

RESEARCH

Group interventions for mental health and parenting in parents with adverse childhood experiences: A systematic review and meta-analysis

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Abstract

Objective: This meta-analysis synthesizes the effects of group parenting interventions (GPIs) on mental health and parenting-related outcomes among parents with adverse childhood experiences (ACEs).

Background: Parents' history of ACEs can jeopardize parental mental health and impede their children's development through dysfunctional parenting. GPIs are increasingly applied to parents with ACEs, but their effectiveness remains to be synthesized.

Method: We identified 12 relevant studies that involve 709 families from PsycINFO, Medline, CINAHL Plus, and Embase. The overall intervention effect size was estimated by adjusted pooled standardized mean difference using random-effects models, and moderator analyses were performed to explore the variability in intervention effects. Risks of bias and publication bias were also assessed.

Results: Most of the parents in the included studies were mothers from ethnic minority groups who had limited family support and a low socioeconomic status. The average age of parents ranged from 18 to 32 years. GPIs showed small positive effects on parenting (Hedge's $g = 0.36$, 95% confidence interval [CI] [0.22, 0.49]) and parent mental health ($g = 0.34$, CI [0.16, 0.53]), with some variability across the studies.

Conclusion: GPIs show promising effects in improving parenting and mental health among parents who have experienced early-childhood trauma.

Implications: Addressing the needs of parents with ACEs warrants a comprehensive intervention framework.

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Interventions for parents with ACEs should balance the focus on building healthy parent–child attachment and addressing parents' personal emotional needs.

KEYWORDS

adverse childhood experience, group intervention, mental health, meta-analysis, parenting, systematic review

Adverse Childhood Experiences (ACEs) are events during which children and adolescents under 18 years of age are exposed to various kinds of maltreatment and household dysfunction (Anda et al., 2006). About 61% of adults surveyed across 25 states in the United States reported having experienced at least one type of ACE, and nearly 1 in 6 reported experiences of four or more types of ACEs (Centers for Disease Control and Prevention, 2021). People who have experienced ACEs may encounter various mental health related challenges when transitioning to parenthood. ACEs are reported to increase the risks of perinatal and postpartum depression, posttraumatic stress disorder (PTSD), anxiety, substance abuse, and suicidal ideation. Parents who have experienced ACEs also showed increased negative physical changes and they held more negative views of their child (Christie et al., 2017). The presence of three or more ACEs was associated with postpartum smoking, binge drinking, depressive and anxiety symptoms, lower optimism, higher neuroticism, and lower parenting morale in pregnant women (McDonald et al., 2019).

Moreover, parents who have experienced ACEs are more likely to engage in parenting styles that negatively impact parent–child interaction. Adverse parenting outcomes related to experience of ACEs included increased parenting stress, child neglect and abuse, harsh/physical/punitive discipline, inconsistent discipline, intrusive parenting, poor monitoring and supervision, lower empathy, and greater psychological control (Harel & Finzi-Dottan, 2018; Hughes & Cossar, 2016; Lotto et al., 2021). Furthermore, individuals reporting four or more ACEs were most vulnerable to forming insecure parent–child relationships (Lange et al., 2019; Murphy et al., 2014).

Additionally, ACEs can impact families across generations. Children of ACE-exposed parents are at a heightened risk for negative psychological and behavioral outcomes. For instance, a systematic review showed that parental ACEs were significantly associated with child externalizing problems (i.e., inattention, hyperactivity, impulsivity, and aggression) and internalizing problems (i.e., anxiety and depression; Cooke et al., 2021). Additionally, ACEs may transmit intergenerationally. Maltreatment-related ACEs (such as neglect; physical, emotional, or sexual abuse) demonstrated heterotypic and homotypic patterns of continuity across parent and child through various paths of intergenerational transmission: from parental physical and sexual abuse to all other types of child-generation abuse; from parental emotional abuse to child-generation emotional, physical, and sexual abuse; and from parental neglect to child-generation sexual and psychological abuse (Madigan et al., 2019).

Given the detrimental impact of ACEs on parent and child mental health, addressing the effects of toxic stress and early childhood trauma is a public health imperative (Waters et al., 2018). Parenting interventions can effectively improve parent mental health and parenting, two important mediators of parental ACEs and child outcomes (Treat et al., 2020; Wolford et al., 2019). Structured group parenting interventions (GPIs) are increasingly applied for parents with histories of trauma. In GPIs, parents may gain peer support from other group members with similar experiences. GPIs may particularly benefit marginalized families because parents may form secure, stable, and nurturing relationships in the group environment, which they may have been unable to find in their harsh childhood environments and the potentially difficult living environments in which they actively raise their children (Steele et al., 2010).

These newly formed nurturing relationships buffer the negative influence of early trauma experiences (Alink et al., 2019; Schofield et al., 2013; St-Laurent et al., 2019).

In addition to the therapeutic benefits to parents themselves, the sense of safety, trust, and empathy built in groups may help parents cultivate healthy relationships outside of the groups, allowing them to rebuild relationships with their children and end the cycle of intergenerational maltreatment transmission (Marmarosh et al., 2013; Yalom, 1995). Additionally, group interventions are more affordable to parents with limited resources, as they can be less expensive than individual interventions that require considerable time and resource commitment, such as one-on-one interactions with clinicians over long periods of time. Compared with interventions delivered in home-visiting formats, group interventions were found to be 50% less expensive (Steele et al., 2010).

Despite the increased application of GPIs among this high-risk population, there is a lack of synthesis of intervention effectiveness. The only existing systematic review focusing on ACE-targeted interventions examined the effects of psychosocial interventions for adult ACE survivors in primary care settings (Korotana et al., 2016). However, this review only included one parenting-focused intervention and it excluded participants from other settings, such as residential programs and community-based interventions. A few other reviews have looked at parents who experienced a given type of ACE, such as childhood maltreatment (e.g., Chamberlain et al., 2019) and childhood sexual abuse (e.g., Stephenson et al., 2018), but these reviewed interventions were primarily individual or home based. A targeted review of interventions specifically for parents with ACEs is needed to fill this gap.

This study aims to systematically review GPIs that specifically target parents who are ACE survivors. Our research questions are the following: What are the characteristics of interventions targeting parents who have previously experienced ACEs in their own childhood? What is the effectiveness of these interventions in improving parenting and parent mental health outcomes?

METHOD

Protocol and registration

This protocol was registered with the Open Science Framework (Lyu & Lu, 2020). This review was conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses diagnostic test accuracy (PRISMA-DTA) guidelines (McInnes et al., 2018).

Search strategy

We conducted an initial literature search up to May 2020 and a second-round search in September 2021. Four online databases were used to search potentially relevant articles: PsycINFO (from 1806), Medline (from 1946), CINAHL Plus (from 1937), and Embase (from 1974). The search was restricted to peer-reviewed English-language published journal articles and included three groups of keywords: (a) target population-related terms (e.g., parent* OR mother* OR father* OR famil*), (b) method-related terms (e.g., random OR control OR experiment OR RCT OR intervention OR group OR program OR training OR therap* OR trial OR curriculum OR treatment), and (c) ACE-related terms (e.g., ACEs OR adverse childhood experience* OR abuse OR neglect OR household dysfunction OR domestic violence OR parental divorce OR criminal household member). Search strategies (e.g., search limits, combination of key terms) were refined for each specific database. Additionally, reference lists of the articles included were hand searched to identify additional relevant studies, and the first author also consulted three experts in the field to identify additional related studies.

Study selection and screening

ACEs included any of the following experiences before the age of 18 years: emotional, physical, or sexual abuse; emotional or physical neglect; domestic violence, household substance abuse, or mental illness in the household; parental separation or divorce; household member(s) have criminal records. Studies were included if they met the following criteria: (a) the intervention focused on parenting and was primarily delivered in a group format; (b) more than 50% of parents in the study had at least one type of ACE, or participants on average had at least three ACEs; (c) a description of the intervention content or structure was provided; and (d) outcome measures contained parenting-related variables (e.g., parenting stress, parenting attitude or behavior, parent–child relationship) or parent mental health variables (e.g., anxiety, PTSD).

Studies were excluded if (a) the intervention was not delivered in a group format (e.g., individual psychotherapy, home based); (b) ACE prevalence was not reported, or fewer than half of parents had ACEs, or participants on average had fewer than three ACEs; or (c) participants had other traumatic experiences (e.g., recent domestic violence from an intimate partner) without report of a combination of ACEs. EndNote software was used for literature management. Two reviewers (Author 1 and Author 2) completed title and abstract screening and full-text screening (Cohen's kappa = 0.82, indicating high interrater agreement); differences were resolved through discussion between reviewers. Figure 1 presents the systematic search and screening process.

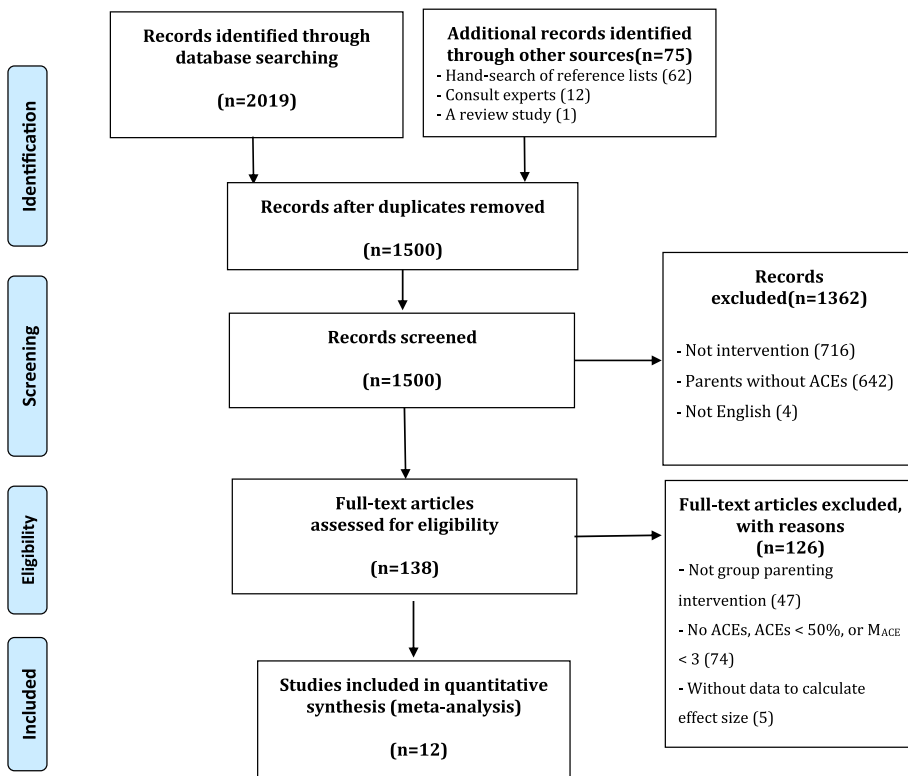


FIGURE 1 Screening process *Note.* ACE = adverse childhood experience [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/j.1545-8319.2023.00000.x)]

Data extraction

Data extraction was conducted independently by two reviewers (Author 1 and Author 3) and included two parts: characteristics of interventions, participants, and studies; and data for calculating effect sizes. Inconsistencies that emerged in data extraction were resolved through discussion between review authors. Authors of target studies were contacted for further clarification in cases of incomplete or unclear study information.

Risk of bias

Risk of bias was assessed using the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018), a critical appraisal tool designed for systematic reviews of mixed study designs. The *MMAT quantitative RCTs* assessment was used for randomized controlled studies, and the *MMAT quantitative nonrandomized studies* assessment was used for single-group and quasi-experimental studies. Both assessments contain five methodological quality criteria (e.g., “Is randomization appropriately performed” for randomized controlled trials [RCTs]; “Are the participants representative of the target population” for non-RCTs). Two assessors (Author 1 and Author 3) independently rated each domain as “yes (low risk),” “no (high risk),” or “cannot tell (unclear risk)” when insufficient or unclear information was reported. Inconsistencies were resolved through discussion. Although MMAT does not provide an overall sum score, we coded “low risk” as 1 and “high/unclear risk” as 0, and categorized studies with a total score of 0–1 as low quality (i.e., high bias), 2–3 as medium quality (medium bias), and 4–5 as high quality (low bias).

Analytical procedure

The analyses were performed with Comprehensive Meta-Analysis software (Version 3.3). Two independent meta-analyses were performed to calculate the effect sizes of parenting and parent mental health. Since the research contexts, interventions, methods, and populations varied across the studies included, we estimated random effects models as they allow true effects to vary from one study to another. Variability across studies was examined by the Q statistic (a number that reflects whether all studies in the analysis share a common effect size), the I^2 value (the ratio of true variation in effect sizes as opposed to random error to the total observed variation), and the 95% prediction interval (in which the true effect size in 95% of all comparable populations falls) (Borenstein, 2019; Borenstein et al., 2009).

Although most studies reported multiple outcomes that came from the same participants and were not independent of each other, to avoid underestimation of the error in the summary effect we computed a composite mental health score and a composite parenting score for each study using the mean of the outcomes. These composite scores were used as the unit of analysis in lieu of treating each outcome separately in the analyses (Borenstein et al., 2009). A pooled standardized mean difference (SMD) was calculated based on the means before and after intervention (for single-group pre-post-test studies) or based on the observed posttest means of the intervention group and the control group (for controlled studies). Log odds ratios were calculated for one study with binary data (Steele et al., 2010), which were then converted to SMD. The SMDs were then converted to Hedge’s g , an effect size indicator that adjusts for the estimation bias in small samples (Hedges, 1981). Similar to SMD, small, medium, and large effect sizes are denoted by Hedge’s g values of 0.2, 0.5, and 0.8, respectively (Cohen, 1992).

In addition, using mixed effects models, we conducted moderator analyses to explain the variability in intervention effects across studies. Studies were grouped by recruitment setting

(clinical, nonclinical/mixed), whether children were involved during the intervention, whether individual sessions were included, intervention dosage, participants' ACE prevalence, and study design. Publication bias was assessed through the Egger's test (Egger et al., 1997) and Trim and Fill analysis (Duval & Tweedie, 2000). Egger's test uses a weighted regression of the intervention effect on the standard error. The intercept indicates the degree of funnel plot asymmetry; the more the intercept deviates from zero, the greater the presence of bias. The Trim and Fill analysis assumes that studies would be symmetric about the mean effect in a funnel plot if there is no publication bias. When more small-sized studies appear on one side of the mean effect than the other, which may indicate a biased overall estimate, the Trim and Fill analysis would impute these potentially missing studies and adjust the mean effect size.

RESULTS

Study characteristics

A total of 12 eligible studies involving 709 families were identified from 2,019 articles (Figure 1). As summarised in Table 1, the included studies were published between 2000 and 2019, with the majority conducted in the United States. One additional study was identified in the second-round search but was excluded as it did not provide the enough data for effect size calculation. Among the 12 included studies, there were nine single-group pre-post studies, two RCTs, and one quasi-experimental study. Ten GPIs were used, and sample sizes ranged from 13 to 160 families. Parenting-related outcome measures included parenting behavior, perceived parental efficacy or stress, and parent-child relationship; parent mental health measures included depression, anxiety, posttraumatic stress disorder, and other mental health issues.

Participant characteristics

Most of the parents in the included reviews were mothers from ethnic minority groups with relatively limited family support and low socioeconomic status. The average age of parents ranged from 18 (SmithBattle et al., 2017) to 32 (Cassidy et al., 2010; Hiebert-Murphy & Richert, 2000). The percentage of ethnic minority participants ranged from 15% (Gannon et al., 2017) to 100% (SmithBattle et al., 2017), with most of the studies including more than 50% ethnic minority participants ($k = 8$). Among the nine studies that reported participant marital status, the percentage of single, divorced, or unmarried parents ranged from 45% (Gannon et al., 2017) to 100% (SmithBattle et al., 2017). In the nine studies that reported parent education background, the percentage of parents with an education below high school level ranged from 9% (Steele et al., 2019) to 55% (Cassidy et al., 2010). In most studies, over half of the parents were living below the poverty line, receiving public assistance, or unemployed ($k = 7$ out of 10 studies reported such information). In the three studies that reported child gender, the percentage of girls ranged from 33% (Steele et al., 2010) to 42% (Waters et al., 2018). In the nine studies that reported child age, eight studies involved children aged 0–6 years, and one study involved children aged 12–36 months (Steele et al., 2010).

Parents in five studies were recruited from clinical settings, while seven studies recruited from non-clinical or mixed settings. Most studies ($k = 10$) reported the percentage of participants with ACEs (ranging 58%–100%), and three studies also reported participants' average number of ACEs. Common mental health issues co-occurring with ACEs included opioid use disorder, substance abuse, PTSD, and depression. Coexisting risk factors included other types of trauma (e.g., environmental/noninterpersonal trauma, exposure to abuse and violence during adulthood) and life challenges (e.g., being a teen mother, lost a child to foster care, lacks stable housing).

TABLE 1 Summary characteristics of included studies

Study	- Country - Recruitment setting - Nature of recruitment setting	Parent: - Type of ACEs (percentage/ Mean/<i>SD</i>) - Gender - Mean age (range) in years - Ethnicity - Marital status - Socioeconomic status: education/ income/ employment status - Mental health and/or other risk factors	Child: - Gender - Mean age (range)	Intervention: - Program name - Dosage - Child participation (Yes, specify/No) - Individual session(s) (Yes, specify/Not included)	- Study design (type of control) - Sample size for data analysis (may vary by variables) - Outcome domains (outcomes)
Cassidy et al. (2010)	- United States - Correctional system - Non-clinical	- Physical or sexual abuse (63%); witness domestic violence (82%) 100% female 32 (range NR) 67% ethnic minority 47% single 55% below high school - Substance abuse history; above 3 years term of mandatory supervision	- NR 0 (program starts when mothers are in their 3rd-trimester) [0–12 months]	- The Circle of Security Perinatal Protocol (COS-PP), as a part of Tamar's Children, a 15-month jail-diversion intervention 15 months, 2 sessions/week, 1.5 hours/session - Yes (mother–infant interaction clip & discussion in the group) - Yes (individual psychotherapy)	- Single group pre-post design (NA) 9–20 - Parenting (maternal sensitivity); - mental health (depression, dissociative experience, self-esteem)
Gannon et al. (2017)	- United States - University-based outpatient & residential treatment programs - Clinical	- Unspecified ACEs ($M_{ACE} = 3.99$, $SD = 2.16$) 100% female 31 (range NR) 15% ethnic minority 45% single 31% below high school; 9% employment - Opioid use disorder (100%)	- NR 14.89 months (3 months to <4 years)	- Mindfulness-based Parenting (MBP) intervention 12 weeks, 1 session/week, 2 hours/session - Yes (3 of the 12 sessions incorporated a mother–child dyad component) - Not included	- Single group pre-post design (NA) 160 - Parenting (mindful parenting)
Hiebert-Murphy & Richert (2000)	- Canada - Referral by intake workers/therapists at a treatment service agency	- Sexual abuse (100%); household substance abuse (NR%) 100% female	- NR - NR	- Solution-focused parenting group intervention 12 weeks, 1 session/week, 2 hours/session	- Single group pre-post design (NA) 22–23 - Perceived parental efficacy/stress (overall)

(Continues)

TABLE 1 (Continued)

	for women with child sexual abuse history/affected by substance abuse	• 32 (range NR) • 66% ethnic minority • 52% single, 10% separated/divorced • 17% below high school; 48% on social assistance or income < \$10,000/year • Substance use history/affected by substance use in partner relationships		• No • Not included	parenting self-esteem); parent-child relationship (attitudes toward child); mental health (self-esteem)
Huebner (2002)	• Clinical • United States • Referrals by professionals at inner-city pediatric clinics & free newsletter/posters/fliers at the clinic sites • Clinical	• Unspecified ACEs (62%) • 95% female • 28 (range NR) • 65% ethnic minority • 89% unmarried • Low school achievement (average education: below high school graduation); 69% relied on government assistance • Substance abuse; lifelong hardship, e.g., lack social support, domestic violence	• NR • 8.46 months (1–36 months)	• Clinic-based Parent Education Program (based on the Systematic Training for Effective Parenting (STEP) program) • 8 weeks, 1 session/week, 2 hours/session • No • Not included	• Single group pre-post design (NA) • 122–143 • Parenting (early development environment; parent-infant interaction; perceived parental efficacy)/stress (parenting stress)
Muzik et al. (2015)	• United States • Recruited through fliers posted in low-income communities, primary care clinics, and community mental health centers • Mixed	• Neglect (60%), emotional abuse (68%), physical abuse (59%), sexual abuse (46%) • 100% female • 24 (range NR) • 52% ethnic minority • 63% single • 25% below high school; 68% < \$15,000/year • PTSD (48%), MDD (56%); other environmental trauma exposure, e.g., robbed/witness	• 41% girls • 21.5 months (0–5 years)	• Mom Power (MP) • 10 weeks, 1 session/week, 3 hours/session • Yes (play-based child parallel group, guided parent-child interaction) • Yes (3 individual sessions conducted before/at midpoint/after the group sessions, respectively, designed to engage, motivate, build	• Single group pre-post design (NA) • 58–80 • Perceived parental efficacy/stress (caregiver helplessness, parenting helplessness); parenting (parenting reflectivity); mental health (depression, PTSD)

(Continues)

TABLE 1 (Continued)

		robbery, death of someone close, accident/natural disaster		trust & rapport with participants)	
Muzik et al. (2016)	• United States • Recruited from an existing patient base at health centers • Clinical	• Physical, emotional abuse/neglect (58%) • 100% female • 20 (range 15–22) • 47% ethnic minority • 65% single • 20% below high school; 61% below poverty line (\$15,000/year) • PTSD (45%), MDD (55%), other traumatic life events (e.g., death of someone close); teen mothers	• NR • 18 months (0–6 years)	• Mom Power (MP) • 10 weeks, 1 session/week, 3 hours/session • Yes (play-based child parallel group, guided parent–child interaction) • Yes (3 individual sessions conducted before/at midpoint/after the group sessions, respectively, designed to engage, motivate, build trust & rapport with participants)	• Single group pre-post design (NA) • 20–34 • Perceived parental efficacy/stress (caregiving helplessness, parenting confidence); mental health (depression, PTSD)
Rosenblum et al. (2017)	• United States • Self-referral via fliers in low-income communities, primary care clinics, community mental health clinics; or via primary care/mental health providers’ referral • Mixed	• Physical, sexual, or emotional abuse and neglect (75%) • 100% female • 24 (range NR) • 71% ethnic minority • 65% single • 39% below high school; 62% annual household income < \$15,000 • PTSD (34%), depression diagnosis (45%); adult exposure to harassment, rape, and/or physical violence; other non-interpersonal trauma (e.g., accident, death of someone close)	• NR • 16.5 months (range NR)	• Mom Power (MP) • 10 weeks, 1 session/week, 3 hours/session • Yes (play-based child parallel group, guided parent–child interaction) • Yes (3 individual sessions conducted before/at midpoint/after the group sessions, respectively, designed to engage, motivate, build trust & rapport with participants)	• RCT (3 individual sessions +10 weekly mails of Mom Power curriculum) • 37–44 • Perceived parental efficacy/stress (caregiving helplessness, parenting stress); parent–child relationship (child caregiving behaviors, CHQ); mental health (depression, PTSD)

(Continues)

TABLE 1 (Continued)

Short et al. (2017)	• United States • Comprehensive outpatient treatment center for pregnant & parenting women with substance use disorders; long-term residential treatment program serving pregnant & parenting women and their children • Clinical	• Unspecified ACEs ($M_{ACE} = 3.9$, $SD = 2.3$). Witness physical violence between guardians (39%), physical abuse (44%), sexual abuse (41%), psychological/emotional abuse (33%), household substance use (64%), parent divorce/separation (70%), mentally ill household member (59%), household member went to jail (44%) • 100% female • 31 (22–40) • 27% ethnic minority • 49% single • 35% below high school; 96% unemployed/disabled/unable to work/student; 93% recipient of public assistance • Substance use disorder (100%)	• NR • NR	• Mindfulness-based Parenting (MBP) intervention • 12 weeks, 1 session/week, 2 hours/session • Yes (3 out of the 12 weekly sessions included a mother–child dyad instruction, whereby children joined mothers for 1-hour mindful play with instructors on hand to offer real-time feedback/guidance • Not included	• Single group pre-post design (NA) • 41–46 • Perceived parental efficacy/stress (parenting stress); mental health (stress)
SmithBattle et al. (2017)	• United States • Flyers distributed at schools & agencies • Non-clinical	• Unspecified ACEs (>50%, M_{ACE} range 1–5 in treatment group, 0–9 in control) • 100% female • 18 (14–19) • 100% African American • 100% single • 6% working full-time; all resided in low-income households • Teen mothers	• NR • NR	• Moms Growing Together (MGT) • 10 sessions over 12 weeks, 1.5 hours/session • No • Not included	• Quasi-experimental design (Girls Night Out, a support group providing life skills training for teen mother) • 16 • Mental health (depression, anxiety, PTSD)
Steele et al. (2010)	• United States • University-affiliated child/family service	• Sexual abuse (52%), substance abuse of household	• 33% girls • M_{age} NR (12–36 months)	• Attachment-Centered Parent–Child Therapy	• Single group pre-post design (NA) • 13

(Continues)

TABLE 1 (Continued)

	center (pediatric mental health, family court, foster care, preschool consultation, etc.)	member (70%), mentally ill household member (89%), parent divorce (96%), neglect (54%)		• 2 sessions/week, 1.5 hours/session, mothers attended between 29–85 sessions (Mean = 63)	• Parent–child relationship (toddler–mother attachment)
	• Mixed	• 100% female		• Yes (begins with a joint parent–child group component, followed by separate parent/child groups, concludes with a reunion)	
		• 28 (20–41)		• Not included	
		• 81% ethnic minority			
		• NR			
		• NR			
		• Ongoing exposure to poverty, domestic/neighborhood violence			
Steele et al. (2019)	• United States	• 4 or more unspecified ACEs (76%)	• NR	• Group Attachment-Based Intervention (GABI)	• RCT (treatment-as-usual, STEP program)
	• Referrals from pediatrics, child welfare, and court systems	• 100% female	• M_{age} NR (0–3 years)	• 26 weeks, 2 hours/session, 3 sessions/week	• 78 families
	• Mixed	• NR (range NR)		• Yes (begins with group parent–child psychotherapy, followed by separate parent/child group and parent–child reunion)	• Parent–child relationship (dyadic constriction/reciprocity); parenting (maternal support/hostility)
		• 96% ethnic minority		• Not included	
		• NR			
		• 9% below high school; 63% unemployed			
		• 19% on psychotropic medications; other: history of psychiatric hospitalization, lost a child to foster care, lack stable housing			
Waters et al. (2018)	• United States	• Unspecified ACEs ($M = 3.5$, $SD = 2.75$)	• 42% girls	• Attachment Vitamins (AV)	• Single group pre-post design (NA)
	• Community advertisements for a parent education group and interested caregivers	• 86% female	• 23 months (0–5 years)	• 10 weeks, 1 session/week, 1.5 hours/session	• 52
	• Non-clinical	• 27 (range NR)		• No	• Parenting (negativity/warmth toward child); perceived parental efficacy/stress (parental sense of competence, parenting stress); mental health (emotional regulation reappraisal/suppression)
		• NR		• Not included	
		• NR			
		• 46% below high school; 30% unemployed, 35% earned (<\$15,000)			
		• NR			

Note. ACE = adverse childhood experience; MDD = major depressive disorder; NA = not applicable; NR = not reported; PTSD = posttraumatic stress disorder; STEP = Systematic Training for Effective Parenting. Ethnic minority = non-Caucasians.

Intervention characteristics

Ten GPI programs were included in the reviewed studies. Supplemental Table 1 (supplemental material) summarizes key components of these interventions, including their theoretical orientation, structure, content, and group components. Although most interventions used a combination of approaches, we clustered these GPIs into three types based on their main approaches: psychotherapeutic, skill training, and psychoeducation groups. Psychotherapeutic groups focus on psychotherapeutic elements, such as a modality of certain type of psychotherapy, or treatment of trauma. Skill training groups focus on building skills through practice in groups. Psychoeducation groups are interventions that mainly involve information delivery, sharing, and discussion.

Most GPIs in this review were psychotherapeutic groups ($k = 7$). For instance, the Moms Growing Together program adopted expressive arts and an action-based therapeutic approach, which largely used music, drama, movement, and storytelling (SmithBattle et al., 2017); a mindfulness-based program integrated mindfulness techniques to heal trauma (Gannon et al., 2017). Two interventions mainly aimed at skill training, such as parenting skills, anger management, and discipline techniques (Huebner, 2002; Short et al., 2017). One GPI (Attachment Vitamins) focused on psychoeducation, which promoted parents' knowledge of child development and the effects of toxic stress and trauma on child and parenting (Waters et al., 2018). All GPIs (except Waters et al., 2018) specified how group activities benefited the parents, such as sharing knowledge with group members, providing a safe and nurturing environment, and fostering peer support among group members who had similar experiences.

With respect to theoretical orientation, most studies ($k = 7$) referred to their interventions as attachment based. Five studies explicitly mentioned their interventions were trauma-informed, and four studies applied trauma-related frameworks but did not specify the interventions as trauma-informed. In terms of intervention structure, five GPIs used parent-only groups. Two mindfulness-based GPIs included guided parent-child dyad interaction components in addition to parent groups (Gannon et al., 2017, and Short et al., 2017). Five studies included separate, parallel parent and child groups along with a child-parent reunion in the end (Muzik et al., 2015; Muzik et al., 2016; Rosenblum et al., 2017; Steele et al., 2010; Steele et al., 2019). Four interventions also included individual sessions in addition to the primary group format (Cassidy et al., 2010; Muzik et al., 2015; Muzik et al., 2016; Rosenblum et al., 2017). For example, in Mom Power, individual sessions were conducted before, during the midpoint, and after GPI, so that intervention facilitators could engage and build direct rapport with each participant (Muzik et al., 2015; Muzik et al., 2016; Rosenblum et al., 2017); in another study involving parents in correctional systems, individual psychotherapy was provided along with group intervention (Cassidy et al., 2010).

Intervention dosage varied across studies. Most interventions ($k = 9$) varied from 8 to 12 weeks, with a session of 1.5–3 hours per week. There were also three longer interventions. The Group Attachment-Based Intervention lasted for 26 weeks, with three 2-hr sessions per week (Steele et al., 2019); the Attachment-Centered Parent-Child Therapy held three 1.5-hr sessions per week, and participants attended 29–85 sessions (Steele et al., 2010); a jail-diversion intervention had two 1.5-hr sessions per week and lasted for 15 months (Cassidy et al., 2010).

Risk of bias

Most of the nonrandomized studies showed high risk in two domains: confounding variables and treatment fidelity. The two randomized controlled studies were rated high and medium quality; one of them (Rosenblum et al., 2017) demonstrated low risk in all domains, while the

other one (Steele et al., 2019) showed high risk in “participant adherence” and “complete outcome data” domains (Supplemental Table 2).

Meta-analyses

Intervention effects on parenting

Combining results from 11 studies that reported parenting-related outcomes (Figure 2a), the meta-analysis showed a small, positive mean effect on overall parenting ($g = 0.36$, 95% CI [0.22, 0.49], $p < .001$). As shown in Table 2, the included studies showed $I^2 = 45.1\%$, indicating that 45.1% of the total observed variation between studies was due to true variation in effect sizes rather than random error. The Q -statistic was not statistically significant ($Q = 18.21$, $p = .051$). The 95% prediction interval was 0.01 to 0.71, which indicates in all populations represented by these studies, the true effect size in 95% of cases will fall somewhere in this range (Borenstein, 2019). In terms of specific parenting domains, GPIs showed small and positive effects on parenting behavior ($g = 0.33$, CI [0.20, 0.46], $p < .001$), perceived parental efficacy/stress ($g = 0.35$, CI [0.17, 0.53], $p < .001$), and a medium and positive effect on parent-child relationship ($g = 0.55$, CI [0.40, 0.69], $p < .001$).

Intervention effects on parent mental health

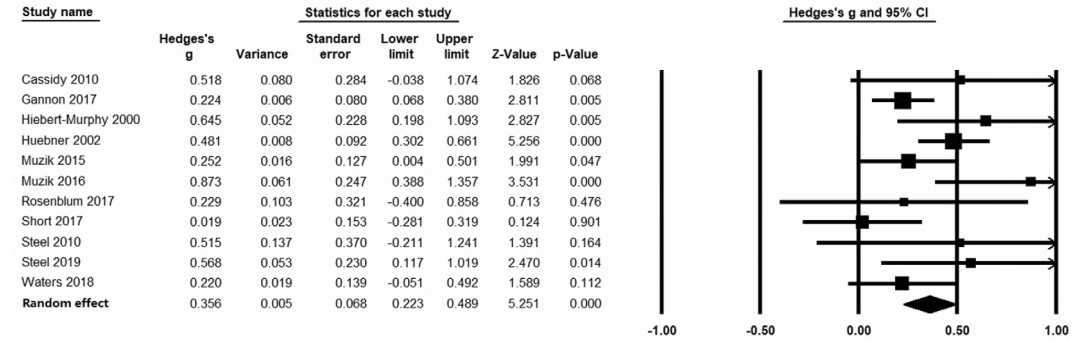
Combining eight studies that reported participant mental health outcomes (Figure 2b), the meta-analysis also showed a small, positive mean effect on overall parent mental health ($g = 0.34$, 95% CI [0.16, 0.53], $p < .001$). As shown in Table 2, an I^2 of 45.4% suggested that 45.4% of the total observed variation between studies was due to true variation in effect sizes rather than random error. The Q -statistic was not statistically significant ($Q = 12.82$, $p = .077$). With respect to specific mental health measures, GPIs showed small and positive effects on reducing depression/anxiety ($g = 0.38$, CI [0.21, 0.55], $p < .001$), but the effects were nonsignificant for PTSD ($g = 0.30$, CI [-0.003, 0.60], $p = .052$) and other mental health issues (e.g., stress, dissociative experience; $g = 0.33$, CI [-0.01, 0.67], $p = .058$).

In addition, we used a sensitivity analysis to assess the results of robustness. We conducted fixed-effects meta-analyses and repeated our analyses for studies with low risk of bias only. Consistent with our main analysis, using a fixed-effects model, GPIs showed small, positive effects on parenting ($g = 0.33$, 95% CI [0.24, 0.42], $p < .001$) and parent mental health ($g = 0.34$, CI [0.22, 0.47], $p < .001$). Similarly, when only including studies with low risk of bias, GPIs showed small, positive effects on parenting ($g = 0.27$, CI [0.07, 0.48], $p = .009$) and parent mental health ($g = 0.25$, CI [0.02, 0.48], $p = .035$).

Moderator analyses

Moderator analyses were conducted to assess whether the intervention characteristics could account for the variance in GPI effects. Supplemental Table 3 (supplemental material) presents results of univariate analysis of moderator variables for parenting and mental health. One moderator variable, recruitment setting, might significantly contribute to between-group variance. GPIs recruited from clinical settings showed larger effect on parent mental health (clinical setting [$g = 0.60$] > non-clinical and mixed settings [$g = 0.19$], $Q_b = 9.34$, $p = .002$). The effects of GPIs on parent mental health might not be significantly associated with other moderators, including child participation, individual session, intervention dosage, participants' ACE prevalence, and study design.

(a) Parenting ($k = 11$)



(b) Mental health ($k = 8$)

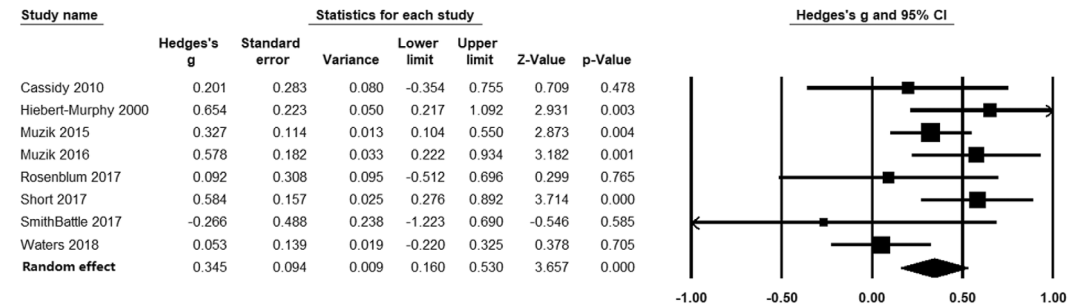


FIGURE 2 Overall effects of group-based parenting interventions on parenting and mental health *Note.* CI = confidence interval

TABLE 2 Intervention effects on parenting and parent mental health outcomes

Outcome	<i>k</i>	Effect size ^b	<i>Q</i>	<i>df</i>	<i>p</i>	<i>I</i> ²
		Hedge's <i>g</i> (95% CI)				
Parenting	11	0.36 [0.22, 0.49] ^{***}	18.21	10	.051	45.10
Parenting behavior	6	0.33 [0.20, 0.46] ^{***}	7.88	5	.163	36.58
Perceived parental efficacy/stress	7	0.35 [0.17, 0.53] ^{***}	13.66	6	.034	56.09
Parent–child relationship	5	0.55 [0.40, 0.69] ^{***}	0.96	4	.916	0.00
Mental health	8	0.34 [0.16, 0.53] ^{***}	12.82	7	.077	45.39
Depression/anxiety	5	0.38 [0.21, 0.55] ^{***}	3.50	4	.478	0.00
PTSD	4	0.30 [−0.003, 0.60]	5.66	3	.129	47.04
Other ^a	4	0.33 [−0.01, 0.67]	10.09	3	.018	70.27

Note. CI = confidence interval; PTSD = posttraumatic stress disorder.

^a“Other” includes stress, self-esteem, dissociative experience, and emotional regulation.

^bEffect sizes were adjusted to the consistent direction for all outcomes; positive values indicate positive treatment effects, negative values indicate negative treatment effects.

^{***}*p* < .001.

Publication bias

Given that studies reporting large effects may be more likely to be published than those with smaller effects, the funnel plot assesses such publication bias by presenting large studies (with

small standard errors) toward the top and small studies (with larger standard errors) toward the bottom; when studies at the bottom unsymmetrically concentrate more on one side of the mean, this potentially indicates a higher-than-average effect in these published smaller studies (Borenstein et al., 2009). In this review, the Egger's test indicated no evidence of statistically significant bias (parenting: intercept = 1.05, $t = 1.20$, $p = .261$; mental health: intercept = -0.48 , $t = 0.36$, $p = .732$); however, the funnel plots seemed to suggest some positive estimation bias in parenting (Supplemental Figure 1). To assess the extent of potential publication bias, we used Trim and Fill analysis to estimate the number of studies missing from the left of the mean effect (i.e., assuming an overestimation in the effect size). Using a random-effects model, the result suggested that three studies were potentially missing, and the adjusted effect size would be 0.28 (95% CI [0.14, 0.42]). Although the adjusted effect was smaller than the observed effect ($g = 0.36$), this finding is consistent with GPIs generating positive and significant effects on parenting.

DISCUSSION

This meta-analysis examined the effects of GPIs on parenting and mental health outcomes among parents with ACEs through the systematic review of 12 studies, covering 10 GPIs and involving 709 families. To our knowledge, this is the first meta-analysis that assesses the effect of group interventions targeting parents with ACEs. Parenting intervention effectiveness is sensitive to parental childhood traumatic experiences, and parent maltreatment histories may impede the efficacy of general parenting interventions (Ammerman et al., 2016; Steele et al., 2019). Thus, understanding the effectiveness of parenting interventions for parents with ACEs is important to inform future interventions for this high-risk group.

Our main finding was that group-based parenting interventions overall showed positive effects on parenting ($g = 0.36$, 95% CI [0.22, 0.49], $p < .001$) and on parent mental health ($g = 0.34$, CI [0.16, 0.53], $p < .001$). Regarding specific parenting domains, GPIs showed small and positive effects on parenting behavior and perceived parental efficacy and stress, and a medium and positive effect on parent-child relationship. This indicates that GPIs may exert greater effect at the relationship level, which may result from positive social interactions among group members that may be transferred outside of the intervention context (Steele et al., 2010). These effect sizes on parenting domain are comparable to parenting programs for parents of children with behavior problems (Flores et al., 2020; parenting behavior, $g = 0.34$; parent distress, $g = 0.30$; parenting efficacy, $g = 0.41$). In addition, GPIs showed small, positive effects on overall parent mental health and the depression/anxiety domain.

Notably, interventions with participants recruited from clinical settings showed significantly greater effect on parent mental health than interventions with participants from non-clinical or mixed settings. Similarly, a previous meta-analysis on parent sensitivity interventions for families with mixed challenges (e.g., low socioeconomic status, child or mother with mental health issues) also found that the only participant characteristic associated with effect size differences was the clinical versus nonclinical populations (Bakermans-Kranenburg et al., 2003). Because participants recruited from clinical settings may start with higher levels of mental health issues and parenting stress, they may respond to interventions with greater improvement. In addition, our reviewed interventions recruited from clinical settings tended to be longer in duration, which may also contribute to the greater effectiveness on parent mental health.

It is important to note that although GPIs showed smaller effects in non-clinical and mixed settings, these GPIs did show significant, positive effects on participants' parenting ($g = 0.31$, 95% CI [0.16, 0.46]) and mental health ($g = 0.19$, CI [0.04, 0.35]) according to our subgroup analyses. Given that not all parents with ACEs meet the clinical diagnosis threshold, GPIs provided outside of clinical settings appear to improve at-risk parents' parenting and may prevent the onset or deterioration of mental health conditions before they necessitate clinical services.

With respect to the relationship between parent ACE levels and intervention efficacy, studies with at least 70% of participants with ACEs showed a slightly larger mean effect size, but this difference was not statistically significant. In addition, note that not all studies reported participant ACEs level. In the 12 reviewed studies, two studies examined the relationship between the level of ACEs and the intervention effect on parenting outcomes. Gannon et al. (2017) indicated that higher baseline ACEs combined with higher attendance rate predicted an improved overall interactive parenting quality (i.e., building relationships, promoting learning, supporting confidence) over time in a 12-week mindfulness-based parenting intervention. In contrast, Steele et al. (2019) found that parents with four or more ACEs demonstrated less positive change in parenting outcomes (lower dyadic reciprocity and higher dyadic constriction) compared with parents with lower ACE levels after a 26-week group attachment-based intervention. These divergent findings likely result from different intervention methods, outcome measures, and inconsistent ways of reporting ACEs. Future studies with standard definitions of target populations will provide clearer evidence to discern the effect of parent ACE levels on the intervention outcome.

Regarding length of intervention, although our subgroup analyses did not show significant differences between longer and shorter interventions, our analysis was likely underpowered due to a small number of studies. A previous meta-analysis found that the most effective interventions to improve parent sensitivity and parent-child attachment had a moderate length (fewer than 16 sessions; Bakermans-Kranenburg et al., 2003). However, that review did not take into account parental trauma history and ACEs. Considering that ACEs and unsolved trauma can impede the effectiveness of attachment-based interventions (Moran et al., 2005), working through trauma and repairing early attachment for parents necessitates longer time. In their Group Attachment-Based Intervention, Steele et al. (2019) suggested that even 26 weeks of intervention (three times per week) was insufficient for the most trauma-laden parents. Future interventions for parents with ACEs may tailor intervention duration and frequency according to the parental ACE level, while monitoring the progress of participants with high ACEs.

Regarding the most effective group model, Mom Power (Muzik et al., 2016) showed the largest effect size on parenting ($g = 0.873$), and Hiebert-Murphy and Richert's (2000) solution-focused group therapy showed the largest effect size on parental mental health ($g = 0.654$). We speculate that parenting improvement is sensitive to interventions that incorporate the parent-child dyad instruction and parenting strategy teaching, whereas mental health improvement is sensitive to interventions that focus on parents' personal emotional needs. Notably, Steele et al. (2019) adopted an active control group (the Systematic Training for Effective Parenting education), in which parenting skills were taught without supervised parent-child interactions or therapeutic support. Mothers in this control group showed no significant improvement, and those with low ACEs showed even worse parent-child interactions. Therefore, interventions that only involve education and knowledge delivery may be inadequate for parents with ACEs.

Our reviewed studies adopted various intervention components. For instance, Mom Power involved a play-based child group, guided parent-child interaction, individual sessions, and mindfulness teaching to help parents regulate their emotions (Rosenblum et al., 2017). To discern the effectiveness and necessity of distinct components, future RCTs may compare the same treatment groups with and without certain components (e.g., a child parallel group, video feedback).

In addition, comparing the group format with individual-based programs is necessary to conclude whether group-based interventions have comparable efficacy to individualized interventions. Given the varying attrition rate and diverse needs of parents with different types of ACEs, it is possible that severe individual trauma cannot be fully addressed in a group environment due to its limited time and space. Therefore, group interventions may incorporate individualized services (e.g., home visits) or individual sessions for high-ACE parents.

Implication for practice and policy

Addressing the needs of parents with ACEs warrants a comprehensive intervention framework. For instance, Mom Power and Group Attachment-Based Intervention were both good examples of adapting parent–child psychotherapy into a group format; parallel child and parent groups were provided in addition to guided parent–child interaction. The Group Attachment-Based Intervention also adopted video feedback as an important therapeutic component, through which the interventionists guided parents to explore their patterns of parent–child interaction (Steele et al., 2019).

Parenting interventions targeting ACEs population also call for the collaboration among psychiatrists, psychotherapists, and social workers. For example, in Gannon et al. (2017), the clinical staff partnered with mindfulness teachers to address triggered emotions that might arise from a previous trauma. Also, caregivers with early trauma commonly experience overwhelming stress due to their own emotional symptoms, which can impede their ability to respond calmly and sensitively to their children's needs (Rosenblum et al., 2017). Treatment of parents' own trauma contributed to the efficacy of parenting interventions (Cassidy et al., 2010). Thus, interventions for parents with ACEs should balance the focus on building healthy parent–child attachment and addressing parents' personal emotional needs.

Limitations and future research directions

Use of controlled design

An important limitation of our meta-analysis is that the majority of the included studies used nonrandomized designs, which are subject to biases introduced by sampling and confounders (Higgins et al., 2019), and the results therefore need to be interpreted with caution. To minimize potential risk of bias, we have selected the most relevant studies to our targeted population with specific inclusion/exclusion criteria. For instance, a cutoff point of 50% of participants with ACEs, or a minimum of three ACEs on average, was used to ensure participants represent those with a particular experience in common.

To assess potential biases in the included studies, two assessors independently rated the risk of bias in each study using standardized multidomain tools. We found that most single-group design studies had high risk in the “confounding variables” domain; because it may not be ethical or feasible to perform randomization with such high-risk participants, future studies should draw existing best available evidence to inform practice decisions and research directions, such as adding multiple baseline tests as self-controls.

Diversity of participants

Most participants in this review were parents in young adulthood (aged 24–32 on average), with only two studies focusing on teen mothers (Muzik et al., 2016, $M_{\text{age}} = 20$, age range 15–22; SmithBattle et al., 2017, $M_{\text{age}} = 18$, age range 14–19). Most studies also included 100% mothers, while only two studies included fathers (Huebner, 2002; Waters et al., 2018). Given the increasingly recognized importance of father involvement in family functioning (Lundahl et al., 2008) and heightened vulnerability among younger parents (SmithBattle et al., 2017), future GPIs may consider involving fathers in the intervention process as well as providing early intervention to young parents such as teenaged mothers and fathers.

A limitation is that we restricted our search to articles published in English. Although we did not limit our search to high-income countries, we found that all studies in this review were based in the United States except for one study conducted in Canada (Hiebert-Murphy &

Richert, 2000). As parents experiencing economic deprivation have heightened distress and parenting difficulties (Donnellan et al., 2013), more interventions and research among families in less developed countries and regions are imperative. In addition, cultural diversity requires interventionists to adapt GPIs to ensure their feasibility and effectiveness in different societies. It would also be interesting for future reviews to include non-English studies and compare intervention effects among countries or regions to identify potential sociocultural variations.

Consideration of additional factors

Our subgroup analyses suggest that mean effect sizes vary by a series of study characteristics: the nature of recruitment settings, whether child participated in the intervention, whether individual sessions were included, intervention dosage, and study quality. Although between-group tests did not yield statistical significance overall (except for recruitment setting), the nonsignificant findings might be due to a lack of statistical power and should be interpreted with caution. The studies recruited from clinical settings in our review tend to be longer in duration, less likely to have children participate, and higher in study quality. It is possible that a combination of these study characteristics may influence intervention effects but may not show unique impact in individual subgroup analyses.

Because moderator tests in meta-analyses are likely to be underpowered (Valentine et al., 2010), and given our small number of included studies, we do not have enough evidence to conclude whether these participant and study characteristics influenced intervention effects. Future reviews with larger samples should consider including these covariates to disentangle the individual effects of participant type, intervention format, and study quality. Additionally, because of common comorbid conditions within parents who experienced ACEs (e.g., mental health issues, substance use), future interventions may consider an integrative intervention approach that addresses both early trauma and ongoing mental health needs. Finally, although parent ACEs have intergenerational effects on their children (Cooke et al., 2021), child outcomes were rarely reported in our included studies. Future studies may add child emotional and behavioral outcome measures to assess the impact of GPIs on family well-being beyond parents themselves.

In conclusion, GPIs show promising effects in improving parenting and parent mental health among parents who have experienced childhood adversities. Our review provides an initial synthesis of existing research evidence for this high-risk group. Although our findings should be interpreted with caution given the small number of included studies, a meta-analysis approach does provide greater validity and transparency compared with other synthesis techniques, such as vote counting (Valentine et al., 2010). This lack of evidence also calls for more research attention to this topic, particularly given the long-lasting effects of parent ACEs on themselves and their families.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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