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Searching for who benefits most and least: An analysis of moderators of the TRUE Dads fatherhood intervention

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Abstract

Evaluations of interventions to promote fathers' involvement in family life typically focus on whether or not the intervention has a positive impact. Some evaluations also attempt to describe mediators that explain how the intervention is linked to specific outcomes. An evaluation of TRUE Dads, a Randomized Clinical Trial of a couples-based fatherhood intervention for low-income families, reported results that addressed these two issues. Reporting new analyses, the present study addresses a question asked in only a very few fatherhood intervention studies: Are there moderator variables that define characteristics of participants who benefit most or least from the intervention? A total of 46 potential moderators of 2 significant intervention outcomes – reductions in personal distress and in negative evaluations of the parents' relationship with each other – were selected from a 5-domain risk/protective model of family functioning (Cowan & Cowan, 2018. *Journal of Family Theory & Review*, **92**, 111) and from a set of demographic variables associated with these outcomes. An additional 24 potential moderators were tested on 4 outcomes that did not have direct intervention effects. Only 6 of the 70 moderator tests were statistically significant. The intervention provided greater reductions in parents' personal distress when fathers had more economic resources, co-parents had higher levels of education, and the parents were living in the same household on entering the study. There were greater reductions in negative aspects of their couple or co-parenting relationship when the parents at enrollment described more difficulties in the parent–child relationship, fathers were

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more involved in the children's daily care and were living in the household with their child. No other moderators were found. The results support the conclusion that TRUE Dads was equally effective for a relatively wide range of participants. This search for potential moderators of TRUE Dads outcomes is presented as an example of a needed direction in the evaluation of fatherhood interventions.

KEYWORDS

couple relationships, fatherhood interventions, who benefits

INTRODUCTION

Beginning in the 1980s, hundreds of research studies have established that fathers' involvement in parenting is consistently correlated with their children's developmental outcomes (Lamb, 2000; Parke, 1995; Tamis-LeMonda & Cabrera, 2013). The research data were used by those concerned with the growing number of absent fathers in the United States (Popenoe, 1993) to argue for the creation of interventions in which groups of men, led by male leaders, followed a curriculum that dealt with fathers' concerns and attempted to reduce barriers to men taking a more active role in the family. These interventions were almost always targeted at low-income fathers long separated from their children and were rarely evaluated systematically. In the few studies that did conduct evaluations of the program (Avellar et al., 2011), the results were generally disappointing (Knox et al., 2011). More recent evaluations of fatherhood interventions, mostly focusing on low-income families, have found positive outcomes for men who participate (Avellar et al., 2021; Holmes et al., 2020; Pearson & Fagan, 2021).

Stimulated by studies beginning in the 1990s that document consistent correlations between unresolved conflict between co-parenting partners, harsh or permissive parenting, and children's problem behaviors (Harold et al., 2016), a few fatherhood programs attempted to include both parents in their intervention offerings. Meta-analyses by Lundahl and colleagues, mostly in the United States (Lundahl et al., 2008), and by van Ijzendoorn and colleagues (2008), mostly in Europe, have shown that adding fathers to traditionally mother-centered parenting interventions results in additional positive outcomes for the family. Conversely, including mothers in fatherhood programs also acts synergistically. However, despite the evidence from mother-only or father-only parenting interventions, fatherhood programs that include both parenting partners are more effective (Panter-Brick et al., 2015), relatively few program providers have included both parents in family-strengthening interventions (for some exceptions, see Besnard et al., 2009; Feinberg, 2002; McHale et al., 2015; Pruett et al., 2019).

Program evaluations of fatherhood enhancement interventions typically ask one, or at most two, of three basic questions about the impact of the intervention experience on individual and family relationship functioning:

1. Is the intervention effective? The gold standard research design for answering this question is a Randomized Clinical Trial (RCT) in which recruits are assigned randomly to an intervention (e.g., a fathers' group) or a no-intervention condition. In an era of scarce resources, with decisions to be made about where to allocate these resources, the question of whether the intervention "works" is almost always a focus of evaluation research.
2. What are the mediating mechanisms or processes that explain intervention-induced changes in the participants? For example, does improvement in the quality of the

relationship between a father and his co-parent function as a pathway to the increased quantity and quality of father involvement? This information is essential to service providers who want to design more specific recruitment strategies, strengthen existing programs, create new programs more likely to produce positive change in various outcomes or add to the empirical and theoretical literature concerning what makes for optimal family functioning.

3. What are the moderators of change? The question posed here is whether it is possible to identify psychological, demographic, or other factors that are associated with stronger or weaker intervention effects? We found only three studies of parenting intervention programs that attempted to identify these factors. Leijten et al. (2018) gathered data from 4 parenting intervention programs in the Netherlands, 3 of them including only mothers and the fourth not specifying the gender of the parents. They found no differential effects of the interventions by families' educational or ethnic background or by children's level of ADHD symptoms. However, children with more severe conduct or emotional problems benefited more from their parents' (mother's) participation. The authors pointed to the "need for studying more precise moderators in prevention research other than relatively static family characteristics alone" (p. 579). In an evaluation of the TYRO program with 252 fathers in 17 sites in the U.S. Midwest (Kim & Jang, 2018), the authors predicted that the intervention would be more effective for residential than for non-residential fathers, and for fathers who perceived low levels of challenges in parenting their child; neither hypothesis was supported. The only statistically significant moderator was that fathers who attended the group sessions more often showed greater increases in the quality of their co-parenting relationship with their child's mother, parenting efficacy, and perceptions of the importance of the father's role. An evaluation of Family Expectations, a group-based intervention for low-income couples in transition to parenthood conducted in the same setting as TRUE Dads (Barton et al., 2023) found few moderation effects as a function of marital status. Those they did find suggested stronger effects for married participants compared to unmarried participants.

The current study

In this paper we describe an exploratory investigation of potential moderators of the intervention effects of the TRUE Dads fatherhood program, which recruited 1042 primarily low-income co-parenting teams (Cowan et al., 2022), 621 of whom (60%) were randomly chosen to participate in a 6-session group of from 7 to 20 couples. Both co-parents filled out questionnaires describing themselves, their relationship, their parenting and their children's behavior at baseline and 1-year follow-up. TRUE Dads, one of 40 Responsible Fatherhood interventions funded in 2015 by the U.S. Healthy Marriage and Responsible Fatherhood program of the Administration for Children and Families (Avellar et al., 2021), was designed to strengthen three of men's key roles in the family: (1) as fathers, building and maintaining positive engagement with their child; (2) as partners, maintaining a positive, collaborative relationship with their co-parent; and (3) as providers, through fostering employment and economic outcomes.

An earlier published evaluation of the TRUE Dads intervention (Cowan et al., 2022) provided answers to Question 1 about whether the intervention works: on average, compared to the no-treatment control families, there were direct effects of TRUE Dads on reducing partners' personal distress (depression, anxiety, and anger) and ameliorating negative relationships between the co-parents. It also answered Question 2 by revealing a chain of mediating variables to explain how the intervention produced indirect effects on parent-child relationship quality, children's behavior problems, and fathers' economic resources. It did not examine potential moderators of the intervention effects. Here, we take advantage of this large sample to report the results of new analyses focused on whether characteristics of the co-parents as they

entered the study could be used to identify which couples benefitted most and least from their participation in TRUE Dads.

Guided by a family systems risk/protection model of five key domains affecting individual family members and their relationships (Cowan & Cowan, 2018), we selected three types of baseline measures to test for their potential function as moderators: (a) Baseline latent variables measuring constructs specified by the model: life stress events; personal distress; co-parent relationship quality; three generational patterns, parent–child relationship quality; children's behavior problems; and fathers' economic resources; (b) specific manifest variable measures that the intervention was designed to affect – depressive symptoms and fathers' involvement; and (c) a selection of demographic variables known to affect family functioning in other studies (e.g., whether the youngest child was the biological offspring of the father; youngest child's age; whether or not father lived with child; whether the co-parents lived with each other or were intimate partners or relatives, friends, etc., both parents' age, marital status, highest degrees obtained).

Although it is important to identify the characteristics of those who benefit most, and also the characteristics of potential participants for whom the program may be ineffective, *not* finding moderators is an equally important outcome. If, for example, fathers who are relatively uninvolved with their children show fewer positive effects of participation in a fatherhood intervention (father involvement as a moderator), in future versions of the program the providers might want to place greater emphasis on the benefits of father involvement during the early group sessions. On the other hand, if the level of involvement of fathers as they begin the intervention is not related to the outcome, the program provider is justified in seeking a broader range of recruits and maintaining the program as it is.

METHOD

Participants

Participants were recruited through radio advertising, outreach by intake workers, and referrals from program participants. Given the risks for families in Oklahoma City's local low-income communities, primary outreach locations included the Women Infants and Children program, health and mental health clinics, public libraries, schools, parole and probation offices, and local family events. TRUE Dads staff targeted recruitment efforts toward low-income fathers, particularly men of color, who: (a) had a child between birth and 12 years, with emphasis on ages 0–5, to offer intervention early in the family's development; (b) were able to involve a co-parent in the study; (c) were age 18 or older; and (d) resided in or were associated with northeast Oklahoma City, a low-income predominantly African American community. Research approval was granted by our local IRB at the University of California, Berkeley.

Recruitment was successfully targeted to low-income families (in 2016–2018 fathers' mean annual income was just over \$10,000 and co-parents' median income was just under \$8,000), with co-parents raising at least one child together who was under 12 years old. 1042 co-parenting pairs filled out baseline surveys. Random assignment at a 60:40 ratio placed 621 co-parenting teams in the TRUE Dads intervention condition and 421 in the no-treatment control condition.

Mean age of the fathers was 31.76, their co-parents' was 30.86, and their youngest child averaged 2.57 years. 32% of the parents were married, 46% were cohabiting, and 7% were divorced but still raising the child together. 23% of the co-parenting teams were not intimate partners, e.g., the fathers were co-parenting with their parent, a family member, or a friend.

Participants were ethnically diverse: non-Hispanic Black (42%), non-Hispanic White (28%), Native American (14%), Hispanic (10%), Asian American or Pacific Islanders (6%). At entrance to the study, 39% of the fathers were unemployed.

Procedure

After an intake session with both parenting partners in which the study was described and consent obtained, participants separately filled out the baseline survey on individual iPads. Their code numbers were fed into a computer program that randomly assigned them to participate in TRUE Dads or a control group; they were not informed of this outcome until the next day so that neither the staff nor the participants had this knowledge when they filled out the baseline measures. The TRUE Dads core curriculum consisted of 6 core 3-h. weekly workshop sessions, plus 6 additional optional sessions led by teams of trained male–female educators. Curriculum content was adapted from a couple relationship program (PREP for Individuals Inc, 2011) and a fatherhood involvement program (Cowan et al., 2009), both of which have been validated by extensive empirical evidence.

The choice of topics for each of the six group meetings was influenced by our family systems model, with units focused on dealing with depression, communication and solving problems when partners disagree, engaging in age-appropriate parenting strategies, interrupting negative intergenerational patterns, dealing with work or unemployment stress, and eliciting support from other people and community agencies. Using short lectures, videos, role-plays, questionnaires, workbooks, and games in whole-group and small-group arrangements, the educators engaged the co-parenting teams in active experiences designed to bring the issues alive and to encourage self-reflection and non-confrontational problem-solving.

The number of co-parenting teams in each session ranged from 7 to 20. Each co-parenting team was also offered Case Management in between the group workshop sessions with a family support coach. 75.5% of the co-parenting couples had only one visit with their coach and 3.5% had more than three visits.

49% of the co-parenting teams attended all 6 core sessions, and 78% attended at least half. 19% of those who agreed to random assignment to intervention or no-intervention did not attend any of the 6 core or 6 additional voluntary intensive sessions, but they were included in the intention-to-treat analysis if one or both partners filled out the 1-year follow-up survey.

Fathers enrolled in TRUE Dads were also offered an opportunity to participate in the WorkReady program (<https://www.workreadyoklahoma.com>), an employment track presented on 10 consecutive weekdays for a total of up to 60h. In group and individual meetings, employment specialists assisted fathers in improving their work readiness skills, preparing resumes, and getting ready for job interviews. 34% of the fathers took advantage of this offer.

Finally, fathers and co-parents in the intervention and control groups each received \$30 for responding to the baseline surveys and \$50 for the 1-year follow-up survey.

Measurement

All 1042 participating co-parent couples completed the baseline surveys. In 219 parenting pairs (21%), only one of the partners completed the 1-year follow-up survey. There were 693 teams with *both partners* completing the follow-up, and 891 teams with *one partner* completing the follow-up. To include only co-parenting teams in which both completed the follow-up would mean reducing statistical power and discarding data from 184 teams. Given moderate to high correlations between partner responses ($mdn=0.354$; range from 0.111 to 0.536), our data

TABLE 1 Baseline and 1-year follow-up latent and single variable measures: Psychometrics.

	Baseline							One-year follow-up						
	#items	Mean	SD	Min	Max	Range	Composite reliability/alpha	Mean	SD	Min	Max	Range	Composite reliability/alpha	
<i>Latent variable measures</i>														
Life stress events	12	0.0	1.0	-1.93	3.70	5.63	0.62	0	1.0	-1.73	4.34	6.07	0.71	
Personal distress	23	0.0	1.0	-1.67	3.53	5.21	0.88	0	1.0	-1.59	3.69	5.28	0.88	
Relationship between parents	26	0.0	1.0	-1.77	3.05	4.82	0.88	0	1.0	-1.58	3.43	5.01	0.88	
Parent-child relationship	25	0.0	1.0	-1.87	4.79	6.66	0.88	0	1.0	-2.07	5.04	7.12	0.88	
Child behavior problems	27	0.0	1.0	-2.16	5.19	7.35	0.83	0	1.0	-1.57	4.82	6.39	0.81	
Economic resources	12	0.0	1.0	-3.18	3.69	6.87	0.56	0	1.0	-2.85	3.62	6.48	0.65	
<i>Single variable measures</i>														
Father's depression	12	9.79	7.53	0.0	36.0	36.0	0.91	8.91	7.97	0.0	36.0	36.0		
Co-parent's depression	12	10.16	7.91	0.0	36.0	36.0	0.93	9.07	8.51	0.0	36.0	36.0		
Father's employment	1	2.89	1.79	0.0	5.0	5.0		3.32	1.63	1.0	5.0	4.0		
Co-parent's employment	1	2.84	1.81	0.0	5.0	4.0		3.47	1.52	1.0	5.0	4.0		

Note: The latent variable measures were created by the Structural Equation Model program, and are standardized scores with a mean of 0 and a standard deviation of 1. Intervention effects can be determined in multiple regressions by entering the intervention as a dummy variable that interacts with the change from baseline to 1-year follow-up (see Table 3).

strategy was to average both partners' scores if present or to enter the single score if one was missing. 83 fewer co-parenting teams completed baseline measures of harsh parenting and child behavior because they entered the study before the birth of their first child so a full data set included 808 co-parenting parents.

Potential latent variable moderators

We were influenced by Moreau and Weibels' (2021) argument that “by pooling different imperfect measures of an underlying construct, one is less prone to measurement error and more likely to obtain theoretically meaningful measures of change over time” (p. 4). The advantage of latent variables over single measures is that they create estimates of complex constructs, somewhat like factors, with each variable weighted according to its contribution to a statistically estimated construct. We created 6 latent variable measures at baseline and again at 1-year follow-up assessments, with each latent variable chosen to represent one domain of our family systems model. Data concerning means, standard deviations, minimum and maximum scores, range, and composite reliability of the latent variables, single measures, and demographic variables are presented in Tables 1 and 2. We chose measures that had already received extensive validation because they were either widely-used standardized measures, e.g., CES-D (Radloff, 1977) or the Parenting Stress Index (Abidin, 1997), or had been shown to be related to central family constructs in other similar couples-focused interventions (Pruett et al., 2019; Wood et al., 2014).

Life stress events (based on Holmes & Rahe, 1967)

14 items were divided into three categories of stressful events occurring in the past month: economic stressors; physical or mental health events; and difficulties with other people; e.g., “During the past month I have experienced stress resulting from work difficulties”; “During the past month I experienced stress resulting from the mental health difficulties of my partner.”

TABLE 2 Demographic variables.

Demographic measures	#items	n (%) or mean	SD	Min	Max	Range or category
Biological child of father	1	675 (83.6%)				No/yes
Child age	1	2.57	3.01	0.0	12.0	12
Father's age	1	31.76	7.14	18.0	68	50
Co-parent's age	1	30.86	8.51	18.0	76.0	57
Resident father	1	723 (89.5%)				No/yes
Parents live together		685 (84.8%)				No/yes
Co-parents as intimate partners	1	623 (77.1%)				No/yes
Married	1	258 (32%)				No/yes
Father's highest degree	1	3.17 ^a	1.7	1	8	7
Co-parent's highest degree	1	3.62 ^a	1.8	1	8	7
Father's annual income	1	\$10,502	\$9125	0	\$79,987	

^aCategory 3=High school diploma, Category 4=Some college.

Personal distress

- a. *Symptoms of depression*. (adapted from the Center for Epidemiological Studies in Depression scale (CES-D) Radloff, 1977). 12 items described depressive symptoms; e.g., “During the past week, I felt sad.”
- b. *Anxiety*. (Scott et al., 2015). 6 items described symptoms of anxiety; e.g., “In the past 7 days I have been anxious or worried for no good reason.”
- c. *Anger*. (Scott et al., 2015). 5 items described angry feelings; e.g., “In the past 7 days I felt angry”; “In the past 7 days I felt ready to explode.”

Negative relationship between the parents (positive items reverse-scored)

- a. *Destructive communication scale* (Wood et al., 2014). 9 items described unresolved conflict; e.g., “Little arguments turn into ugly fights.”
- b. *Coercive control scale* (items based on literature definitions of coercive control, (e.g., Beidatsch, 2023)). 8 items described aspects of coercion; e.g., “Partner threatened to hurt you or your child.”
- c. *Constructive communication scale* (Wood et al., 2014). 8 items described positive behavior during problem-solving discussions; e.g., “Even when arguing we can keep a sense of humor.”
- d. *Happiness with the relationship* (one item included in most marital satisfaction questionnaires, (e.g., Gottman & Ryan, 2005)). “Taking all things together, on a scale from 0 to 10, where 0 is not at all happy and 10 is completely happy, how happy would you say your co-parenting relationship is with your partner?”

Parent–child relationship quality

- a. *Harsh parenting* (adapted from the Alabama Parenting Scale Essau et al., 2006). 6 items described harsh behavior directed toward the child; e.g., “In the past month, how often have you yelled at [target child]?” “In the past month, how often have you hit, spanked, or grabbed [target child]?”
- b. *Parenting stress* (adapted from the Parenting Stress Index, Abidin, 1997). 4 items described ways in which the child causes stress or distress in the parent; e.g., “Child turned out to be more of a problem than I expected.”
- c. *Father involvement in the care of the child. Who Does What?* scale (Cowan et al., 1988). 11 items described the division of labor between parents in performing child care tasks; e.g., feeding the child, taking the child to the doctor.
- d. *Conflictful co-parenting*. (Feinberg et al., 2012). 4 items described how the co-parents interacted when the child was present; e.g., “How often in a week when the whole family is together do you yell at each other in front of the child?” “How often in a week do you or your partner say cruel or hurtful things in front of the child?”

Child behavior problems

Child adaptive behavior inventory. (Cowan et al., 1995). 27 items were divided into 4 child behavior problem scales that comprised the latent variable for child behavior problems: (1) aggressive; (2) hyperactive; (3) sad/anxious; and (4) shy/withdrawn; e.g. “How well does each of the following statements describe your child? Gets into fights; Distractible; Sad; Usually plays alone.”

Fathers' economic resources

The funder's requested that the intervention focus on fathers' economic self-sufficiency; for example, the chance to participate in the WorkForward program was to be offered to fathers and not to their co-parent partners.

- a. *Father's employment*. Single item with 5 alternatives; 1=Not currently employed; 2=Temporary, occasional, or seasonal employment, or odd jobs for pay; 3=Employed, but number of hours changes from week to week; 4=Part-time employment (usually work 1–34h a week); 5=Full-time employment (usually work 35 or more hours a week).
- b. *Father's income*. Single item. “What was your total individual income from all jobs in the last 12 months before taxes?”
- c. *Employment hope* (adapted from Hong et al., 2012). 6 items described optimism about getting and keeping a job; e.g., “I feel positive about how I will do in my future job situation.”
- d. *Employment confidence*. 4 items described confidence about employment-related skills; e.g., “I feel confident about my interviewing skills when applying for a job.”

Potential single variable moderators

We selected 2 single measures of psychological functioning measured at baseline that might reasonably be expected to affect how parents made use of the intervention. Although these variables were included in the latent variable measures, we were specifically interested in their potential role as moderating intervention effects, and we examined them separately for fathers and co-parents.

- a. Father and co-parent symptoms of depression (CES-D; Radloff, 1977).
- b. Father and co-parent ratings of fathers' involvement with the child (Who Does What? Cowan & Cowan, 1988).

Potential demographic variable moderators

We selected 13 demographic variables commonly included as control or moderator variables in family studies: age of fathers, co-parents, or children; whether the target child in the study was the biological offspring of the father or lived with the father; whether co-parents were living together; whether they were married, not-married intimate partners or were co-parenting with a relative or friend; level of education achieved by either parent; and father's and co-parent's hours of employment.

Data analysis plan

Figure 1 presents a schematic diagram of the Structural Equation Model presented in Cowan et al. (2022). All the paths linking baseline to follow-up measures were statistically significant. Random assignment to intervention and control conditions is represented by a dummy variable. From the published study, we know that at the 1-year follow-up, participant couples compared with those in the no-treatment control group showed less personal distress (depression, anxiety, anger) and less negative communication between the partners (less destructive communication and coercive control and greater constructive communication and happiness with their relationship). Solid lines between the intervention variable and other latent variables

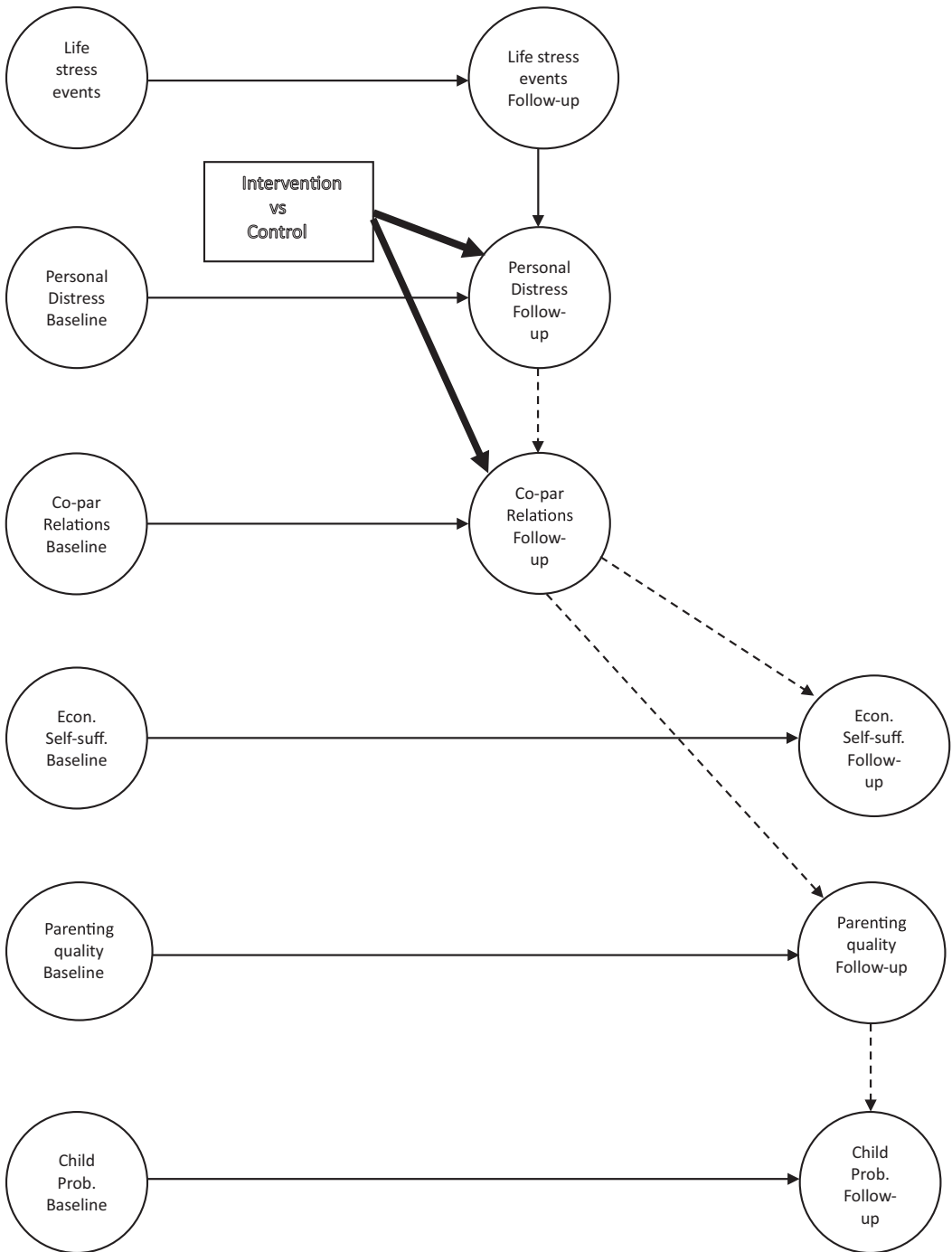


FIGURE 1 Direct and indirect effects of TRUE Dads impact on change from baseline to 1-year follow-up.

represent direct effects of TRUE Dads participation. Dashed lines represent statistically significant indirect effects: over and above the correlations between adjacent latent variables, the intervention contributed significantly to the outcomes.

The direct path between intervention (control=0; intervention=1) and co-parent communication was -0.111 with a p -value of 0.071. Not reported was the fact that if the direct link

TABLE 3 Tests of latent variable potential moderators of intervention effects on personal distress and the quality of the relationship between parents.

	Personal distress			Quality of relationship between parents		
	β	t	p	β	t	p
Baseline latent variable potential moderators						
Personal distress	-0.035	-0.729	0.467	-0.002	-0.043	0.965
Couple communication	-0.024	-0.502	0.616	0.038	0.867	0.376
Life stress events	0.013	0.264	0.791	0.062	1.428	0.154
Parent-child relationship quality	-0.014	-0.259	0.795	0.100	1.987	0.049*
Child behavior problems	0.060	1.151	0.250	0.058	1.245	0.213
Father's economic resources	-0.103	-2.098	0.036*	-0.031	-0.696	0.487

*Statistically significant moderator effect.

between intervention and personal distress was omitted from the model, the direct path (-0.132) between intervention and co-parent communication was statistically significant ($p=0.013$). Accordingly we chose the intervention effects on personal distress and co-parent relationship as targets in our search for baseline moderators. First, scores were centered with a mean equal to zero. Moderator effects were tested using hierarchical multiple regressions:

Dependent variable (e.g., parent's personal distress at the one-year follow-up).

Step 1. Enter independent variable (e.g., personal distress at baseline).

The model so far measures change from baseline to follow-up.

Step 2. Enter a dummy variable contrasting intervention vs control. This step assesses whether the intervention has a statistically significant effect on the change in personal distress from baseline to follow-up.

Step 3. Enter a potential moderator variable at baseline.

Step 4. Enter an interaction term: baseline moderator*intervention.

Step 4 assesses whether a proposed moderator strengthens or weakens the average intervention effect (e.g., whether participants enrolling in TRUE Dads with initially high levels of personal distress experienced greater or lesser effects of the intervention).

Statistically significant moderator interaction effects were followed up with simple slope analyses (Aiken & West, 1991). Each statistically significant moderator variable was dichotomized to form groups of participants with low or high scores on that variable. Then, the multiple regression in steps 1 to 3 were re-run to determine whether the intervention effects were larger for participants who entered the study with lower or higher moderator scores.

We acknowledge at the outset that the large set of moderator effects tested ignores the usual cautions to limit the number of statistical tests in order to avoid reporting chance findings as statistically significant. Nevertheless, we proceeded in an attempt to define the territory of potential moderator effects in this particular intervention as a first step toward defining a more limited set of variables for further replication studies.

RESULTS

Sample characteristics

Table 1 shows that the composite reliabilities of 4 of the 6 latent variable measures and the item reliabilities of all 4 single variable measures were acceptably high (0.81–0.93), but the life stress events at baseline (0.62) and 1-year follow-up (0.71) were lower, and the composite reliability

of the 4 items included in the fathers economic resources measures at baseline (0.56) and follow-up (0.65) was still lower. The Life Stress Events measure combined subscales assessing economic stressors, physical or mental health events, and difficulties with other people. Apparently, in this sample, these three sources of stress were somewhat heterogeneous, but were still significantly correlated. The fatherhood economic resources measure included both factual indicators (employment and income) and employment attitudes (employment hope and confidence). We chose to keep the latent variable in the present analyses because both kinds of measures are part of the same economic construct, but also to test moderator effects separately on a single variable measuring fathers' and co-parents' hours of employment.

The dropout rate in both the intervention and control samples over the year of the study was an identically low 15%. Two sets of analyses determined that the remaining analysis sample tended to be an unbiased estimate of those recruited to the study. First, the earlier paper (Cowan et al., 2022) had pre-selected 7 measures from fathers' and mothers' questionnaires that would serve to evaluate intervention impact: life stress events, symptoms of depression (CES-D), coercive violence, destructive communication, harsh parenting, and children's internalizing and externalizing behavior problems. As reported in that paper, there were no statistically significant differences between intervention and control samples at baseline in any of the 14 statistical tests (7 for fathers, 7 for co-parents). Second, for the current paper, using *t*-tests, we examined baseline differences on these 7 measures between those who completed the 1-year follow-up and those who dropped out. Note that the degrees of freedom for all *t*-tests reported here was approximately 806, varying slightly for each measure. Here we found two baseline differences. TRUE Dads fathers' who described their own parenting as including more harsh behavior ($t=2.85$; $p=0.004$) and mothers who described their children as more aggressive ($t=1.999$; $p=0.046$) were more likely to remain in the study. But the other 12 *t*-tests, including measures of individual and couple functioning, found no statistically significant differences at baseline between future dropouts and continuers.

Latent variable moderators

We first examined the potential moderators of the two statistically significant direct intervention effects. There were 6 tests of baseline latent variables as moderators of the impact of TRUE Dads on parents' personal distress, and another 6 tests of the same baseline variables as moderators of the impact of TRUE Dads on the quality of the relationship between the co-parents (see Table 3 for Beta weights, *t*-tests, and significance levels of all 12 tests).

Two of 12 moderator tests were statistically significant. First, the latent variable representing father's economic resources at baseline was a moderator of the direct impact of intervention participation on the co-parents' personal distress ($t=2.098$; $p=0.036$). Simple slope analysis revealed that the positive effect of participation in the intervention was stronger when fathers at baseline had higher economic resources. For fathers who were unemployed or with very few hours of work, participation in the intervention did not result in reduced personal distress for the couple ($t=-0.976$; $p=0.330$), whereas fathers who entered the study at the higher end of the economic resources scale (but still resource poor) and participated in TRUE Dads group intervention were in couples who were significantly less depressed, anxious, and angry 1 year later ($t=2.968$; $p=0.003$).

Second, negative relationships with their children at baseline (harsh reactions to children, with high parenting stress, more conflict over parenting issues in front of the child, and lower father involvement) moderated the impact of the intervention on the relationship between the parents ($t=1.995$; $p=0.048$). Couples who described their relationship with their children at baseline in less negative terms, showed a marginally significant benefit from participating in the TRUE Dads groups ($t=1.38$; $p=0.071$), while those entering the study with highly negative

relationships with their child significantly improved this relationship if they were in the intervention condition ($t = -3.041$; $p = 0.023$). In sum, only one of the six latent variables moderated the intervention impact on personal distress (fathers' employment status), and only one (negative relationship with the child) moderated the intervention impact on couple relationship quality.

What about possible moderating effects of the intervention on the other four latent variables? We recognize the possibility that a positive effect of intervention participation in a set of participants defined by a baseline measure could be offset by a decline in functioning experienced by the control participants – a significant moderator effect of a non-significant intervention effect. Accordingly, we performed exploratory regression analyses of the six latent variable baseline potential moderator effects on the remaining four latent variable measures of change over time: life stress events, parent–child relationship quality, child behavior problems, and father's economic resources (24 tests). None of the analyses yielded statistically significant effects of the potential moderator (baseline measure \times intervention).

What is notable in this analysis of the latent variable measures is the relative absence of statistically significant moderating effects. For parents who entered the study with high life stress, high personal distress, negative communication between them, and children with problem behaviors, TRUE Dads was equally effective in reducing their personal distress and improving negative aspects of their relationship as a couple.

Single variable analyses

We conducted 4 tests (2 measures \times 2 parents) of single manifest variables as moderators of the impact of TRUE Dads on parents' personal distress, and another 4 tests of the same baseline variables as moderators of the impact of TRUE Dads on the quality of relationship between the co-parents. With regard to parents' personal distress, there were no statistically significant moderator effects of (a) fathers' or co-parents' depression scores on entering the study, or (b) either parent's view of the father's involvement with their child. Only one potential moderator affected the impact of the intervention on co-parent relationship quality: When the co-parent at baseline described the father as more involved in caring for the child, there was a greater positive impact of TRUE Dads on the quality of their relationship as co-parents (reduction in destructive communication and control violence), increase in constructive communication, and satisfaction with the relationship ($t = 2.70$; $p = 0.023$; see Table 4 for Beta weights, t -tests, and significance levels of all 8 tests). Simple slope analysis showed that when co-parents described the fathers as low in involvement in the daily tasks of child care, the intervention did

TABLE 4 Single measure potential moderators of intervention effects on personal distress and quality of relationship between parents.

	Personal distress			Quality of relationship between parents		
	β	t	p	β	t	p
Baseline single variable potential moderators						
Father's depressive symptoms	-0.089	-1.878	0.061	0.024	0.472	0.635
Co-parent's depressive symptoms	0.030	0.633	0.527	0.012	0.288	0.773
Father involvement (dad report)	0.003	0.038	0.470	-0.126	-1.771	0.077
Father involvement (co-parent report)	0.013	0.147	0.844	-0.129	2.270	0.023*

*Statistically significant moderator effect.

not affect the quality of the couple relationship ($t=0.744$; $p=0.457$), whereas the co-parent's description of highly involved fathers predicted positive couple relationship benefits from participating in TRUE Dads ($t=2.642$; $p=0.009$).

Demographic variables as potential moderators

We conducted tests of 13 potential demographic moderators on the intervention effects of TRUE Dads on personal distress and the same 13 variables on the quality of the co-parenting relationship (see Table 5): Two of the 13 variables moderated the intervention impact: whether or not the father lived with the co-parent ($t=-2.550$; $p=0.011$) and if the co-parent had higher levels of education (completing high school, $t=2.758$; $p=0.006$). Simple slope analysis indicated that participation in TRUE Dads had little effect on personal distress when fathers lived apart from co-parents ($t=0.902$; $p=0.368$) but a statistically significant impact on distress reduction when the co-parents lived together ($t=4.877$; $p<0.001$). And, personal distress reduction following participation in TRUE Dads was statistically significant when the co-parent had a higher level of education ($t=3.114$; $p=0.002$), in contrast with lower level of education ($t=0.425$; $p=0.671$).

Only one of 13 baseline demographic variables moderated the intervention effect on the quality of the relationship between the parents; when fathers lived with the child ($t=1.988$; $p=0.048$). Fathers who lived apart from the child did not show statistically significant benefits of TRUE Dads participation ($t=1.391$; $p=0.165$), but father-child co-residence was associated with a significant intervention effect on the quality of the parent's relationship with each other ($t=3.091$; $p=0.003$).

None of the other 26 potential moderators showed statistically significant effects. Compared with parents in the control condition, TRUE Dads parents showed similar

TABLE 5 Demographic variable potential moderators of intervention effects on personal distress and quality of relationship between parents.

	Personal distress			Quality of relationship between parents		
	β	t	p	β	t	p
Baseline demographics potential moderators						
Father's age	-0.212	1.536	0.125	0.078	0.629	0.529
Co-parent's age	-0.093	-0.739	0.468	-0.046	-0.366	0.715
Youngest child's age	-0.039	-0.673	0.501	-0.007	-0.143	0.887
Father's biological child	-0.078	-0.913	0.361	0.056	0.735	0.463
Co-parent's biological child	0.139	1.719	0.086	0.064	0.886	0.376
Father lives with child	-0.103	-0.993	0.321	-0.186	1.968	0.050*
Co-parents married or not	0.065	1.217	0.224	-0.007	-0.143	0.886
Co-parents intimate partners or not	0.048	0.525	0.600	0.029	0.360	0.719
Father lives with co-parent	-0.295	-2.550	0.011*	-0.189	1.804	0.072
Father's highest level of education	0.052	-0.683	0.495	0.026	0.374	0.709
Co-parent's highest level of education	-0.228	-2.758	0.006**	-0.014	-0.186	0.852
Father's hours of employment	-0.080	-1.156	0.248	0.041	0.967	0.197
Co-parent's hours of employment	0.840	1.209	0.227	-0.075	-1.150	0.251

*Statistically significant moderator effect.

** $p < .01$

effects regardless of the age of fathers, co-parents, or children or whether the target child in the study was the biological offspring of the father. The intervention effects were also similar for co-parents who were married, not-married intimate partners, or parenting their child with an intimate partner or a relative or friend. Fathers' level of education made no difference to the intervention outcome. Fathers' and co-parents' employment hours, considered apart from the latent variable of economic resources, was not a significant moderator of the intervention effects.

DISCUSSION

In all, we conducted 46 tests of possible moderators of direct intervention effects on personal distress and couple/co-parent communication – 12 latent variable tests, 8 individual measure tests, and 26 demographic potential moderators of TRUE Dads effects – with an additional 24 tests of moderator effects on the indirect effects of the intervention on latent variable measures of life stress events, parent–child relationship quality, child behavior problems, and father's economic resources. Of these 70 tests, only 6 revealed a statistically significant moderator effect on personal distress and co-parent communication, and there were no significant moderator effects of the indirect effects of TRUE Dads on life stress, parent–child relationship quality, children's behavior problems, or fathers' economic resources. All in all, the proportion of statistically significant moderator effects found (8%) was only slightly greater than we would expect by chance (5%).

Moderator effects on personal distress and the quality of the relationship between the co-parents

In the results section, we described the statistically significant moderator findings in terms of the type of measure used. Here, we group the results by intervention outcome, either parents' personal distress or quality of relationship between the parents.

Note that the simple slope analyses, by dividing moderators into low and high scorers, seemed to imply that for the six statistically significant moderator variables, those in the lower half of the sample received none of the benefits of participating in TRUE Dads in terms of reductions in personal distress or negative couple relationships. This arbitrary division of high and low scores is chosen to represent lower and upper points of the slope of a regression line depicting the interaction of the intervention with the moderating variable (Aiken & West, 1991). Therefore, the comparison of *t*-tests for lower and higher moderator scores can be interpreted as indicating whether there are stronger intervention effects for those at the higher end of the continuum than at the lower end (or vice versa).

Reductions in parents' personal distress were greater in the intervention participants when, at baseline, fathers had more economic resources or their partners had higher levels of education. Recall that the mean income for fathers was \$10,542; only 4% of them earned more than \$40,000 and none earned more than \$80,000. It could be that the very moderate financial resources of fathers and economic and educational resources of the co-parents at baseline provided an initial cushion that facilitated reductions in parents' personal distress (depression, anxiety, and anger) after they participated in the intervention. It may also be that co-parents with fewer financial worries are better able to engage with the psychological and relationship issues presented in the workshops. Alternatively, it may be that participants at the lowest end of the income scale – earning from 0 to \$5000 find that their financial concerns interfere with their capacity to receive the potential benefits of the intervention.

One added finding concerning moderators of personal distress: reductions in personal distress following participation in the couples groups were greater for both parents when fathers lived with their co-parenting partner. Our impression is that co-parents who live apart, although committed to raising a young child together, are leading even more strained, stressful lives, full of scheduling and arrangements than co-parents who live in the same household. It is also possible that the reasons for living separately may have emerged out of ongoing stresses in the couple relationship. If this finding is replicated in other studies, it would suggest that more attention should be given to co-residence status as couples enter the study, and some attempt is made to address this issue early in the workshop meetings. However, we need to recognize that this variable did not moderate any of the remaining five outcomes. Co-parents who did not live together benefitted to the same degree from participating in TRUE Dads as the co-resident parenting partners in terms of couple relationship quality, parent–child relationship quality, child behavior, and economic resources.

The fact that two of the three moderators of TRUE Dads' impact on parents' individual personal distress were concerned with family finances and employment suggests that future revisions of the TRUE Dads curriculum should address these issues early in the sequence of workshops. This suggestion is supported by the findings from Kohl and colleagues (2022) who compared two interventions for low-income fathers, nearly all non-white, both of which emphasized economic stability. One of the programs also included curriculum on “responsible fatherhood” and healthy relationships. Participants in both versions experienced similar improvement in financial outcomes, but also in parenting and parents' psychological well-being. The authors speculated that “gaining financial stability could have contributed to positive improvements in other domains” (p. 2).

A different small set of variables moderated the impact of the intervention on the quality of the relationship between co-parents. When fathers lived with their child, and were described by their co-parent as more involved in their child's daily care, not surprisingly, there were stronger positive effects of participating in the intervention on their relationship as a couple. It may be that when a co-parent views the father as engaged with their child, they become more willing to work on their co-parenting interactions with a difficult child during their participation in the intervention. This interpretation is consistent with the research evidence of a positive correlation between father involvement and couple relationship quality, which occurs across national boundaries, and regardless of whether the parents are married, cohabiting, separated, or divorced (Carlson et al., 2011; Chen, 2013; Davies et al., 2009; Lee & Doherty, 2007; Liu, 2007; Pruett & Johnston, 2004; Rienks et al., 2011).

A surprising finding to us was that when both parents entering the study described their relationship with their youngest child in more negative terms, but the co-parent described the father as more involved with their youngest child, the co-parenting pair experienced their relationship less negatively after the intervention. The finding that co-parents who described themselves as engaging in harsh parenting at baseline (latent variable) were more likely to complete the 1-year follow-up survey may be relevant here. That is, couples who were having difficulty with their children may have recognized that TRUE Dads was addressing their concerns; they stayed in the study, and, as their parent–child relationships improved, their ability to relate more positively to each other also improved. This is an example of the fact that systemic intervention effects are often bidirectional, with co-parent relationship quality influencing parenting quality, and relationships with children influencing the couple.

Overall findings

The amount of space we have devoted to documenting and explaining the 6 statistically significant moderating effects tends to obscure the major finding. There were very few moderators identified in our 70 moderator tests. Overall, the clear conclusion from the findings is that in this large

intervention study, with a racially diverse low-income sample, the impact of the intervention was similar for participants who entered the study regardless of their initial levels of personal distress, quality of couple relationship and parent–child relationship, youngest child's behavior problems, fathers' employment hours, hope and confidence about employment, and a host of demographic characteristics. Pending further replication of these results we can conclude that the TRUE Dads program is appropriate for a wide variety of potential fathers and their co-parents.

Limitations

Because there were so many tests of potential moderators, even some of the few statistically significant findings could be attributable to chance. Nevertheless, we note that the statistical tests were conducted with a very large sample (808 co-parenting teams) with very high power to detect differences between groups if they exist.

A second limitation is that we have presented results from only one study of co-parenting teams with a restricted range of economic resources. Although the variation in many of the baseline variables was substantial, it will be necessary to test for potential moderators of the impact of TRUE Dads in different samples with different and more heterogeneous mixes of participants before we can be confident in making claims about which variables do and do not moderate the impact of the intervention.

Third, the design of the TRUE Dads fatherhood program was strongly influenced by the belief that requiring fathers to bring co-parents to the groups, and providing a curriculum that addressed multiple aspects of the family system, would be instrumental in producing positive program effects. However, as of now, neither of these beliefs has received systematic testing. In future it will be necessary to conduct RCTs that compare TRUE Dads interventions attended by fathers only, with interventions attended by fathers and their partners. Several studies cited in the Introduction (e.g., Panter-Brick et al., 2015) suggest that the couples approach to father involvement is an essential ingredient in producing TRUE Dads' positive outcomes. It will also be necessary to use an RCT strategy to compare participants in workshops structured by the present multidomain curriculum with an intervention that focuses more narrowly on encouraging father involvement.

Finally, to say that TRUE Dads has a positive effect on participants with a wide variety of characteristics does not imply that this original version of TRUE Dads is the most effective possible intervention for fathers and their co-parents. As we pointed out in the original publication (Cowan et al., 2022), the effect sizes were relatively small. We are currently evaluating a new and, we hope, improved version of the intervention named TRUE Dads 2.0 to determine whether the modifications from TRUE Dads 1.0 will produce even stronger positive effects. In the evaluation of the new version, we will certainly include tests of whether baseline characteristics of the fathers and co-parents predict who benefited most and least.

Implications for service providers and policy makers

We believe that over and above the question of whether a proposed fatherhood intervention “works,” the search for potential moderators has important implications for service providers and the policy makers who fund family services. The identification of a statistically significant moderator effect tells the provider or funder that some potential recruits to the program are likely to benefit more than others. This defines a choice point for further program recruiting and offerings. One possibility is that the program chooses to alter recruitment strategies in order to target more fathers and couples who are likely to benefit. This may work well if the moderator identifies characteristics of families in most need of help.

However, if, as in the present study, the moderator analyses suggests that if families are more financially secure they will benefit more, we do not believe that the preferred solution is to recruit more financially stable families to a fatherhood intervention. The alternative possibility, then, is to make modifications in the curriculum and delivery of the fatherhood program that are more likely to meet the needs of families who have not benefitted from the program's current version.

CONCLUSIONS

Beyond the questions of whether a fatherhood intervention has a positive impact on the participants or how the effects are mediated, an overlooked essential issue is establishing the range of characteristics in the participants for which the intervention provides the best outcomes. Our analysis of moderator effects of TRUE Dads is offered as an example of a much-needed approach to providing systematic information about whether the design and execution of a fatherhood intervention provides a match or mis-match to the target population recruited by intervention providers. Our findings add to those from three previous studies of moderator effects on fatherhood interventions cited in the introduction (Barton et al., 2023; Kim & Jang, 2018; Leijten et al., 2018), all of which found very few statistically significant effects. Taken together with the present study, the results suggest that a wide range of fathers and co-parents who agree to enroll in an intervention designed to enhance their positive involvement in family life can benefit from their participation.

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