hardship

experienced in the focal child's household (Wu et al. 2021).<sup>3</sup> The six-item scale represents what economic hardships a family experienced within the past year, such as skipping meals or foregoing medical care because of lack of money. This measure was first used in the Child Support Noncustodial Parent Employment Demonstration and was adapted from items originally used in the Fragile Families and Child Wellbeing Study (Cancian et al. 2019). Another example of a measure of material hardship used in one of the evaluations we reviewed was the Economic Hardship Questionnaire (Lempers et al. 1989), in which parents report how often they had to change their family lifestyle due to their financial needs (see Wadsworth et al. 2011 for an example).

Physical health and cognitive skills. Although the psychological, social, and economic domains of child well-being are likely to be the most relevant for evaluators, some evidence suggests that the physical and cognitive domains might also be influenced by improvements in parental relationships that are a focus in HMRE programs. For example, evidence from the Fragile Families study shows that single parenthood and family instability are related to children's health outcomes, such as obesity and asthma (Craigie et al. 2010). In the cognitive domain, there are also important links between parenting behaviors and children's academic achievement (Sun and Li 2011). If evaluators want to pursue measures of children's physical well-being, they should consider aspects of health that have been shown to relate to family structure, including nutrition, obesity, or asthma. Evaluators can ask parents who have young children to report on children's achievement of cognitive developmental milestones; however, as children get older, cognitive skills are typically assessed through direct assessment or through teacher- or school-reported measures or grades. These are more difficult for evaluators to capture, but if a program is affiliated with a school or if evaluators have access to school records or teachers, it could be useful to capture information about children's academic progress.

#### Measuring child well-being in evaluations of RF programs

**Psychological health.** Fathers who are involved in their children's lives can offer important perspectives on children's development. If an RF program serves resident fathers or nonresident fathers who have regular contact with their children, evaluators should consider measuring the psychological domain of child well-being. Measures in this domain usually ask fathers to describe their child's typical behavior. In addition to being appropriate for use with children across a wide age range, the Child Behavior Checklist (described earlier) was used in one of the RF evaluations that we reviewed (King et al. 2020). Other examples of measures of children's psychological health are available in Table 2.

Social interactions. For evaluations of RF programs, measures of parent–child relationships can help evaluators move beyond measuring only the amount of interaction fathers have with their children to focusing more on the quality of those interactions. This broader view is important because benefits of father involvement depend on the quality of the father–child relationship, not just the amount of contact between father and child (for an example, see Osborne et al. 2014). Measuring father–child relationship quality might be more relevant than other measures of child well-being (such as those in the psychological domain) for fathers who do not see their children regularly enough to report on those other aspects of children's behavior. Even with irregular contact, fathers' responsiveness to their children's emotional needs and their warmth and supportiveness are important parts of the parent–child relationship (Dunn 2004). One measure that has been tested with a sample of nonresident fathers is the Child-Parent Relationship Scale Short Form (Pianta 1992). This measure was also found to be reliable with a sample of

<sup>&</sup>lt;sup>3</sup> This evaluation is not included in our review as it was published after the review was completed.

fathers who had children ranging in age from 2 to 18, making the scale a good candidate to use in evaluations of RF programs serving fathers with children who vary in age (Dyer et al. 2017).

Because many RF programs serve nonresident fathers, evaluators should consider how the child well-being measures they select align with the ways in which nonresident fathers might interact with their children. Aspects of father involvement most closely associated with child well-being include involvement in children's activities, involvement in multiple aspects of children's lives (for example, attendance at sports and school events), and a positive father—child relationship (Adamsons and Johnson 2013). Recently, Fagan et al. (2019) developed a measure to assess nonresident father contact with their children who ranged in age (from 1 to 18 years). This measure is useful because it defines contact broadly and focuses on two types of contact that are relevant to nonresidential fathers: caregiving contact (such as face-to-face contact and nights spent with their child) and communication contact (such as, telephone/social media contact and engagement items that did not require physical presence, such as praising their child).

**Economic circumstances.** Economic well-being is a key outcome that RF programs directly try to influence by increasing the likelihood that fathers provide financial support for their children. This domain was the most commonly examined aspect of child well-being in the RF evaluations we reviewed (Figure 3). As described earlier, most RF evaluations that include measures in the economic domain examine effects on fathers' financial support for their children. Various studies also used administrative data to track fathers' child support payments and amounts owed (for examples, see Cancian et al. 2019 and Davis et al. 2010). Administrative data can be useful to avoid the bias fathers might have toward overreporting the child support payments they provide. Table 2 includes additional examples of measures of economic circumstances for RF evaluators to consider.

Physical health and cognitive skills. In evaluations of RF programs, particularly those involving primarily nonresident fathers, it can be particularly challenging to measure children's physical health and cognitive skills. Some nonresident fathers might have limited information on these aspects of their children's well-being. In fact, none of the 22 RF evaluations we reviewed examined a measure in the physical or cognitive domain. Given the likely challenges of measuring the physical and cognitive child well-being domains, RF evaluators might want to make them a lower priority and to focus instead on child well-being measures of psychological health, social interactions, and economic circumstances.

## 2) Evaluators can use measures of parenting and parent well-being to help clarify the pathways between HMRE and RF program content and child well-being outcomes.

A likely pathway for HMRE and RF programs to influence child well-being is through their effect on parenting and parent well-being. As described previously, improved parenting behaviors are related to decreases in children's problem behaviors (for example, Mistry et al. 2002). Similarly, improvements in parental well-being, such as reductions in depressive symptoms and stress, are related to positive child outcomes (Gunlicks and Weissman 2008; Hanington et al. 2012; Shelton and Harold 2008; Smith 2004). For this reason, evaluators might want to measure program effects in these areas to confirm whether this pathway exists and to better understand potential program effects on child well-being.

A majority of the reviewed HMRE evaluations (24 of 33) and RF evaluations (16 of 22) included measures of co-parenting, parenting behaviors, or parent psychological well-being. These measures are closely aligned with the goals of HMRE and RF programs and, as a result, might be areas where evaluations are more likely to demonstrate effects, particularly in the short term. Below, we provide a few

examples of measures in these parent-related domains. See Appendix B for examples of parent-related measures used in the evaluations we reviewed.

**Co-parenting.** A frequently used measure in the evaluations we reviewed was the Parental Alliance Inventory (Abidin and Brunner 1995), which assesses the quality of co-parenting respect and shared responsibility (see Sarfo 2014 for an example). Studies also measured co-parenting conflict. For example, the co-parenting conflict scale (Ahrons and Wallisch 1987) consists of three items that indicates the degree to which parents argue about childrearing, argue about time spent with the child, and the degree to which the child hears negative comments about the co-parent (Adler-Baeder et al. 2013).

Parenting behaviors. Some of the reviewed evaluations measured parent—child interactions and parental responsiveness or used measures of parental monitoring, such as the Parental Monitoring Scale (Jacobson and Crockett 2000). One HMRE evaluation (Adler-Baeder et al. 2013) used a four-item scale (Parental Involvement Scale; Palkovitz 1984) to measure parents' frequency of engaging in activities such as playing with the child and caretaking behaviors. To measure fathers' parenting behaviors, the PACT evaluation included measures of nurturing behaviors and nonviolent discipline (Avellar et al. 2018; Covington et al. 2020a; Covington et al. 2020b). Other evaluations also measured discipline. For example, Adler-Baeder et al. (2018) measured punitive parenting behaviors by assessing the frequency of negative parenting actions, such as spanking, yelling, or shouting at their child on a scale of 1 = rarely to 4 = daily. Some studies (such as Adler-Baeder et al. 2013 and Cowan et al. 2020) used published measures of discipline practices. These measures included the Positive Discipline Scale (Adler-Baeder et al. 2013) which includes three items about the frequency with which a parent praises or explains consequences to a child, and the Harsh Parenting Scale, an adapted version of the Alabama Parenting Questionnaire (Frick 1991), which includes six items about harsh parenting behaviors, such as yelling.

Parental psychological well-being. Many studies included measures of depressive symptoms, often measured via the Center for Epidemiological Studies Depression Scale (Radloff 1977). Other studies measured parenting stress using the Parenting Stress Index-Short Form (PSI-SF; Loyd and Abidin 1985), which assesses parents' level of distress related to parenting. The PSI-SF is commonly used as a parenting measure and covers parenting distress and difficult parent—child interactions (Abidin 1995). In addition, the PSI-SF (described above) has some evidence of validity with fathers who have low incomes, though more research is necessary (McKelvey et al. 2008).

## 3) Evaluators should consider the cultural validity and relevance of the measures they select for the participants in the program being evaluated.

While the broad domains of child well-being (psychological health, social interactions, physical health, economic circumstances, cognitive skills) span cultures, the specific parenting and family practices that support positive child outcomes can vary by culture (Bornstein 2013; Kotchick and Forehand 2002; Deater-Deckard and Dodge 1997; Pinquart and Kauser 2018). Many child well-being measures have been developed with White, two-parent, middle-class, English-speaking families (Cho and Yu 2020). For this reason, it is important for HMRE and RF evaluators to consider whether the child well-being measures they select are appropriate for the people who will be served by the programs they are evaluating. An initial step in this process is to determine whether the measures have been used with populations that are similar to those who will be included in the study. As a starting point, evaluators can use the descriptions of the populations included in the HMRE and RF studies we reviewed and the measures these studies included (see Appendix Tables A.1 and A.2).

When a measure has not been used with a particular population, it is important to pre-test the measure with people who are similar to those who will be included in the study to see whether the questions are readily understood by those respondents and interpreted as intended. One HMRE study we reviewed described how the evaluators selected published measures and then adapted and piloted them with focus groups of community members who shared similar characteristics to the study population (Cox et al. 2009). This process helped evaluators determine whether the measures were relevant to study participants and whether they captured the specific aspects of child well-being intended by the developers of the measure. HMRE and RF evaluators could consider engaging community members more broadly in study design, measure selection, interpreting findings, and dissemination as a means of strengthening their evaluations and better meeting community needs (Whicher et al. 2022).

Another best practice for ensuring that the child well-being measures included in a study have cultural validity and relevance is to include measures that document strengths and positive behaviors and to avoid focusing solely on negative outcomes. In many studies that include children who have experienced adversity, particularly children of color, researchers have focused primarily on measuring problem behaviors (Cabrera et al. 2012). There are many ways children can demonstrate resiliency in the face of adversity that could be bolstered as parents work to improve their relationships (Newland 2015). Selecting measures that provide information about positive behaviors, such as prosocial interactions, problem-solving, or emotion regulation, can help highlight children's resilience and the ways HMRE and RF programs might strengthen this resilience. We found several examples of outcomes focused on positive behaviors in the studies we reviewed, including measures of social competence and family harmony (Table 1). HMRE and RF evaluators can consider using these or other measures of positive child outcomes in their studies.

#### References

- Aber, J.L., S.M. Jones, and C.C. Raver. "Poverty and Child Development: New Perspectives on a Defining Issue." In *Child Development and Social Policy: Knowledge for Action* (pp. 149–166), edited by J. L. Aber, S. J. Bishop-Josef, S. M. Jones, K. T. McLearn, and D. A. Phillips. Washington, DC: American Psychological Association, 2007.
- Abidin, R. Parenting Stress Index: Professional Manual. Lutz, FL: Psychological Assessment Resources, 1995.
- Abidin, R., and J.F. Brunner. "Development of a Parenting Alliance Inventory." *Journal of Clinical Child Psychology*, vol. 24, no. 1, 1995, pp. 31–40.
- Achenbach, T.M., and L.A. Rescorla. *Manual for the ASEBA School-Age Forms and Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families, 2001.
- Adamsons, K., and S.K. Johnson. "An Updated and Expanded Meta-Analysis of Nonresident Fathering and Child Well-Being." *Journal of Family Psychology*, vol. 27, no. 4, 2013, pp. 589–599.
- Adler-Baeder, F., A. Calligas, E. Skuban, M. Keiley, S. Ketring, and T. Smith. "Linking Changes in Couple Functioning and Parenting Among Couple Relationship Education Participants." *Family Relations*, vol. 62, no. 2, 2013, pp. 284–297.
- Adler-Baeder, F., C. Garneau, B. Vaughn, J. McGill, K.T. Harcourt, S. Ketring, and T. Smith. "The Effects of Mother Participation in Relationship Education on Coparenting, Parenting, and Child Social Competence: Modeling Spillover Effects for Low-Income Minority Preschool Children." *Family Process*, vol. 57, no. 1, 2018, pp. 112–130.
- Ahrons, C.R., and L. Wallisch. "Parenting in the Binuclear Family: Relationships Between Biological and Stepparents." In *Remarriage and Stepparenting: Current Research and Theory*, edited by K. Pasley and M. Ihinger-Tallman. New York, NY: The Guilford Press, 1987.
- Amato, P.R. "Research on Divorce: Continuing Trends and New Developments." *Journal of Marriage and Family*, vol. 72, no. 3, 2010, pp. 650–666.
- Avellar, S., R. Covington, Q. Moore, A. Patnaik, and A. Wu. "Parents and Children Together: Effects of Four Responsible Fatherhood Programs for Low-Income Fathers." OPRE Report Number 2018-50. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2018.
- Bachman, H.J., R.L. Coley, and J. Carrano. "Maternal Relationship Instability Influences on Children's Emotional and Behavioral Functioning in Low-Income Families." *Journal of Abnormal Child Psychology*, vol. 39, no. 8, 2011, pp. 1149–1161.
- Barnes, H.L., and D.H. Olson. "Parent–Adolescent Communication and the Circumplex Model." *Child Development*, vol. 56, no. 2, 1985, pp. 438–447.
- Bauserman, R. "Child Adjustment in Joint-Custody Versus Sole-Custody Arrangements: A Meta-Analytic Review." *Journal of Family Psychology*, vol. 16, no. 1, 2002, pp. 91–102.
- Berger, L.M., and S.S. McLanahan. "Income, Relationship Quality, and Parenting: Associations with Child Development in Two-Parent Families." *Journal of Marriage and the Family*, vol. 77, no. 4, 2015, pp. 996–1015.
- Bornstein, M.H. "Cultural Approaches to Parenting." *Parenting, Science and Practice*, vol. 12, no. 2–3, 2012, pp. 212–221. https://doi.org/10.1080/15295192.2012.683359.

- Briggs-Gowan, M.J., A.S. Carter, J.R. Irwin, K. Wachtel, and D.V. Cicchetti. "The Brief Infant-Toddler Social and Emotional Assessment: Screening for Social-Emotional Problems and Delays in Competence." *Journal of Pediatric Psychology*, vol. 29, no. 2, 2004, pp. 143–155.
- Brown, S.L. "Marriage and Child Well-Being: Research and Policy Perspectives." *Journal of Marriage and Family*, vol. 72, no. 5, 2010, pp. 1059–1077.
- Brown, S.L., J.B. Stykes, and W.D. Manning. "Trends in Children's Family Instability, 1995–2010." *Journal of Marriage and Family*, vol. 78, no. 5, 2016, pp. 1173–1183.
- Cabrera, N.J., M. Beeghly, and N. Eisenberg. "Positive Development of Minority Children: Introduction to the Special Issue." *Child Development Perspectives*, vol. 6, no. 3, 2012, pp. 207–209.
- Cabrera, N.J., L. Karberg, J.L. Malin, and D. Aldoney. "The Magic of Plan: Low-Income Mothers' and Fathers' Playfulness and Children's Emotion Regulation and Vocabulary Skills: Mothers' and Fathers' Playfulness." *Infant Mental Health Journal*, vol. 38, no. 4, 2017, pp. 1–14.
- Caldwell, C.H., C.L. Antonakos, S. Assari, D. Kruger, E.H. De Loney, and R. Njai. "Pathways to Prevention: Improving Nonresident African American Fathers' Parenting Skills and Behaviors to Reduce Sons' Aggression." *Child Development*, vol. 85, 2014, pp. 308–325. https://doi.org/10.1111/cdev.121.
- Caldwell, C.H., J. Rafferty, T.M. Reischl, E.H. De Loney, and C.L. Brooks. "Enhancing Parenting Skills Among Nonresident African American Fathers as a Strategy for Preventing Youth Risky Behaviors." *American Journal of Community Psychology*, vol. 45, 2010, pp. 17–35.
- Cancian, M.D., D. Meyer, L. M. Berger, A. Guarin, L. Hodges, K.A. Magnuson, L.K. Vogel, M. Waring., R.G. Wood, Q. Moore, and A.Y. Wu. "Final Impact Findings from the Child Support Noncustodial Parent Employment Demonstration (CSPED): Technical Supplement." Madison, WI: Institute for Research on Poverty, University of Wisconsin–Madison, 2019.
- Cancian, M., D. Meyer, and R. Wood. "Final Impact Findings from the Child Support Noncustodial Parent Employment Demonstration (CSPED)." Madison, WI: Institute for Research on Poverty, University of Wisconsin–Madison, 2019.
- Carlson, M. J., and S.S. McLanahan. "Strengthening Unmarried Families: Could Enhancing Couple Relationships Also Improve Parenting?" *Social Service Review*, vol. 80, no. 2, 2006, pp. 297–321.
- Carlson, M. J., S.S. McLanahan, and J. Brooks-Gunn. "Coparenting and Nonresident Fathers' Involvement with Young Children After a Nonmarital Birth." *Demography*, vo. 45, no. 2, 2008, pp. 461–488.
- Carlson, M. J., N. Pilkauskas, S.S. McLanahan, and J. Brooks-Gunn. "Couples as Partners and Parents Over Children's Early Years." *Journal of Marriage and Family*, vol. 73, 2011, pp. 317–334.
- Carlson, R. G., T. Dickenson, B.D. Rogers, C.J. Hipp, and G. Glascoe. "Six Month Impact Evaluation of Prevention and Relationship Education Program's (PREP's) Within Our Reach in Orlando, Florida. Final Impact Evaluation Report for University of Central Florida." Washington, DC: Administration for Children and Families, Office of Family Assistance, December 21, 2020.
- Castillo, J. T., G.W. Welch, and C.M. Sarver. "Walking a High Beam: The Balance Between Employment Stability, Workplace Flexibility, and Nonresident Father Involvement." *American Journal of Men's Health*, vol. 6, no. 2, 2012, pp. 120–131.
- Cavanagh, S.E., and A.C. Huston. "The Timing of Family Instability and Children's Social Development." *Journal of Marriage and Family*, vol. 70, 2008, pp. 1258–1270.

- Chaudry, A., and C. Wimer. "Poverty Is Not Just an Indicator: The Relationship Between Income, Poverty, and Child Well-Being." *Academic Pediatrics*, vol. 16, no. 3, 2016, pp. S23–S29.
- Cheadle, J.E., P.R. Amato, and V. King. "Patterns of Nonresident Father Contact." *Demography*, vol. 47, no. 1, 2010, pp. 205–225.
- Cho, E.Y.N., and F.Y. Yu. "A Review of Measurement Tools for Child Wellbeing." *Children and Youth Services Review*, vol. 119, 2020, article 105576.
- Coley, R.L., and D.C. Hernandez. "Predictors of Paternal Involvement for Resident and Nonresident Low-Income Fathers." *Developmental Psychology*, vol. 42, no. 6, 2006, pp. 1041–1056.
- Conger, R.D., K.J. Conger, and M.J. Martin. "Socioeconomic Status, Family Processes, and Individual Development." *Journal of Marriage and the Family*, vol. 72, no. 3, 2010, pp. 685–704.
- Conti, G., and J.J. Heckman. "The Economics of Child Well-Being." Cambridge, MA: National Bureau of Economic Research, 2012.
- Cooper, C.E., C.A. Osborne, A.N. Beck, and S.S. McLanahan. "Partnership Instability, School Readiness, and Gender Disparities." *Sociology of Education*, vol. 84, no. 3, 2011, pp. 246–259.
- Covington, R., A. Patnaik, A. Wu, S. Avellar, and Q. Moore. "Parents and Children Together: Effects of Four Responsible Fatherhood Programs for Low-Income Fathers Technical Supplement." OPRE Report #2020-46. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2020a.
- Covington, R., Q. Moore, A. Wu, A. Patnaik, and S. Avellar. "Parents and Children Together: Effects of Two Healthy Marriage Programs for Low-Income Couples." OPRE Report #2020-45. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2020b.
- Cowan, P.A., and C.P. Cowan. "Normative Family Transitions, Couple Relationship Quality, and Healthy Child Development." In *Normal Family Processes: Growing Diversity and Complexity* (pp. 428–451), edited by F. Walsh. New York: The Guilford Press, 2012.
- Cowan, C.P., and P.A. Cowan. "Couple Communication Questionnaire." Unpublished manuscript. Berkeley, CA: University of California, 1990.
- Cowan, C.P., P.A. Cowan, and J. Barry. "Couples' Groups for Parents of Preschoolers: Ten-Year Outcomes of a Randomized Trial." *Journal of Family Psychology*, vol. 25, no. 2, 2011, pp. 240–250.
- Cowan, P.A., C.P. Cowan, and P. Gillette. "TRUE Dads: Including Co-Parents in a Fatherhood Intervention." Berkeley, CA: University of California, 2020.
- Cowan, P. A., C.P. Cowan, and G. Heming. "Manual for the Child Adaptive Behavior Inventory (CABI)." Unpublished manuscript. Berkeley, CA: University of California, 1995.
- Cowan, P.A., C.P. Cowan, and V. Knox. "Marriage and Fatherhood Programs." *The Future of Children*, vol. 20 no. 2, 2010, pp. 205–230.
- Craigie, T.A., J. Brooks-Gunn, and J. Waldfogel. "Family Structure, Family Stability and Early Child Wellbeing." Princeton, NJ: Center for Research on Child Wellbeing, 2010.
- Cramer, L., P. Thompson, and B. Peterson. "Impact Evaluation of the Fathers Advancing Community Together Program in Contra Costa County, California." Washington, DC: Urban Institute, 2020.

- Davis, L., J. Pearson, and N. Thoennes. "Tennessee Parenting Project Final Report." Denver, CO: Center for Policy Research, 2010. Available at <a href="https://centerforpolicyresearch.org/wp-content/uploads/TennesseeParenting.pdf">https://centerforpolicyresearch.org/wp-content/uploads/TennesseeParenting.pdf</a>.
- Deater-Deckard, K., and K.A. Dodge. "Externalizing Behavior Problems and Discipline Revisited: Nonlinear Effects and Variation by Culture, Context, and Gender." *Psychological Inquiry*, vol. 8, no. 3, 1997, pp. 161–175.
- Dunn, J. "Annotation: Children's Relationships with Their Nonresident Fathers." *Journal of Child Psychology and Psychiatry*, vol. 45, no. 4, 2004, pp. 659–671.
- Dyer, J.W., R. Kaufman, and J. Fagan. "Father-Child Closeness and Conflict: Validating Measures for Nonresident Fathers." *Journal of Family Psychology*, vol. 31, no. 8, 2017, pp. 1074–1080.
- Fagan, J. and M. Barnett. "The Relationship Between Maternal Gatekeeping, Paternal Competence, Mothers' Attitudes About the Father Role, and Father Involvement." *Journal of Family Issues*, vol. 24, no. 8, 2003, pp. 1020–1043.
- Fagan, J., R. Kaufman, and J.W. Dyer. "Conceptualizing and Measuring Low-Income, Nonresident Fathers' Contact with Children." *Monographs of the Society for Research on Child Development*, vol. 332, no. 84, 2019, pp. 94–106.
- Fava, N.M., T. Li, S.L. Burke, and E.F. Wagner. "Resilience in the Context of Fragility: Development of a Multidimensional Measure of Child Wellbeing Within the Fragile Families Dataset." *Children and Youth Services Review*, vol. 81, 2017, pp. 358–367.
- Frick, P.J. "The Alabama Parenting Questionnaire." Unpublished rating scale. Tuscaloosa, AL: University of Alabama, 1991. https://doi.org/10.1037/t58031-000.
- Gershoff, E. T., J.L. Aber, J. L., and C.C. Raver. "Child Poverty in the U.S.: An Evidence-Based Framework for Programs and Policies." In *Promoting Positive Child, Adolescent, and Family Development: A Handbook of Program and Policy Innovations* (pp. 81–136), edited by R.M. Lerner, F. Jacobs, and D. Wertlieb. Newbury Park, CA: Sage Publications, 2003.
- Gershoff, E. T., J.L. Aber, C.C. Raver, M.C. Lennon. "Income Is Not Enough: Incorporating Material Hardship Into Models of Income Associations with Parenting and Child Development." *Child Development*, vol. 78, no. 1, 2007, pp. 70–95.
- Gibson-Davis, C.M. "Single and Cohabiting Parents and Poverty." In *The Oxford Handbook of the Social Science of Poverty* (pp. 417–437), edited by D. Brady and L.M. Burton. New York: Oxford University Press, 2016.
- Goldberg, J.S., and M.J. Carlson. "Parents' Relationship Quality and Children's Behavior in Stable Married and Cohabiting Families." *Journal of Marriage and Family*, vol. 76, no. 4, 2014, pp. 762–777.
- Gratz, K.L., and L. Roemer. "Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale." *Journal of Psychopathology and Behavioral Assessment*, vol. 26, no.1, 2004, pp. 41–54.
- Gunlicks, M.L. and M.M. Weissman. "Change in Child Psychopathology with Improvement in Parental Depression: A Systematic Review." *Journal of the American Academy of Child & Adolescent Psychiatry*, vol. 47, no. 4, 2008, pp. 379–389.
- Guo, G. and K.M. Harris. "The Mechanisms Mediating the Effects of Poverty on Children's Intellectual Development." *Demography*, vol. 37, no. 4, 2000, pp. 431–447.

- Guterman, N.B., J.L. Bellamy, and A. Banman. "Promoting Father Involvement in Early Home Visiting Services for Vulnerable Families: Findings from a Pilot Study of "Dads Matter"." *Child Abuse & Neglect*, vol. 76, 2018, pp. 261–272.
- Halberstadt, A.G., J. Cassidy, C.A. Stifter, R.D. Parke, and N.A. Fox. "Self-Expressiveness Within the Family Context: Psychometric Support for a New Measure." *Psychological Assessment*, vol. 7, no. 1, 1995, pp. 93–103.
- Hanington, L., J. Heron, A. Stein, and P. Ramchandani. "Parental Depression and Child Outcomes—Is Marital Conflict the Missing Link?" *Child: Care, Health and Development*, vol. 38, no. 4, 2012, pp. 520–529.
- Hawkins, A.J. "Are Federally Supported Relationship Education Programs for Lower-Income Individuals and Couples Working? A Review of Evaluation Research." Washington, DC: American Enterprise Institute, 2019.
- Herman-Stahl, M., M.E. Scott, K. Cox, and S. Vaughn. "History and Implementation of the Federally Funded Healthy Marriage and Relationship Education (HMRE)." Bethesda, MD: Marriage Strengthening Research and Dissemination Center, 2021.
- Huston, A.C. "Reforms and Child Development." The Future of Children, vol. 12, no. 1, 2002, pp. 59–77.
- Jacobson, K.C., and L.J. Crockett. "Parental Monitoring and Adolescent Adjustment: An Ecological Perspective." *Journal of Research on Adolescence*, vol. 10, no. 1, 2000, pp. 65–97.
- Jeynes, W.H. "A Meta-Analysis: The Relationship Between Father Involvement and Student Academic Achievement." *Urban Education*, vol. 50, no. 4, 2015, pp. 387–423.
- Jones, J.H., T.A. Call, S.N. Wolford, and L.M. McWey. "Parental Stress and Child Outcomes: The Mediating Role of Family Conflict." *Journal of Child and Family Studies*, vol. 30, 2021, pp. 746–756.
- Karberg, E., and N.J. Cabrera. "Family Change and Co-Parenting in Resident Couples and Children's Behavior Problems." *Journal of Family Studies*, vol. 26, no. 1, 2017, pp. 1–17.
- Kessler R.C., G. Andrews, L.J. Colpe, E. Hiripi, D.K. Mroczek, S.L. Normand, E.E. Walters, and A.M. Zaslavsky. "Short Screening Scales to Monitor Population Prevalences and Trends in Non-Specific Psychological Distress." *Psychological Medicine*, vol. 32, 2002, pp. 959–976.
- King, C., M. Krauss, S. Cheng, N. Mueller, P. Kohl, and P. Fowler. "Final Impact Evaluation Report: The Evaluation of the New Pathways to Responsible Fatherhood Family Formation Program." Washington, DC: Administration for Children and Families, 2020. Available at <a href="https://www.acf.hhs.gov/sites/default/files/documents/ofa/FFSC\_Impact\_Report.pdf">https://www.acf.hhs.gov/sites/default/files/documents/ofa/FFSC\_Impact\_Report.pdf</a>.
- Kingsley, D.E. "Preliminary Evaluation of the Quenching the Father Thirst Program." Technical report. 2007. Available at <a href="https://fathers.com/wp-content/uploads/2019/03/QFT-Evaluation-Report-2007-pdf.pdf">https://fathers.com/wp-content/uploads/2019/03/QFT-Evaluation-Report-2007-pdf.pdf</a>.
- Knox, V., and C. Redcross. "Parenting and Providing: The Impact of Parents' Fair Share on Paternal Involvement." New York: MDRC, 2000.
- Koblinsky, S.A., K.A. Kuvalanka, and S.M. Randolph. "Social Skills and Behavior Problems of Urban, African American Preschoolers: Role of Parenting Practices, Family Conflict, and Maternal Depression." *American Journal of Orthopsychiatry*, vol. 76, no. 4, 2006, pp. 554–563.

- Kotchick, B.A., and R. Forehand. "Putting Parenting in Perspective: A Discussion of the Contextual Factors That Shape Parenting Practices." *Journal of Child and Family Studies*, vol. 11, no. 3, 2002, pp. 255–269.
- Kramer, K.Z., L.L. Myhra, V.S. Zuiker, and J.W. Bauer. "Comparison of Poverty and Income Disparity of Single Mothers and Fathers Across Three Decades: 1990–2010." *Gender Issues*, vol. 33, no. 1, 2016, pp. 22–41.
- Kwon, E., B. Kim, and S. Park. "The Multifaceted Nature of Poverty and Differential Trajectories of Health Among Children." *Journal and Children and Poverty*, vol. 23, no. 2, 2017, pp. 141–160.
- LaFreniere, P.J., and J.E. Dumas. "Social Competence and Behavior Evaluation in Children Ages 3 to 6 Years: The Short Form (SCBE-30)." *Psychological Assessment*, vol. 8, no. 4, 1996, pp. 369–377.
- Lempers, J.D., D. Clark-Lempers, and R.L. Simons. "Economic Hardship, Parenting, and Distress in Adolescence." *Child Development*, vol. 60, no. 1, 1989, pp. 25–39.
- Lindquist, E., J. Hsueh, A.E. Lowenstein, K. Faucetta, D. Gubits, C. Michalopoulos, and V. Knox. "A Family Strengthening Program for Low-Income Families: Final Impacts form the Supporting Healthy Marriage Evaluation." OPRE Report #2014-09A. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2012.
- Lovejoy, M.C., P.A. Graczyk, E. O'Hare, and G. Neuman. "Maternal Depression and Parenting Behavior: A Meta-Analytic Review." *Clinical Psychology Review*, vol. 20, no. 5, 2000, pp. 561–592.
- Loyd, B.H., and R.R. Abidin. "Revision of the Parenting Stress Index." *Journal of Pediatric Psychology*, vol. 10, no. 2, 1985, pp. 169–177.
- Lundquist, E., J. Hsueh, A.E. Lowenstein, K. Faucetta, D. Gubits, C. Michalopoulos, and V. Knox. "A Family Strengthening Program for Low-Income Families: Final Impacts form the Supporting Healthy Marriage Evaluation." OPRE Report #2014-09A. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2014.
- Malmberg, L. E., S. Lewis, A. West, E. Murray, K. Sylva, A. Stein. "The Influence of Mothers' and Fathers' Sensitivity in the First Year of Life on Children's Cognitive Outcomes at 18 and 36 Months." *Child: Care, Health , and Development,* vol. 42, no. 1, 2015, pp. 1–7.
- Marchand-Reilly, J.F., and R.G. Yaure. "The Role of Parents' Relationship Quality in Children's Behavior Problems." *Journal of Child and Family Studies*, vol. 28, no. 8, 2019, pp. 2199–2208.
- McGill, J., F. Adler-Baeder, A.B. Bradford, J. Kerpelman, S.A. Ketring, and D. Sollie. "The Role of Relational Instability on Individual and Partner Outcomes Following Couple Relationship Education Participation." *Family Relations*, vol. 65, no. 3, 2016, pp. 407–423.
- McKelvey, L., L. Whiteside-Mansell, R. Faldowski, J. Shears, C. Ayoub, and A. Hart. "Validity of the Short Form of the Parenting Stress Index for Fathers of Toddlers." *Journal of Family Studies*, vol. 18, 2008, pp. 102–111.
- Mistry, R. S., E.A. Vandewater, A.C. Huston, and V.C. McLoyd. "Economic Well-Being and Children's Social Adjustment: The Role of Family Process in an Ethnically Diverse Low-Income Sample." *Child Development*, vol. 73, no. 3, 2002, pp. 935–951.

- Moore, K. A., A. Kinghorn, A., and T. Bandy. "Parental Relationship Quality and Child Outcomes Across Subgroups." Washington, DC: Child Trends, 2011. Available at <a href="https://www.childtrends.org/wp-content/uploads/2011/04/Child\_Trends-2011\_04\_04\_RB\_MaritalHappiness.pdf">https://www.childtrends.org/wp-content/uploads/2011/04/Child\_Trends-2011\_04\_04\_RB\_MaritalHappiness.pdf</a>.
- Moos, R., and B. Moos. Family Environment Scale Manual and Sampler Set: Development, Applications and Research (4th ed.). Palo Alto, CA: Mind Garden, 2009.
- National Education Goals Panel Early Childhood Assessments Resource Group. "Principles and Recommendations for Early Childhood Assessments." Washington, DC: U.S. Department of Education, 1998. Available at <a href="http://govinfo.library.unt.edu/negp/reports/prinrec.pdf">http://govinfo.library.unt.edu/negp/reports/prinrec.pdf</a>.
- Nepomynaschy, L., A.D. Emory, K.J. Eickmeyer, M.R. Waller, and D.P. Miller. "Parental Debt and Child Well-Being: What Type of Debt Matters for Child Outcomes?" *Russell Sage Foundation Journal of the Social Science*, vol. 7, no. 3, 2021, pp. 122–151.
- Newland, L.A. "Family Well-Being, Parenting, and Child Well-Being: Pathways to Healthy Adjustment." *Clinical Psychologist*, vol. 19, no. 1, 2015, pp. 3–14.
- Newland, R.P., L. Ciciolla, and K.A. Crnic. "Crossover Effects Among Parental Hostility and Parent—Child Relationships During the Preschool Period." *Journal of Child and Family Studies*, vol. 24, no. 7, 2015, pp. 2107–2119.
- Osborne, C., and S. McLanahan. "Partnership Instability and Child Well-Being." *Journal of Marriage and Family*, vol. 69, no. 4, 2007, pp. 1065–1083.
- Osborne, C., J. Austin, M.R. Dion, J. Dyer, J. Fagan, K.E. Harris, and M.E. Scott. "Framing the Future of Responsible Fatherhood Evaluation Research for the Fatherhood Research and Practice Network." Denver, CO: Center for Policy Research, 2014.
- Palkovitz, R. "Parental Attitudes and Fathers' Interactions with Their 5-Month-Old Infants." *Developmental Psychology*, vol. 20, no. 6, 1984, pp. 1054–1060.
- Pearson, J., and L. Davis. "Strong Start, Stable Families: Final Report." Denver, CO: Center for Policy Research, 2009.
- Peltz, J.S., R.D. Rogge, and M.L. Sturge-Apple. "Transactions Within the Family: Coparenting Mediates Associations Between Parents' Relationship Satisfaction and the Parent–Child Relationship." *Journal of Family Psychology*, vol. 32, no. 5, 2018, pp. 553–564.
- Pianta, R.C. "Child-Parent Relationship Scale." Unpublished measure. Charlottesville, VA: University of Virginia, 1992.
- Pinquart, M., and R. Kauser. "Do the Associations of Parenting Styles with Behavior Problems and Academic Achievement Vary by Culture? Results from a Meta-Analysis." *Cultural Diversity and Ethnic Minority Psychology*, vol. 24, no. 1, 2018, pp. 75–100.
- Pollard, E.L., and P.D. Lee. "Child Well-Being: A Systematic Review of the Literature." *Social Indicators Research*, vol. 61, no. 1, 2003, pp. 59–78.
- Radloff, L.S. "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population." *Applied Psychological Measurement*, vol. 1, no. 3, 1977, pp. 385–401.
- Ribar, D.C. "Why Marriage Matters for Child Wellbeing." *The Future of Children*, vol. 25, no. 2, 2015, pp. 11–27.

- Roddy, M.K., G.K. Rhoades, and B.D. Doss. "Effects of ePREP and OurRelationship on Low-Income Couples' Mental Health and Health Behaviors: A Randomized Controlled Trial." *Prevention Science*, vol. 21, no. 6, 2020, pp. 861–871.
- Roopnarine, J.L., and E.E. Yildirim. "Influence of Relationship Skills Education on Pathways of Associations Between Paternal Depressive Symptoms and IPV and Children's Behaviors." *Psychology and Men & Masculinity*, vol. 19, no. 2, 2018, pp. 223–233.
- Sandstrom, H., and S. Huerta. "The Negative Effects of Instability on Child Development: A Research Synthesis." Washington, DC: Urban Institute, 2013.
- Sarfo, B. "The Building Brighter Futures Evaluation Report: Promoting Responsible Parenting and Co-Parental Cooperation Among Non-Custodial Parents with Child Support Orders." Unpublished manuscript. Alexandria, VA: MEF Associates, 2014.
- Sarfo, B. "The DAD Map Evaluation Report: A Randomized Controlled Trial of a Culturally Tailored Parenting and Responsible Fatherhood Program." Philadelphia, PA, and Denver, CO: Fatherhood Research and Practice Network, 2017. Available at <a href="http://frpn.org/asset/frpn-granteereport-the-dad-map-evaluation-randomizedcontrolled-trial-culturally-tailored">http://frpn.org/asset/frpn-granteereport-the-dad-map-evaluation-randomizedcontrolled-trial-culturally-tailored</a>.
- Schoppe, S.J., S.C. Mangelsdorf, and C.A. Frosch. "Coparenting, Family Process, and Family Structure: Implications for Preschoolers' Externalizing Behavior Problems." *Journal of Family Psychology*, vol. 15, no. 3, 2001, pp. 526–545.
- Shafer, K. "Impact Evaluation of Phone Services Added to the R3 Academy in California." Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2020.
- Shelton, K.H., and G.T. Harold. "Interparental Conflict, Negative Parenting, and Children's Adjustment: Bridging Links Between Parents' Depression and Children's Psychological Distress." *Journal of Family Psychology*, vol. 22, no. 5, 2008, pp. 712–724.
- Smith, M. "Parental Mental Health: Disruptions to Parenting and Outcomes for Children." *Child and Family Social Work*, vol. 9, 2004, pp. 3–11.
- Stanley, S.M., R.G. Carlson, G.K. Rhoades, H.J. Markman, L.L. Ritchie, and A.J. Hawkins. "Best Practices in Relationship Education Focused on Intimate Relationships." *Family Relations*, vol. 69, 2020, pp. 497–519.
- Stanley, S.M., and G.K. Rhoades. "Marriages at Risk: Relationship Formation and Opportunities for Relationship Education." In *What Works in Relationship Education: Lessons from Academics and Service Deliverers in the United States and Europe*, edited by H. Benson and S. Callan. Doha, Qatar: Doha International Institute for Family Studies and Development, 2009.
- Sun, Y., and Y. Li. "Effects of Family Structure Type and Stability on Children's Academic Performance Trajectories." *Journal of Marriage and Family*, vol. 73, no. 3, 2011, pp. 541–556.
- Wadsworth, M.E., C.D. Santiago, L. Einhorn, E.M. Etter, S. Rienks, and H. Markman. "Preliminary Efficacy of an Intervention to Reduce Psychosocial Stress and Improving Coping in Low-Income Families." *American Journal of Community Psychology*, vol. 48, 2011, pp. 257–271.
- Waldfogel, J., T. Craigie, and J. Brooks-Gunn. "Fragile Families and Child Wellbeing." *Future of Children*, vol. 20, no. 2, 2010, pp. 87–112.

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- Whicher, D., J. Alamillo, L. Ouellette, and B. Williams. "Engaging Community Members in Evaluations of Healthy Marriage and Responsible Fatherhood programs." OPRE Report 2022-55. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, forthcoming.
- White, H., and S. Sabarwal. "Developing and Selecting Measures of Child Well-Being." Methodological Briefs: Impact Evaluation 11. Florence, Italy: UNICEF Office of Research, 2014.
- Wilson, K.R., and M.R. Prior. "Father Involvement and Child Well-Being." *Journal of Pediatric Child Health*, vol. 47, no. 7, 2011, pp. 405–407.
- Wood, R.G., S. McConnell, Q. Moore, A. Clarkwest, and J. Hsueh. "The Building Strong Families Project: Strengthening Unmarried Parents' Relationships: The Early Impacts of Building Strong Families." Washington, DC: Mathematica Policy Research, 2010.
- Wood, R.G., Q. Moore, A. Clarkwest, A. Killewald, and S. Monahan. "The Long-Term Effects of Building Strong Families: A Relationship Skills Education Program for Unmarried Parents." OPRE Report #2012-28A. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2012.
- Wu, A.Y., Q. Moore, and R.G. Wood. "Healthy Marriage and Relationship Education with Integrated Economic Stability Services: The Impacts of Empowering Families." OPRE Report #2021-224. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2021.
- Young, M.S., K.A. Moore, K. Kopakin, and M. Sicks. "Impact Evaluation of the Jewish Family and Children's Service of the Suncoast, Inc. Healthy Marriage Program in Sarasota, Florida." Washington, DC: Office of Family Assistance, Administration for Children and Families, U.S. Department of Health and Human Services, 2021.
- Zill, N. "Behavior Problems Scales Developed from the 1981 Child Health Supplement to the National Health Interview Survey." Washington, DC: Child Trends, 1985.

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# Appendix A. Technical methods

#### Methods

We reviewed HMRE and RF studies published since 2000, in the U.S. and designed either to measure the effects of these programs (that is, randomized controlled trials or quasi-experimental designs) or to describe how the outcomes of program participants change over time (that is, pre-post studies). To ensure that we had an adequate number of studies to review and summarize, we did not restrict our review to studies of HMRE and RF programs funded through federal grants provided by ACF's Office of Family Assistance. Instead, for HMRE studies, we examined research that examined programs offering relationship education services and serving primarily adult parents. For RF studies, we reviewed research on programs serving fathers and offering parenting, relationship, and employment services.

We drew upon four sources to identify studies for review: 1) two recent reviews, one focused on outcomes in HMRE evaluation studies and the other a meta-analysis of RF programs (Briggs et al. 2020 and Holmes et al. 2018); 2) local impact evaluations from the 2015-2020 cohort of OFA-funded HMRE and RF programs; 3) two literature reviews completed as part of the FRAMING Research project (Alamillo et al., 2020; Wood et al., 2019); and 4) suggestions from two experts consulted as part of this paper.

To inform the recommendations section of this paper we spoke with two experts in measurement for HMRE and RF programs: 1) Phil Cowan, *Professor of Psychology (Emeritus), University of California at Berkeley*, an expert in how the family context influences children's social, emotional, and cognitive development and 2) Lina Guzman, *Vice President for Strategy, Director of the Hispanic Institute, Child Trends*, an expert in culturally appropriate measurement related to family well-being, fatherhood and healthy marriage, and early care and education.

#### Review process

After scanning the source documents and applying the criteria described above we conducted a detailed review of 61 articles and reports (34 HMRE and 27 RF). Other evaluations in the source documents were most often excluded for the following reasons: 1) the evaluation did not include a sample of primarily parents; 2) the evaluation was of a program that operated outside of the United States; or 3) the evaluation was of a program that had a substantially different structure from HMRE or RF programs (for example, programs of incarcerated individuals that served both mothers and fathers, Eddy et al., 2013; Wilson et al., 2010)

Of the 61 articles and reports that met the criteria, there were 55 unique evaluations. Tables A.1 and A.2 include details about the evaluations that included measures of child well-being (12 HMRE and 15 RF evaluations).

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Table A.1 Healthy Marriage and Relationship Education evaluations that included child well-being measures

Evaluation	Evaluation description	Sample size	Follow-up period	Domain of child well- being measured	Participant characteristics <sup>a</sup>
Building Strong Families <sup>b</sup> (Wood et al. 2012)	Building Strong Families (BSF) was an RCT evaluation of eight HMRE programs serving unmarried couples who were expected a bay or had just had one. Outcomes examined include couples' relationships, parenting and father involvement, and child well-being.	5,102 couples	36 months (for child well- being outcomes)	Cognitive skills, economic circumstances, psychological health, physical health, social interactions	BSF served unmarried parents who were expecting or had had a baby in the past three months. Across the eight evaluation sites about half of the couples were Black (52%, both partners) and less than a quarter (20%, both partners) were Hispanic. For just over a third (37%) of couples both partners had completed high school. Average annual earnings for couples in the study were just above \$20,000 and most of the fathers (74%) were employed. The local programs included in the evaluation were located in: Atlanta, GA; Baltimore, MD; Baton Rouge, FL Orange and Broward counties in FL; Houston, TX; Allen, Marion, and Lake counties in IN; Oklahoma City, OK; and San Angelo, TX.
Caring for My Family (Cox et al. 2009)	This QED evaluation examined the Caring for My Family (CFMF) curriculum that focused on challenges experienced by unmarried parents. Outcomes included the attitudes and behaviors of couples.		Not reported	Social interactions	Participants were unmarried new parents, the majority (75%) were mothers. Race varied across the program and comparison groups. Forty-three percent of the program group participants were White and 37% were Black, while the majority (72%) of the control group participants were White and less than a quarter (21%) were Black. Across both groups, almost half of the participants had attended some high school, 30% of the program group completed high school and 18% of the comparison group completed high school. The majority of participants had an income less than \$25,000 a year and about half were unemployed. The evaluation took place in five Midwestern counties.
Community Healthy Marriage Initiative (Bir et al. 2012)	The Community Healthy Marriage Initiative QED evaluation examined the outcomes of a community-wide effort aimed at improving relationship skills and increasing healthy marriage. This evaluation examined changes in family life outcomes.	2,985 sample members including a mix of individual adults and couples	2 years	Psychological health	This evaluation tested community-level interventions. The study participants were a representative sample of adults age 18-49 in each demonstration and matched community. Just over a quarter (29%) of participants were married, and most reported being in a romantic relationship. About half of the respondents were Black (non-Hispanic) and a third (27%) were Hispanic. Almost one third (29%) did not complete high school. Half (47%) reported receiving public assistance; the majority (81%) were employed. The local programs included in the evaluation were located in: Dallas, TX; Fort Worth, TX; St. Louis, MO; Kansas City, MO; Milwaukee, WI; and Cleveland, OH.
Basic Training for Black Marriages, Mastering the Mysteries of Love, Together We Can, and Smart Steps: Embrace the Journey (McGill et. al 2016)	This pre-post evaluation included several HMRE programs, all for couples, with one focused on coparenting. The evaluation included outcomes related to relationship quality and stability, adult depression, and family harmony.	379 Couples	6-8 weeks	Social interactions	The majority of participants were married couples (75%). About half (54%) of the participants were White, 43% were Black. One quarter (25%) of participants had completed high school and another quarter (24%) had completed some college. About half the sample had an annual household income less than \$40,000.
Fatherhood, Relationship, and Marriage Education (FRAME) (Wadsworth, et al. 2011)	This evaluation focused on pre–post intervention changes in economic hardship, stress and coping, problem solving, and adult depression among participants in the FRAME relationship support program for couples.	173 Couples	2 weeks, 6 months, and annually thereafter	Economic circumstances	All participants were either married or cohabiting. About a third (33%) of the participants were White, another third (28%) were Black and almost a quarter (24%) were Hispanic. Participants had completed an average of 13 years of school. About two-thirds of the men (65%) and just over half the women (57%) were employed. About half of the participants had income at or below the federal poverty line. The evaluation took place in the Denver, CO area.

Evaluation	Evaluation description	Sample size	Follow-up period	Domain of child well- being measured	Participant characteristics <sup>a</sup>
Schoolchildren and their Families Project (Cowan et al. 2011)	This was an RCT evaluation of a couples' group preventative intervention. The RCT compared three cohorts of a 1) low-dose group, 2) a group focused on relationship issues and 3) a group focused on parenting issues. The evaluation included outcomes related to marital satisfaction, couple communication, parenting style, and child well-being.	100 Couples	total: when children were in kindergarten, first grade, fourth grade, and ninth grade	Psychological health	All participants were married couples whose oldest child would enter kindergarten in the fall following the intervention. The majority were White. Family income was middle to upper income, well above the median family income for the geographic area (San Francisco Bay Area).
Strong Start- Stable Families (Pearson and Davis 2009)	The Strong Start – Stable Families (SSSF) program aimed to support adolescent pregnant girls and, when possible, their partners to encourage stable relationships and father involvement. The QED evaluation included three groups: 1) a "high-level" treatment group that included relationship, paternity, and child support classes; 2) a "low-level" treatment group that was mailed printed materials about the same topics; and 3) a comparison group which only received standard prenatal care.	727 sample members including a mix of individual adults and couples	3 months after the birth of their baby	Economic circumstances, physical health	Participants were pregnant adolescent girls who were in a relationship with the father of their baby. Almost all (94%) were unmarried, more than half of the participants said their romantic relationship had lasted for more than 2 years. Half to two-thirds (55% to 64% depending on the group) of the participants were Black, about a third were Hispanic. About half had a high school degree or GED. Half lived with their parents. The evaluation took place in Harris County, TX.
Supporting Father Involvement <sup>c</sup> (Cowan et al., 2009); (Cowan et al., 2014); (Cowan et al., 2019); (Kline et al., 2019).	The Supporting Father involvement (SFI) program served coparenting couples who were low income and involved in the child welfare system. The RCT evaluation outcomes included parenting roles and style, parenting stress, discipline, couple relationship quality and stability, and child well-being.	289 Couples	2 months, 18 months	Psychological health	Participants were couples who were parents, most (72%) of whom were married and living together, 22% were cohabiting. Two-thirds were Hispanic, one third were White. More than two-thirds of the participants had incomes below the federal poverty level. About half of the participants completed high school. Most of the fathers (79%) and just over a third (39%) of the mothers had worked in the week prior to the baseline assessment. The evaluation took place in four rural California counties: San Luis Obispo, Santa Cruz, Tulare, and Yuba.
Supporting Healthy Marriages Initiative (SHM) (Lundquist et al., 2014)	This RCT evaluation was a 30-month follow up of the SHM evaluation. SHM was a skills-based relationship education program for people with low and moderate incomes aimed at strengthening couple relationships and providing more stable environments for parents and children. Outcomes included relationship stability and quality, psychological distress, coparenting and parenting, and child well-being.	6,298 Couples	30 months	Cognitive skills, psychological health	Participants were primarily married parents of a child under age 18 (or expecting a child). Forty-three percent of the couples were Hispanic. For about half of the couples both spouses had at least a high school diploma. Among most couples, at least one spouse was employed (81%). Family income was below the poverty line for 43% of the couples. The local programs included in the evaluation were located in Bronx, NY, Oklahoma City, OK; Orlando, FL; two towns in PA (Bethlehem and Reading); Seattle, WA; a suburb of Seattle, WA; two Texas towns (El Paso and San Antonio); and Wichita, KS.
Together We Can (Adler-Baeder et al. 2018)	This QED evaluation focused on the outcomes of a relationship education program offered to mothers whose children were participating in a Head Start program. Outcomes included mothers' coparenting, parenting, and children's social competence.		4 months, 12 months	Psychological health	Participants were mothers whose children were participating in a local Head Start program. Most were in a romantic relationship; 21% were married. The mothers were primarily Black (94%). About half had completed high school. Most reported less than \$14,000 in annual income. The evaluation took place in a Southeastern state.

			Follow-up	Domain of child well-	
Evaluation	Evaluation description	Sample size	period	being measured	Participant characteristics <sup>a</sup>
Together We Can	This QED evaluation focused on the outcomes	80	4 months, 12	Psychological health	Participants were female caregivers, primarily mothers (91%) whose children
(Kirkland, C., Adler-	of a relationship education program for female	Individuals	months		were participating in a local Head Start program. The majority of participants
Baeder, F. and Bradford,	caregivers whose children were participating				were in romantic relationships; just over a third (37%) were married. The
A. 2011).	in a Head Start program. Outcomes included				majority (94%) were Black and just over half (55%) had some post-secondary
,	coparenting quality and preschool children's				education. About half (49%) reported less than \$14,000 in annual income.
	well-being.				The evaluation took place in a Southeastern state.
Healthy Families/Healthy	This RCT evaluation examined the Healthy	697 sample	13 weeks, 26	Social interactions	The evaluation report provides a breakdown of demographics by analytic
Children	Families/Healthy Children program designed	members	weeks		sample for each outcome. For the one child well-being outcome included in
Delivered by The Jewish	to improve relationship skills, parenting skills,	including a			the study, the majority of the participants were female (over 90%) and less
Family and Children's	and economic stability among individuals with	mix of			than half were married or in a romantic relationship. Most participants were
Service of the Suncoast	low incomes. Outcomes included family	individual			White (80%). About a third had completed no more than high school and just
(Young et al. 2021)	conflict, parenting, child well-being, and	adults and			over 40% had completed some college or more. Two-thirds of participants
	economic stability.	couples			made less than \$25,000 a year and about half were employed full time. The
					evaluation took place in Sarasota, FL.

<sup>&</sup>lt;sup>a</sup> The descriptions of participant characteristics use the terminology and categories chosen by the evaluation authors.

<sup>&</sup>lt;sup>b</sup> The Building Strong Families evaluation had multiple articles associated with the evaluation. This table includes the primary evaluation citation.

<sup>&</sup>lt;sup>c</sup> We reviewed four articles that reported on the Support Father Involvement evaluation. Demographic characteristics and sample sizes varied slightly across these studies. We present the characteristics reported in Cowan et al., 2009.

Table A.2 Responsible Fatherhood evaluations that included child well-being measures

Evaluation	Evaluation description	Sample size	Follow- up period	Domain of child well-being measured	Participant characteristics <sup>a</sup>
Building Assets for Fathers and Families (BAFF) (Davis et al. 2014).	This was a pre-post evaluation of BAFF. BAFF was a statewide program aimed at increasing the economic stability of families with low incomes.	1,334 Individuals	3, 6, and 24 months	Economic circumstances	Participants were non-custodial parents, primarily fathers (98%), most of whom had never been married (94%). Almost all participants were Black (94%). Two-thirds (60%) had completed high school and most (90%) were unemployed. The evaluation took place in Shelby County, Tennessee.
Building Brighter Futures (Sarfo 2014)	This evaluation examined the impact of the Love Notes healthy relationship curriculum with non-custodial parents who had child support orders. Outcomes included parental engagement, co-parenting, healthy relationship skills, and child support contributions.	8 individuals	60 days	Economic circumstances	Participants were non-custodial parents (all but one were men) with an active child support case. Most were single. Most of the participants were Hispanic, three were Black, and one was American Indian/Alaskan Native. Most had completed high school and were employed full- or part-time. The evaluation took place in Los Angeles, CA.
Child Support Noncustodial Parent Employment Demonstration (CSPED) (Cancian et. al. 2019)	The RCT evaluation of CSPED examined employment programs for noncustodial parents who were behind on child support payments and under/unemployed.  Outcomes included service receipt, child support payments and arrears, employment, parenting, parental well-being, and earnings.	10,173 Individuals	11-27 months	Economic circumstances	Participants were non-custodial parents, mostly fathers (90%). A quarter of participants were divorced, 14% were married. About half (52%) had never been married. Forty percent of participants were Black, a third were White, and slightly less than a quarter (22%) were Hispanic. Less than half (43%) had completed high school and just over a quarter had some college or an associates or vocational degree. About half of the participants reported that they had worked for pay in the 30 days before random assignment. On average, participants who did work had monthly earnings below the federal poverty threshold. The evaluation took place in eight states: California, Colorado, Iowa, Ohio, South Carolina, Tennessee, Texas, and Wisconsin.
Developing all Dads for Manhood (DAD MAP) (Sarfo 2017)	This RCT evaluation examined the efficacy of the "Developing all Dads for Manhood and Parenting" (DAD MAP) parental education curriculum on fatherhood and child well-being outcomes.	164 Individuals	3 and 6 months	Economic circumstances, psychological health	Participants were fathers, most of whom were non-residential (61%). Eighteen percent of the fathers lived with the mother of the focal child. Most of the participants were Black (96%). About a quarter (24%) had attended some college, 39% had completed high school or gotten a GED. A quarter were employed and slightly less than half (44%) reported receiving any month income. The evaluation took place in Baltimore, MD.
Fathers Advancing Community Together (FACT) Program (Cramer et al. 2020)	This was a QED evaluation of the FACT program that served individuals who were low- to moderate-income and who were custodial or noncustodial parents of children. The program aimed to enhance financial mobility. Outcomes included child support payments, employment, and public assistance receipt.	1,236 Individuals	6 months	Economic circumstances	Participants were custodial and non-custodial parents with a child support order. The majority of participants were fathers (62%). Two-thirds (66%) were Black and 17 percent were Hispanic. Less than half of the participants (46%) were employed at any point in the prior six months. Approximately 10% reported receiving public assistance at any point in the prior six months. The evaluation took place in Contra Costa County in California.
Fathers and Sons Program <sup>b</sup> (Caldwell et al. 2014)	This was a QED of the Fathers and Sons Program. The program was designed to enhance parenting skills among non-resident fathers with the goal of avoiding violence and reducing aggression among preadolescent boys. Outcomes included parenting skills, sons intentions about violence, parent-child communication, and child behaviors.	287 fathers and son pairs	2 months	Psychological health, social interaction	Participants were father and son pairs. The sons were all 8 to 12 years old at study enrollment. All of the study participants were Black. About three-quarters of the fathers lived with their son for some portion of their son's lives. Just over a quarter of fathers were married (26% in the intervention group and 36% in the comparison group). Most fathers had a high school education or higher (78%) and half were employed. Just over half of fathers said they "did not have enough money to get by." The evaluation took place in two Midwestern cities.

Evaluation	Evaluation description	Sample size	Follow- up period	Domain of child well-being measured	Participant characteristics <sup>a</sup>
Parent Fair Share (Knox et al. 2000)	The Parent Fair Share program (PFS) was designed to increase the involvement of noncustodial fathers with their children. Outcomes included child support payment, contact with children, and coparenting.	5,600 Individuals	12 months	Economic circumstances	Participants were noncustodial fathers. Two-thirds were Black, approximately a quarter (23%) were Hispanic. Sixty percent of participants had never been married. About half (53%) had completed high school and the average annual income was below \$10,000 a year. Twenty percent of the fathers had worked full time in the prior year; 23% had not worked at all. The evaluation took place in seven sites: Los Angeles, CA; Jacksonville, FL; Springfield, MA; Grand Rapids, MI; Trenton, NJ; Dayton, OH; and Memphis, TN.
Multi-Site Family Study on Incarceration, Parenting, and Partnering (Lindquist et al. 2016)	This was a QED national evaluation of 12 programs that were designed to support healthy relationships between incarcerated fathers, their partners, and children. Outcomes included relationship status and quality, parenting, and coparenting (including parent-child relationships), employment, drug use, and recidivism.	3,473 Individuals	months	Social interactions	This evaluation took place across four states: Indiana, Ohio, New York, and New Jersey. The participant populations differed by site but the evaluation focused primarily on fathers, with most programs also trying to recruit their partners for participation. The total sample included both men and women. Demographics vary by study site (see Table 4-1 and 4-2 in Lindquist et al. 2016). Most of the participants were in nonmarried romantic relationships with their survey partner, though in New York, 60% of the intervention group was married. Race and ethnicity varied by site. For example, almost half of the participants in Indiana were White, while the majority (72%) of participants in New Jersey were Black. Education also varied: between 13% and 39% of participants across sites had completed some college or an advanced degree; between a quarter and a half of participants across sites had a GED or high school diploma.
New Pathways to Responsible Fatherhood Family Formation (NPFF) Program (King et al. 2020)	This RCT evaluation examined effects of the NPFF program for fathers with low-income. Outcomes included father involvement, healthy relationships, parenting skills, and child well-being.	692 Individuals	12 months	Psychological health	Demographics are reported separately for each outcome measure, though they are similar across outcomes. Fathers who were eligible to complete the child well-being measure included fathers who lived with or saw the child in the past six months and whose child was at least 1.5 years old. Less than half of the 454 fathers who were eligible completed the child well-being survey at the 12-month follow-up. Among the 190 fathers who did complete the child well-being survey, most had never been married and about a third (31%) lived with their children. Three-quarters of the fathers had at least a high school diploma and about half were employed. The evaluation took place in St. Louis, Missouri.
Parents and Children Together- Responsible Fatherhood (Avellar et al., 2018)	This RCT evaluation included four responsible fatherhood grantees. The evaluation examined the impacts of fathers' parenting, relationships, economic stability, and father well-being a year after being enrolled in the program.	5,522 Individuals	12 months	Economic circumstances	Study participants were all fathers, 37% of whom lived with the focal child. Most participants (77%) were Black. Almost 70 percent had completed high school or had a GED. Most (71%) had worked for pay in the last six months. Average earnings were less than \$400 a month at the time of study enrollment. The evaluation took place in Kansas, Missouri, and Minnesota.
Parents to Work (Pearson et al. 2011)	This RCT evaluation examined the Parents to Work program which promoted employment stability among under and unemployed non-custodial parents who have child support obligations. Outcomes included employment and earnings, child support payment and public assistance receipt.	950 Individuals	12 Months	Economic circumstances	Participants were non-custodial parents with an open child support case. Most (68% in the intervention group) had never been married and about a quarter were divorced. About half of participants (46%) were Black, 31% were White, and 15% were Hispanic. Most had completed high school or gotten a GED. Most participants (82%) were unemployed. The evaluation took place in Arapahoe County, Colorado.

Evaluation	Evaluation description	Sample size	Follow- up period	Domain of child well-being measured	Participant characteristics <sup>a</sup>
Non-Custodial Parent Choices PEER Pilot (NCP Choices-PEER) (Schroeder et al. 2011)	The NCP Choices-PEER evaluation was an RCT that examined whether adding a parenting, relationship skills, and financial literacy curriculum to a workforce development program increased the ability of low-income non-custodial parents to economically support their children. Outcomes included workforce participation, child support payment, and employment and earnings.	330 Individuals	Monthly	Economic circumstances	Participants were non-custodial fathers, two-thirds of whom were Hispanic and about a quarter of whom were Black. A quarter were employed at the time of study enrollment. Average quarterly earnings of participants across the four years prior to entering the program was less than \$3,000. The evaluation took place in three Texas counties/cities: Hidalgo, El Paso, and Beaumont/Port Arthur.
Strengthening Families Through Stronger Fathers Initiative (Lippold et al. 2011)	This was a QED evaluation of the Strengthening Families through Stronger Fathers Initiative. The Initiative offered employment and other support services to parents owed child support. The New York Office of Temporary and Disability Assistance contracted with organizations in four New York cities to implement the Initiative. Evaluation outcomes included earnings, employment, and child support payments.	3,668 Individuals	Monthly	Economic circumstances	Participants were non-custodial parents, primarily fathers (93%), most of whom had never been married (69%). Just over half of the participants were Black (58%) and 23% were Hispanic. Most (79%) had completed high school. A small percentage (11%) were employed; about a third (30%) reported having a job within the three months prior to joining the study. Average annual household income was just over \$10,000. The evaluation took place in four New York cities: Buffalo, Jamestown, Syracuse, and New York City.
Tennessee Parenting Project (Davis et al. 2010)	The Tennessee Parenting Project was a QED evaluation that examined whether providing parents who had child support payments with support to solve visitation challenges improved parent-child contact and payment of child support to the custodial parent.	2,174 Individuals	25 months	Economic circumstances	Participants were parents, about half of whom were non-custodial. The program operated in three sites and in two of the sites both parents typically attended, while in the third site, the majority of attendees were fathers. Across both non-custodial and custodial parents who were served by the program, most parents were single and most were Black. The non-custodial parents in the study had a higher education level (with 61% on average completed high school) than the custodial parents in the study did (44% completed high school). The majority of non-custodial parents (58%-70% depending on site) were employed full time; about half of the custodial parents were employed full time. Almost all parents (98%) had incomes less than \$40,000 per year. The evaluation took place in three sites in Tennessee: Nashville, Chattanooga, and a third site that included three smaller cities.
TRUE Dads (Cowan et al. 2020)	The TRUE Dads evaluation was an RCT. TRUE Dads focused on fathers role in the family and building and maintaining positive engagement with their children and partners. The evaluation examined effects on adult depression, co-parenting, parenting quality, fathers' employment, and child well-being.	1,042 Fathers and their co-parents	12 months	health	Participants were fathers with a young child (0 – 12 years old) and a co-parent. This co-parent had to be participating in raising the child and could be a spouse, a current or former romantic partner, a family member, or a friend. For those in study who reported on the child well-being measures, slightly less than half (44%) were Black, 28% were White, and 8% were Hispanic. About a third (35%) were married; most (85%) were living together either married or unmarried. About 60% of fathers were employed and a similar percentage had completed high school or beyond. Average annual incomes were less than \$12,000. The evaluation took place in Oklahoma City, OK.

<sup>&</sup>lt;sup>a</sup> The descriptions of participant characteristics use the terminology and categories chosen by the evaluation authors.

<sup>&</sup>lt;sup>b</sup> The Fathers and Sons program evaluation had multiple articles associated with the evaluation. This table includes the primary evaluation citation.

# Appendix B. Supplemental table on parent-focused measures related to child well-being

Table B.1 Illustrative examples of parent-focused measures related to child well-being

Example Measures	Measure Description	Mode of Data Collection	Program type	Evaluation
Co-Parenting				
Co-parenting Conflict Scale (Ahrons and Wallisch 1987)	4 items assessing the frequency of agreements and arguments in the co-parenting relationship and an overall rating of the co-parenting relationship quality.	Survey	Healthy Marriage	Untitled Couple and Relationship Education <sup>a</sup> Adler-Baeder et al. 2013
Co-parenting Relationship Scale (Dyer et al. 2017)	11 items to assess fathers' co-parenting relationship with the mother of their child(ren).	Survey	Responsible Fatherhood	New Pathways to Responsible Fatherhood King et al. 2020
Couple Communication Questionnaire (Cowan and Cowan 1990)	3 items that ask about typical child-focused disagreements to assess the amount of parenting conflict the couple experienced, including ideas about raising children, children's schooling, and discipline.	Survey	Healthy Marriage	Supporting Father Involvement Cowan et al. 2009 Cowan et al. 2014 Cowan et al. 2019 Pruett et al. 2019
Parental Alliance Inventory (Abiding and Brunner 1995)	30 items (there is also a short form that is 10 items long), with two subscales (co-parenting and own parenting) that assesses the perceived relationship alliance between the biological parents, both prior to and after the birth of a child.	Survey	Responsible Fatherhood	Building Strong Families Evaluation that used the 10-item version see Wood et al. 2012 Dads Matter <sup>b</sup> Evaluation that used the 30 item version see Guterman et al. 2018
Parenting				
Alabama Parenting Questionnaire (Frick 1991)	32 items measuring ideas about parenting practices related to maladaptive child behaviors that is divided into five domains: Positive parenting, poor monitoring, inconsistent discipline, involvement, and corporal punishment.	Survey	Healthy Marriage	Supporting Father Involvement Cowan et al. 2009 Cowan et al. 2014 Cowan et al. 2019 Pruett et al. 2019
Father Engagement Scale (Fatherhood Research and Practice Network; Dyer et al.)	9-11 items asking fathers to indicate the frequency of engaging in various activities with their child. Questions varied slightly depending on the age of the child.	Survey	Responsible Fatherhood	R3 Academy, Healthy Relationships California <sup>c</sup> Shafer, 2020
Parent-child Communication Scale (Barnes and Olson 1985)	8 items asking about the quality of communication between parents and children. The items ask about perceived ease of communication between fathers and sons.	Survey	Responsible Fatherhood	Fathers and Sons Program Caldwell et al., 2014

Example Measures	Measure Description	Mode of Data Collection	Program type	Evaluation
The Pie (parenting roles (Cowan and Cowan 1990)	The Pie is an activity where participants graphically represent their psychological investment in various aspects of their lives by dividing a circle to represent the salience or importance of that role to their identity. This can help determine how much their role of parent defines their own self-image.	Direct assessment	Healthy Marriage	Supporting Father Involvement Cowan et al. 2009 Cowan et al. 2014 Cowan et al. 2019 Pruett et al. 2019
Positive Discipline Scale (Adler-Baeder et al. 2013)	3 items from the Parenting Scale were used to create the Positive Discipline Scale where parents reported the frequency with which they praised or explained consequences to their child.	Survey	Healthy Marriage	Untitled Couple and Relationship Education <sup>a</sup> Adler-Baeder et al. 2013
Parental Psychological Well-b	peing			
Center for Epidemiological Studies-Depression Scale (Radloff 1977)	20 items (there is also a short form that is 12 items long) asking about the extent to which participants experienced symptoms of depression in the past week.	Survey	Healthy Marriage	Building Strong Families Evaluation that used the 12-item version see Wood et al. 2012 FRAME Evaluation that used the 20-item version see Wadsworth et al. 2011
Difficulties in Emotion Regulation Scale (Gratz and Roemer 2004)	36 items that measures a parent's emotional awareness, acceptance, goal-directed behavior, and emotion regulation strategies. Participants respond to the frequency with which each item applies, and higher scores indicate greater difficulty regulating their emotions.	Survey	Healthy Marriage	Within Our Reach <sup>d</sup> Carlson et al. 2020
K6 Mental Health Screening Tool (Kessler et al., 2003)	6 items used to measure the frequency with which participants experienced psychological distress symptoms. The tool was modified for use in this evaluation to a 4-point response scale from the original 5-point scale.	Survey	Healthy Marriage	Supporting Healthy Marriage (Lundquist et al. 2014)
Parenting Stress Index (Abidin 1997)	38 items asking about parents' levels of stress associated with parenting their child, if they perceive their child as difficult to manage, and if their child is different than they expected them to be.	Survey	Healthy Marriage and Responsible Fatherhood	Community Healthy Marriage Initiative Bir et al. 2012 Supporting Father Involvement Cowan et al. 2009 Cowan et al. 2014 Cowan et al. 2019 Pruett et al. 2019 TRUE Dads Cowan et al. 2020 Dads Matterb Guterman et al. 2018

Note. Please see tables A1 and A2 for a description of the population included in each evaluation. Three evaluations in this table are not included in tables A1 or A2. For those evaluations, a description of the population characteristics is included below.

- <sup>a</sup> The Couple and Relationship Education pre-post evaluation (Adler-Baeder et al. 2013) included 299 couples and 324 individual adults who were participating in an HMRE program. The majority (77%) were women. Two-thirds of the participants were married, and just over half (54%) were Black. One-third (29%) of participants had completed high school. Half had an income less than \$25,000 a year.
- b The Dads Matter QED evaluation (Guterman et al. 2018) included 24 families who were predominately Black (approximately 80%). About 80 percent of the couples were married or cohabiting. One-third of the fathers in the intervention group, and half of the fathers in the comparison group, were employed. All participants indicated they were receiving public assistance.
- <sup>c</sup> The *R3 Academy* evaluation (Shafer 2020) used an RCT to examine the effects of adding a phone service to the "R3 Academy" program of parenting, coparenting, and economic supports for fathers. The evaluation also included pre-post outcomes for all fathers. Most fathers who participated were married. About half of the fathers were Hispanic and about half were non-Hispanic White men. Most fathers (80%) were Spanish-speaking. Just less than a third (32%) had completed high school. Three-quarters of the fathers made less than \$3,000 a month.
- d The Within our Reach RCT evaluation (Carlson et al. 2020) included a mix of married and unmarried couples. Couples enrolled in the study together and planned to attend program sessions together. Assessments were completed by both partners in the couple and demographics were reported at the individual level. Two-thirds of the individuals were Hispanic and about half were White. Just less than half had a bachelor's degree or higher. The majority (70%) of participants were employed. More than 80% of the participants had monthly incomes below \$3000.

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