EMPIRICAL RESEARCH

A Meta-analysis of the Effects of Mentoring on Youth in Foster Care

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Abstract
Research suggests that mentoring programs may promote a range of positive outcomes in youth populations. Less is known, however, about the extent to which such programs are effective in specialized youth populations, such as youth involved in the foster care system. The current study aimed to investigate the extent to which mentoring interventions promote positive outcomes among youth involved in the foster care system and to systematically explore factors that may moderate the effectiveness of mentoring interventions. Using a multilevel meta-analytic approach, this study estimated the effect size of nine formal mentoring programs in the United States serving youth involved with the foster care system (total $n = 55,561$). Analyses revealed a small-to-medium-sized overall effect ($g = 0.342$). Moderator analyses revealed weaker effects for studies containing higher proportions of youth with emotional abuse histories. Programs deploying near-peer mentors were more than twice as effective as intergenerational mentors. The findings highlight the salience of emotional abuse history, suggesting the utility of providing mentor trainings in trauma-informed care for this population.

Keywords Mentoring · Formal mentor · Foster care · Youth · Meta-analysis

Introduction

Increasingly, mentoring relationships have been viewed as a vital protective factor for the 420,000 youth in and aging out of the foster care system in the United States (Adoption and Foster Care Analysis and Reporting System, 2019). Mentors can provide a secure base and facilitate foster care youth's transition to independent living and adulthood (Osterling & Hines, 2006; Greeson, 2013) by providing support and encouraging positive expectations and perceived sense of control about their futures (Robbins & Bryan, 2004). Mentoring relationships are often cultivated through formal programs, some of which are specifically designed to meet the needs and circumstances of youth in the foster care system (e.g., Geenen et al., 2013; Taussig & Culhane, 2010). Although primary evaluations have examined the effectiveness of mentoring programs for youth in foster care and meta-analyses have assessed the effectiveness of mentoring for general youth populations,

no meta-analyses have examined the effectiveness of mentoring programs for the specialized population of foster care youth. Thus, the purpose of the current study was to systematically examine (1) the overall effectiveness of mentoring programs for youth involved with the foster care system in the United States and (2) the extent to which the effectiveness of these programs varies as a function of mentor and youth characteristics and outcomes.

Mentoring for Youth in Foster Care

In the United States, youth may be placed in the foster care system to receive support from a temporary caregiver when their primary guardians are unable to care for them. Foster care placement may result from a range of factors, including youth parental or caregiver abuse, severe child behavioral problems beyond the control of parents, or significant parental problems such as illness, incarceration, substance abuse, or unexpected death (American Academy of Child and Adolescent Psychiatry, 2018). In addition to receiving a new temporary guardian, formal mentoring, in which mentors and mentees are matched through programs, is another common intervention strategy for addressing the needs and circumstances of youth involved in the foster care system.

Rhodes' (2005) model of mentoring outlines several developmental processes through which mentoring may

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positively influence youth, including social-emotional, cognitive, and identity development. These developmental processes are thought to be dependent on the formation of a strong mentor-mentee relationship, which provides a context for youth to take on new challenges. By modeling caring and providing support, for example, mentors can both challenge negative views that some youth may hold of themselves and demonstrate that positive relationships with adults are possible. In this way, a mentoring relationship may become a "corrective experience" for youth who have experienced unsatisfactory relationships with parents or other caregivers. In other cases, however, forming a close mentoring relationship may be complicated for youth in the foster care system, particularly those who have experienced interpersonal trauma. Such youth may have lower emotional awareness and heightened sensitivity and reactivity to threat-related stimuli (McLaughlin et al., 2020; Weissman et al., 2019).

Given these vulnerabilities, programs serving youth involved in the foster care system often provide their mentors with intensive training in trauma-informed care as well as additional structure, and supervision (e.g., Geenen et al., 2015; Taussig & Culhane, 2010). Additionally, although mentoring programs typically involve intergenerational relationships, mentoring programs may opt to deploy mentors who are closer to their mentees in age and experience (i.e., "near-peer" mentors, Geenen et al., 2015). In particular, mentors who have also been involved with the foster care system, are thought to act as more credible messengers since their guidance is often grounded in shared experience (Austria & Peterson, 2017). These younger mentors are typically provided with relatively more training and supervision than older adult mentors, who may be more trusted by program staff and given more independence in their mentoring relationships (Karcher & Berger, 2017; Burton, 2020).

The effectiveness of formal mentoring for youth in the U. S. foster care system has been examined in a number of studies in the past decade. Much of this research has examined five programs in particular that have been specially developed for youth involved with the foster care system. Most notably, Taussig and colleagues' Fostering Healthy Futures mentoring program for maltreated pre-adolescent youth involved with the foster-care system has been evaluated in a number of studies, all indicating positive effects for youth participants (e.g., Taussig & Cuhane, 2010; Taussig et al., 2012, 2013, 2019; Weiler & Taussig, 2019). Specifically, evaluations of the Fostering Healthy Futures program have indicated positive effects for youth participants' residential placement stability and permanency, as well as mental health outcomes such as trauma symptoms. Other programs, including My Life (Powers et al., 2012), the Transition to Independence Program

(Ayna, 2017), Better Futures (Geenen et al., 2015), and Take Charge (Geenen et al., 2013) have also explored the effectiveness of mentoring programs, and have found generally positive effects across a range of psychological outcomes and symptoms including self-determination, hope, mental health empowerment, and anxiety and depression, as well as educational/academic, independent living, and service utilization outcomes.

Potential Moderators of Program Effectiveness

Although these evaluations provide important contributions to the field, important questions remain about the overall effectiveness of mentoring interventions for youth in the foster care system and the factors that may moderate outcomes. The examination of moderators is crucial to understanding for whom, and under what circumstances, mentoring can be more effective. Furthermore, moderator analyses can illuminate whether certain program practices, outcome types, and research methodologies yield larger effects.

Mentee characteristics

Although some mentoring programs have shown relatively promising effects in outcomes across youth gender, racial/ethnic identity, and mental health functioning (Taussig et al., 2019), additional research is necessary to determine whether these findings are similar across a range of mentoring studies for foster care youth. Given that youth of color are more likely to be involved with the foster care system (Kids Count Data, 2020) and are also at risk of experiencing structural and systemic race-related stress and oppression (Fulbright-Anderson et al., 2005), it is particularly important to investigate race and ethnicity, as well as a range of other sociodemographic characteristics.

It is also important to consider the moderating effects of baseline risk factors, such as whether youth are currently, formerly, or transitioning out of the foster care system. Youth who are currently in the foster care system may be more likely to seek help around issues of improving well-being, changing problematic behaviors, and obtaining access to mental health services (Taussig et al., 2019), whereas youth who are transitioning out of, or formerly involved with the system, are more likely to need support in areas such as skills required for independent living (Ayna, 2017).

Likewise, the extent to which foster care youth have been exposed to potentially traumatic circumstances, such as experiences of abuse, neglect, or abandonment by a caregiver may affect outcomes (Adoption and Foster Care Analysis and Reporting System, 2019). These traumatic experiences can affect working models of attachment and

the formation and maintenance of meaningful social ties (Blakemore et al., 2017). Studies of natural mentoring relationships (i.e., naturally occurring, organic bonds developed between youth and nonparental adults) have shown that youth with histories of trauma are less likely to form close mentoring relationships than their non-trauma-exposed counterparts (Weber Ku et al., 2021). Likewise, previous studies have demonstrated that having a more emotionally vulnerable mentee predicts lower-quality mentoring relationships, and a higher likelihood of mentor attrition (Karcher, 2005; Karcher & Lindwall, 2003). Furthermore, in one study of a mentoring program for youth in foster care, mentees exposed to fewer adverse childhood experiences tended to have more beneficial outcomes (Taussig et al., 2019).

More generally, there is some evidence that youth who enter mentoring programs with significant behavioral risk factors may derive fewer benefits. For instance, one study found that greater behavioral risk, including academic problems, misconduct in school, or substance use, was associated with mentees' dissatisfaction with the mentoring relationship and mentors' perceptions of lower relationship quality (Raposa et al., 2016). Other studies have also shown stronger effects in programs serving youth with greater levels of individual and environmental risk, and mentoring programs may be particularly effective for youth who initially report higher risk for negative outcomes (DuBois et al., 2011).

Mentor characteristics

Mentors' sociodemographic characteristics may also affect foster mentoring program outcomes. For example, one study found that foster care youth mentees who participated in a mentoring program with young foster care alumni mentors experienced moderate to large positive effects for self-determination, quality of life, use of transition services, high school completion, employment, and independent living outcomes (Powers et al., 2012), suggesting that mentor age may be a salient moderator. Additionally, a recent intergenerational youth mentoring meta-analysis demonstrated larger effects in programs that had a higher percentage of male mentors (Raposa et al., 2019). Thus, mentor gender may also be a relevant moderator of program effects. In addition, mentor race and ethnicity may be a significant contributing factor to mentoring outcomes, particularly among youth of color. For example, one study found that African American, Hispanic, and mixed race youth who were matched with mentors who did not share their racial identity experienced lower levels of service (i.e., time spent between youth and mentor; Scannapieco & Painter, 2014).

Besides mentor sociodemographic factors, former experiences of mentors may also play a significant role in the effects of mentoring. For example, one study found that mentors who had prior experience in mentoring were more likely to buffer the negative effects of youth behavioral problems on relationship quality (Raposa et al., 2016). Likewise, mentors who have a background in a helping professional role yield strong effects as they may feel a stronger sense of efficacy (Raposa et al., 2019; Van Dam et al., 2018). Finally, same-age or near-age peer mentors may be in a unique position as credible messengers to share their recent experiences with their mentees in the foster care system. By sharing their experiences and conveying a sense of understanding of the foster care system, peer mentors can encourage a sense of empathy, support, and connection (Austria & Peterson, 2017). As a result, it is important to consider whether mentors' congruent or former experiences in the foster care system may influence the effectiveness of mentoring.

Program characteristics

The considerable diversity in the practices of mentoring programs that target foster care youth employ may also affect intervention outcomes. For example, some programs offer mentoring as the sole intervention (e.g., Greeson & Thompson, 2017) whereas other programs offer mentoring in conjunction with other interventions such as psychoeducation and skills training (e.g., Powers et al., 2012). Mentoring programs for foster care youth may also vary in terms of whether they are offered as a one-to-one (e.g., Taussig et al., 2019) or group format (e.g., Powers et al., 2012), and whether or not they are curriculum-based. Researchers have found stronger satisfaction and outcomes in programs that provide opportunities for both individual and group mentoring activities and offer more staff support and mentor training (Herrera et al., 2008). Furthermore, program expectations of how much time youth and mentors spend together, such as program duration and match session length, may influence outcomes. Although some studies of youth mentoring have indicated that youth benefit from relationships that last for at least 12 months (Grossman & Rhodes, 2002), other studies have suggested that the expected amount of time mentors and youth spend together may be more important than relationship length (Grossman et al., 2012). Likewise, although earlier meta-analyses did not find differences in program effect on the basis of match length (DuBois et al., 2011), results from a recent meta-analysis of formal youth mentoring programs found that programs with expectations for longer meeting times yielded smaller effect sizes (Raposa et al., 2019). Given that these program features do not occur in isolation, it is also important to examine how combinations of program factors and practices may influence outcomes (Lyons & McQuillin, 2021).

Additionally, program structure and whether programs recruit intergenerational or near-peer may moderate youth outcomes. In one study of peer mentoring relationships, programs that incorporated both individual and larger group activities, provided a greater amount of adult oversight and involvement, and more staff support were positively associated with mentors' views of relationship quality and program satisfaction (Herrera et al., 2008). Research suggests that increased time spent in training and higher quality mentor training can also positively impact outcomes (Herrera et al., 2008). Despite this, little research has compared the effects of different mentoring approaches.

Outcome characteristics

The effects of mentoring programs for foster care youth may vary by outcomes. For example, outcomes related to transitioning to independent living and education as well as utilization of various psychosocial services are likely more salient for youth who have experienced the foster care system (e.g., Skobba et al., 2018). Additionally, as discussed above, previous evaluation studies of mentoring programs for youth involved with the foster care system have focused on a variety of different outcomes; however, certain unique developmental outcomes, such as behavioral outcomes and social functioning, have historically been understudied. Previous meta-analyses of mentoring for general youth populations have commonly examined outcomes such as internalizing symptoms and mental well-being, externalizing and behavioral problems, academic performance, and social-relational functioning (Raposa et al., 2019), thus warranting the examination of these outcomes in the foster care youth population as well. One reason that effects did not differ by outcomes is that many programs were nonspecific and cast a wide net of undifferentiated outcomes. There is growing evidence that more structured, goal-focused programs that target specific outcomes can dramatically improve outcomes in intergenerational mentoring programs (Christensen et al., 2020). As a result, it is important to explore the potential differential effects of mentors in both the broad outcome categories that exist in the current mentoring literature as well as the understudied outcomes that are more relevant for youth in the foster care system.

Methodological characteristics

Finally, the methodological approach of included studies needs to be examined. For example, larger study sample sizes may be more sensitive to statistically detect changes in effects. Likewise, studies that employ quasi-experimental designs and are published in peer-reviewed journals are more likely to yield larger effects than those that employ random assignment and are unpublished (Cheung & Slavin, 2015). These potential publication biases are important to consider when conducting a thorough meta-analysis.

Current Study

Youth involved in the foster care system have access to a variety of services, including mentoring, which research has suggested to be an effective intervention for general youth populations. Less is known, however, about the extent to which mentoring is effective for specialized youth populations, such as youth involved in the foster care system. As a result, there is a need to investigate whether mentoring is an effective service for foster care youth, and the factors that may moderate its impact. Given that a number of primary studies have been conducted on the effectiveness of formal mentoring for youth in the foster care system, meta-analysis presents a timely opportunity to assess the landscape and consolidate current evidence in the field relevant to practitioners and researchers alike. Thus, the purpose of the current study was twofold. First, this study aimed to determine the overall effectiveness of formal mentoring on outcomes for youth currently and/or formerly engaged in the foster care system in the United States. Second, this study aimed to systematically examine factors with the potential to moderate the effectiveness of mentoring, including the approach to mentoring, youth and mentor characteristics, as well as outcome measures.

Methods

Study Selection

Studies were identified through a literature search of seven online databases (i.e., PsycInfo, Social Sciences Citation Index, Academic Search Complete, ProQuest Dissertations & Theses, Cochrane Central Register of Controlled Trials, ERIC, and PubMed), identifying all published and unpublished evaluations (i.e., peer-reviewed articles, unpublished dissertations, technical reports) of mentoring interventions for youth currently or previously involved with the foster care system between the years of 1990 and May 2020. The search string included four elements. First, for the youth element, the following search terms were used: "youth", "adolescent*", "young people", or "teen*". Second, for the mentoring element, the following search terms were used: "mentor*", "big brother*", "non-parental*", Or "non-parental*". Third, for the foster care element, the following search terms were used: "foster care*", "out of home care", "child welfare" or "displacement". Finally,

for the research design element, search terms include "random*", "control*", "trial*", "quasi*", or "effect". Prior meta-analyses and review papers were manually searched to locate additional studies and websites for national mentoring agencies that fund or evaluate mentoring research and the Office of Juvenile Justice and Delinquency Prevention were searched for additional reports and articles. In addition, reference lists of the eligible articles were inspected to locate additional relevant studies. This search process yielded 539 potential articles, dissertations, and reports and duplicate studies were eliminated prior to evaluation for inclusion.

Multiple inclusion criteria were used to select studies for this meta-analysis. First, youth needed to have been in contact with the foster care system and have resided in a non-primary caregiver home. Second, eligible studies must have included a formal mentoring intervention in the United States. Studies in which mentoring was not a primary or secondary intervention, as well as tutoring and coaching programs were excluded from this meta-analysis. Third, eligible studies must have included a comparison group, either through a randomized control trial or quasi-experimental research design. Finally, studies must have reported on outcomes measures in at least one of five domains that are typically explored mentoring program meta-analyses. These included internalizing symptoms and mental wellbeing, academics/career, externalizing/behavioral problems, service utilization, and social competencies.

The first two authors conducted the screening and selection process. In cases of uncertainty or discrepancy of judgment, the last author was consulted. Figure 1 presents a flowchart of the search. The initial search yielded a total of 539 results. After removing duplicate articles, the first and second author completed double-blind review for eligibility of 10% of the title and abstracts from the 376 studies, with each then reviewing half of the remaining title and abstracts. This process reduced the sample to 156 studies that were subsequently independently, blindly coded by each coder for further eligibility screening. Discrepancies were resolved through discussion and examination of the inclusion criteria with the all members of the research team. After thorough inspection of the full-text for studies, an additional 143 studies were excluded due to not meeting the inclusion criteria. A final sample of nine studies was included in this meta-analysis (studies included in analyses are marked with an asterisk in the reference list).

Study Coding Procedures

Each study was coded on five major domains (youth characteristics, mentor characteristics, mentoring characteristics, outcome types, and methodological characteristics) by the
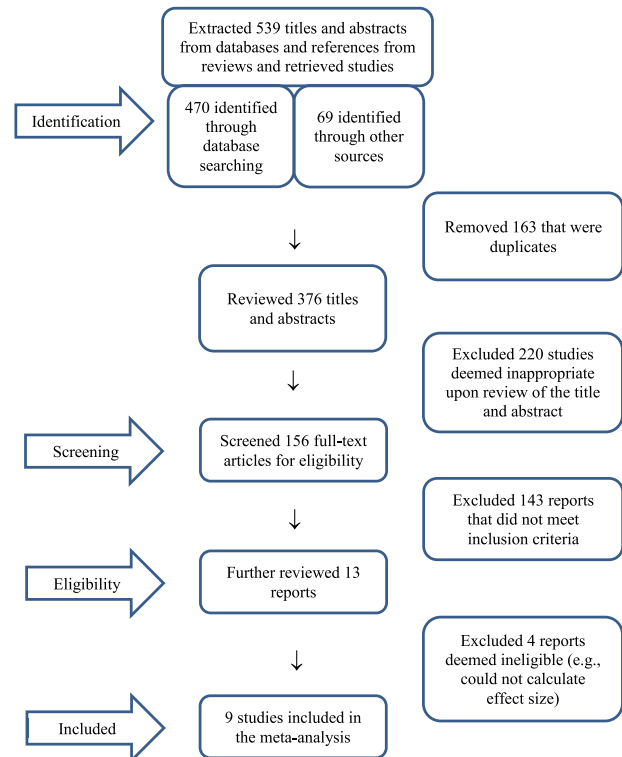

Fig. 1 Flowchart of the study selection process

first two authors to test for interrater reliability, yielding 94% agreement for moderator coding and 98% agreement for effect size coding.

Youth characteristics including youth gender, age, race/ethnicity, academic problems, foster care status, and histories of abuses and maltreatment were examined as potential moderators of program effectiveness. Raters recorded the demographic characteristics of the sample of each study, including mentee's sex, age, and race/ethnicity (Hispanic/Latino, Black/African American, White, Asian, Native Hawaiian/Other Pacific Islander, American Indian/Alaska Native, Multiracial, and "other"). Several variables were coded as indicators of academic problems, including receiving academic support or services and performing below grade level academically. Foster care status was coded to indicate whether the sample included youth currently in the foster care system, youth who were formerly in the foster care system, youth both currently and formerly in the foster care system, and youth transitioning out of the foster care system. Finally, coders identified and recorded the percentage of mentees who had experiences of physical abuse, emotional abuse, sexual abuse, and neglect.

Mentor characteristics including mentor gender, age, and race/ethnicity were examined as potential moderators. Raters recorded the demographic characteristics of the sample of each study similarly to coding for mentee characteristics. Additionally, raters coded proportion of mentors who had prior experience in mentoring, proportion of

mentors who had worked in a helping professional role, and proportion of mentors who were formerly involved with the foster care system.

Program characteristics were also examined as potential moderators. Raters coded whether mentoring was the sole intervention within the study or whether it was paired with other types of support for the youth. Raters also coded the mentoring format (i.e., one-on-one, group, mixed), whether the program followed a curriculum, whether the program used near-peer mentors (i.e., mentors who were similarly aged as the mentees), program length, whether the mentors received trainings, program expectations on program duration, meeting duration, anticipated support for mentors, as well as the number of months from baseline that outcomes were measured.

Outcome types were coded into five domains, including internalizing symptoms and mental wellbeing (e.g., post-traumatic stress), academics/career (e.g., post-secondary preparation), externalizing/behavioral problems (e.g., arrests; felony convictions), service utilization (e.g., transition planning), and social competencies (e.g., social acceptance; social withdrawal).

Finally, methodological characteristics were coded in order to account for their influence on the reported effect size. The publication status (i.e., journal, dissertation, or report) as well as the year the study was published, defended, or presented to the public were noted. In addition, the sample size of each study was noted. Furthermore, each study's design was coded as a randomized controlled trial (i.e., including a treatment condition and a no-treatment or waitlist control condition) versus a quasi-experimental design, and the control group was coded as "no treatment" versus "treatment as usual", and the number of months lapsed between baseline and outcome measurement was also noted. Moreover, studies were coded to indicate whether the comparison between treatment and control group was between foster care youth who received and did not receive the mentoring intervention, or between mentored youth who were involved and not involved with the foster care system. See Table 1 for a description of the mentoring programs, sample size, study design, outcomes reported, and months from baseline when outcomes were measured post-intervention.

Effect Size Calculation and Data Analysis

Effect sizes of the studies were calculated through the standardized mean difference between the treatment group and the control group for each outcome, where a positive standardized mean value indicates better performance in the treatment group. Of note, all included studies in this meta-analysis have mentoring intervention as the treatment group and non-mentoring as the control group.

Standardized mean difference values were transformed into Hedge's g (Hedges & Olkin, 1985) in order to adjust for small sample sizes as well as differences in sample size across studies.

Given that a majority of the included studies assessed more than one outcome, multiple effect sizes were calculated for most studies. Moreover, some studies assessed outcomes at multiple timepoints. To account for interdependency of these effect sizes, a multilevel meta-analysis approach was adopted to account for both between- and within-study variability (Van den Noortgate et al., 2015).

A series of preliminary four- and three-level analyses were first conducted to determine whether between-study, between-timepoint, and between-program differences contributed significant variability to the overall effect size. In the first set of four-level meta-analyses, four sources of variance were modeled into the equation: (1) the sampling variance of the observed effect sizes, (2) the variance between the same outcome category across different timepoints, (3) the variance between effect sizes from the same study, and (4) the variance between studies. In the second set of four-level meta-analyses, the variance between the same outcome category across different timepoints was removed, and variance within the same mentoring programs were inserted as a level-4 indicator. Log-likelihood-ratio-tests were then used to compare the deviance of the full model relative to the deviance of the models excluding one of the variance parameters, which shows if significant variance is present at the second and third (within-study) as well as fourth (between-study) levels (Assink & Wibbelink, 2016). Significant variance indicates a heterogeneous effect size distribution, and that the effect sizes cannot be treated as estimates of a common effect size. As the variance between the same outcome category across different timepoints did not significantly contribute to the analyses (LRT = 2.755, $p = 0.097$) in the first set of analyses, and the variance within the same program in the second set of analyses did not significantly contribute to the analyses (LRT = 0.006, $p = 0.937$), a final three-level strategy with sampling variances (level 1), variance between effect sizes in the same study (level 2), and variance between studies (level 3) was adopted for all analyses in this study.

Publication Bias Analysis

Publication bias results from the trend for non-statistically significant results to either never be submitted for peer-review or be rejected through the peer-review process, leading these results to remain unpublished (Pigott et al., 2013). In an effort to reduce publication bias, both published and unpublished works (e.g., reports, dissertations, theses) were eligible for inclusion in the current meta-analysis.

Table 1 Summary of included studies

Study citation	Program name	Program description	Total sample size	Study design	Outcomes reported	Months from baseline (outcomes measured)[a]
Ayna, 2017	Transition to Independence Program (TIP)	The process of mentoring is one that allows a senior, more accomplished person to provide instruction and support to a novice. At TIP, there are two forms of mentoring: peer-to-peer mentoring and career-based mentoring. In peer-to-peer mentoring, students are matched with more senior students (i.e., 'peer mentors') based on academic interests and schedule availability. Peer mentors serve as a resource for mentees by (1) providing information about available services (academic, financial, and social), and (2) helping the mentee understand and register for these services. Career mentors teach students career-oriented skills and strategies designed to increase their chances of occupational success. These mentors help guide students and serve as "door openers", providing letters of recommendation, advice about resumes and applications, and exposure to careers of interest. (p. 21)	144	QED	Academics, Externalizing	N/A
Blakeslee & Keller, 2018	My Life	Youth participants meet weekly with their mentors for 60–90 min, typically during unscheduled class periods, immediately before or after school, or in the evenings or on weekends (whichever is most feasible for the youth). My Life mentors are adults who have training and talent for working with youth, and they may be project staff or supervised MSW students. Youth in the My Life program are expected to participate in at least four group mentoring workshops. (p. 9)	293	RCT	Academics, Externalizing, Service Utilization	T1:12.0 T2: 24.0 T3: 36.0
Geenen et al., 2013	TAKE CHARGE	Youth participated in two components of TAKE CHARGE: (a) Individualized coaching in applying self-determination skills to achieve their educational and related goals and to participate in educational planning meetings and (b) group mentoring, where youth and near-peer foster care alumni who had completed high school and were working or in college gathered for information sharing and peer support. Mentors were recruited from college campuses, nominations from caseworkers, and study participants from earlier waves. (p. 87)	123	RCT	Internalizing, Academics, Social	T1: 9.0 T2: 18.0
Geenen et al., 2015	Better Futures	Mentoring brought together youth and their coaches for discussions and experiences guided by speakers with expertise around child welfare, mental health,	67	RCT	Internalizing, Academics, Service Utilization	T1: 1.0

Table 1 (continued)

Study citation	Program name	Program description	Total sample size	Study design	Outcomes reported	Months from baseline (outcomes measured)[a]
		and higher education. Peer coaches were young adults (under the age of 28), who were in higher education and had shared experiences around foster care and/or mental health challenges. (p. 155–156)				
Greeson & Thompson, 2017	C.A.R.E.	C.A.R.E. is 12 weeks and is delivered by an interventionist with a Master of Social Work degree. Prior to enrollment in C.A.R.E, the interventionist meets individually with youth in an effort to identify an appropriate mentor. Once mentors have been screened and approved, they undergo a trauma-informed training to better understand adolescent development, the role of trauma and loss in the lives of youth in foster care, the importance of self-care, the need for clear boundary setting, and the expectations associated with being a mentor. (p. 209)	24	RCT	Internalizing, Academics, Social, Service Utilization	T1: 3.0
Powers et al., 2012	TAKE CHARGE	Youth in the intervention group participated in TAKE CHARGE for approximately 12 months. The intervention included two elements: (a) individual, weekly coaching sessions for youth in the application of self-determination skills to achieve self-identified goals and to carry out a youth-led transition planning meeting; and (b) quarterly workshops for youth with young adult mentors who were formerly in foster care. (p. 2182)	69	RCT	Internalizing, Service Utilization	T1:12.0 T2: 24.0
Taussig & Culhane, 2010	Fostering Healthy Futures (FHF)	The 9-month FHF preventive intervention consisted of two components: (1) manualized skills groups; and (2) one-on-one mentoring by graduate students in social work. (p. 741)	156	RCT	Internalizing, Social, Service Utilization	T1:12.0 T2: 18.5
Taussig et al., 2019	Fostering Healthy Futures (FHF)	The FHF program provided 30 weeks of one-on-one mentoring for each child within the community. Mentors were graduate student interns in social work or psychology who received course credit for their work on the project. (p. 410)	426	RCT	Internalizing, Service Utilization	T1: 18.5
Truong, 2014	Unspecified; mentors from state agency	Youth matched with a screened and trained adult for one-on-one relationship who met on a regular basis. This service only included mentors who are facilitated, provided, and paid for by the state agency (National Youth in Transition Database, 2013) (p. 4).	33,294	QED	Academic	N/A

QED quasi-experimental design, *RCT* randomized controlled trial, *T1* Time 1 (post-intervention), *T2* Time 2 (post-intervention follow-up), *T3* Time 3 (post-intervention follow-up)

[a]QED studies were marked with N/A as there were no baseline data collected

To examine publication bias, analyses explored whether there were statistically significant differences between effect sizes obtained from unpublished reports and published journal articles. Additionally, a funnel plot analysis (i.e., a visual representation of effect sizes plotted against sample sizes) was conducted to test for publication bias to observe potential bias resulting from unpublished data not included in the current study (Crombie & Davies, 2009). Effect sizes from articles included in the current meta-analysis were aggregated at the publication level (because publication bias is a publication-level phenomenon) and a trim-and-fill analysis was conducted with the function 'trimfill' in the metafor package (Viechtbauer, 2010). A symmetrical funnel plot with evenly distributed points on both sides of the funnel suggests a lack of publication bias. Finally, sensitivity analyses were conducted to investigate the robustness of the overall results. The effect sizes were recalculated nine times, each time removing a different study, to examine the influence of each individual study on the overall effect size (Viechtbauer & Cheung, 2010).

Results

All analyses were conducted in R using metafor package (Assink & Wibbelink, 2016). Descriptive information for coded moderators is presented in Table 2.

Overall Effects

The average effect size across all nine studies and 148 outcomes was $g = 0.342$ ($p < 0.001$; 95% CI: 0.177–0.508), which is a statistically significant small-to-medium effect size by Cohen's (1988) guidelines. Analyses revealed there to be significant heterogeneity across studies ($\sigma^2_{level\ 3} = 0.057$, $p < 0.001$) and within studies ($\sigma^2_{level\ 2} = 0.013$, $p < 0.001$). There was no significant difference in effects based on youth outcome type ($F(4, 174) = 1.930$, $p = 0.749$).

Moderator Analyses

Mentee characteristics, including percentage female, percentage Hispanic/Latino, percentage youth of color, average age, percentage with low academics, and foster care status were not statistically significant moderators (see Table 3). Weaker effects were found for studies containing higher proportions of youth with emotional abuse histories ($b = 0.512$, $p = 0.033$), but not in other forms of abuse histories such as physical abuse, sexual abuse, and physical neglect.

Mentor characteristics were coded in the included empirical studies. However, no study in this meta-analysis reported mentor age or race/ethnicity. Furthermore, only one study reported mentor gender, and only two studies

Table 2 Descriptive statistics for included moderators

Moderators	Minimum	Maximum	Mean
Mentee characteristics			
Percentage female	41	67	51
Percentage Hispanic	4	52	20
Percentage minority (non-white)	49	100	60
Age	10.28	20.22	15.73
Percentage low academics	23	100	59
Foster care status	78% currently in foster care; 11% formerly in foster care; 11% currently & formerly in foster care		
Experiences of abuses/maltreatment			
Percentage physical abuse	20	52	34
Percentage emotional abuse	2	63	32
Percentage sexual abuse	11	33	21
Percentage neglect	28	83	54
Mentoring characteristics			
Sole intervention	22% sole intervention; 67% with other interventions; 11% unknown		
Mentoring format	67% one-on-one only; 11% groups only; 33% mixed		
Curriculum	56% no curriculum; 44% curriculum-based		
Peer/intergenerational mentoring	22% near-peer mentoring; 78% intergenerational		
Mentor training	11% no training; 78% have training; 11% unknown		
Program length (in weeks)	3	12	8.71
Program expectations			
Expected program duration (weeks)	12	52	36
Expected meeting duration (h)	1.25	3	2.10
Expected support for mentors (h/month)	4	8	6
Methodological characteristics			
Mentee sample size	24	33,294	3844
Months from baseline	14.1	1	36
Publication type	67% peer-reviewed articles; 22% dissertation/thesis; 11% reports		
Research design	78% randomized controlled trial; 22% quasi-experimental		

reported proportions of mentors who were formerly involved with the foster care system. As a result, there was insufficient information in the included studies to conduct moderator analyses for mentor characteristics.

Moderation analyses of program characteristics revealed that near-peer mentors were more than twice as effective as intergenerational mentors ($b = 0.359$, $p = 0.024$). Other program characteristics, such as whether mentoring was the sole intervention, mentoring format (i.e., one-on-one only,

Table 3 Results from moderator analyses

Moderator variable	k	No. of ES	B_0/g	t_0	B_1	t_1	F
Mentee characteristics							
Percentage female	9	148	0.482	0.693	−0.274	1.345	$F(1, 146) = 0.042$
Percentage Hispanic	8	143	0.458***	0.129	−0.646	0.463	$F(1, 141) = 1.946$
Percentage youth of color (non-white)	9	148	0.333	0.369	0.016	0.608	$F(1, 146) = 0.001$
Age	8	147	−0.042	0.414	0.027	0.026	$F(1, 145) = 1.046$
Percentage low academics	5	100	0.201	0.303	0.333	0.441	$F(1, 98) = 0.570$
Foster care status							$F(2, 145) = 1.2237$
Currently in foster care (RC)	7	142	0.356***	0.108			
Formerly in foster care	1	5	0.494	0.275	0.137	0.293	
Currently + formerly in foster care	1	1	0.080	0.276	−0.276	0.294	
Experiences of abuses/maltreatment							
Percentage physical abuse	5	102	0.179	0.419	0.746	1.181	$F(1, 100) = 0.399$
Percentage emotional abuse	4	72	0.512***	0.107	−0.512*	0.240	$F(1, 70) = 4.562*$
Percentage sexual abuse	5	102	0.168	0.303	1.273	1.359	$F(1, 100) = 0.892$
Percentage neglect	5	102	0.506	0.397	−0.137	0.690	$F(1, 102) = 0.040$
Mentoring characteristics							
Sole intervention							$F(1, 145) = 2.352$
Sole (RC)	2	40	0.144	0.169			
Not sole intervention	6	107	0.440***	0.092	0.296	0.193	
Mentoring format							$F(2, 148) = 3.437$
One-on-one only (RC)	6	52	0.237*	0.097			
Group	1	14	0.667**	0.226	0.430	0.246	
Mixed	3	85	0.398**	0.125	0.161	0.158	
Curriculum							$F(1, 148) = 0.052$
No curriculum (RC)	5	70	0.378**	0.116			
Have curriculum	4	80	0.338**	0.129	−0.039	0.173	
Peer/intergenerational mentoring							$F(1, 148) = 5.086*$
Intergenerational mentoring (RC)	7	115	0.281***	0.075			
Near-peer mentoring	2	35	0.639***	0.140	0.358*	0.159	
Program length	7	142	0.087	0.344	0.030	0.037	$F(1, 140) = 0.667$
Mentor training							$F(1, 143) = 0.141$
No mentor training (RC)	1	3	0.242	0.288			
Mentor training	7	142	0.356***	0.099	0.115	0.305	
Program expectations							
Expected program duration	7	142	0.134	0.323	0.006	0.008	$F(1, 140) = 0.528$
Expected meeting duration	5	98	0.25	0.164	−0.018	0.073	$F(1, 96) = 0.063$
Expected support for mentors	6	128	0.074	0.338	0.038	0.052	$F(1, 126) = 0.519$
Outcome types							$F(4, 141) = 2.631$
Internalizing symptoms/mental wellbeing (RC)	6	63	0.320***	0.095			
Academics/career	6	35	0.372***	0.098	0.051	0.064	
Externalizing/behavioral problems	2	16	0.458***	0.119	0.137	0.097	
Service utilization	6	23	0.329**	0.104	0.009	0.063	
Social competencies	3	9	0.398**	0.123	0.078	0.090	
Methodological characteristics							
Publication type							$F(1, 146) = 1.190$
Peer-reviewed article (RC)	6	113	0.405	0.101			
Dissertation/report	3	35	0.212	0.145	−0.193	0.177	
Mentee sample size	9	148	0.374	0.089	<0.001	<0.001	$F(1, 146) = 1.152$
Research design							$F(1, 146) = 0.097$
Quasi-experimental (RC)	2	6	0.288	0.196			
Randomized controlled trials	7	142	0.356***	0.100	0.069	0.220	
Months from baseline	7	142	0.392***	0.106	−0.003	0.003	$F(1, 140) = 0.567$

RC reference category, *k* number of studies, *ES* effect sizes, B_0/g intercept/mean effect size, t_0 difference in mean effect size and zero, B_1 estimated regression coefficient, t_1 difference in mean effect size with reference category, *F* omnibus test

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

group, or mixed), whether the program followed a curriculum, program length, and whether mentors received training were not statistically significant moderators. Furthermore, program expectations, including expected mentor support, expected program duration, and expected length of mentoring session did not significantly influence mentoring outcomes. However, recognizing that these program expectations did not occur in isolation, post-hoc analyses were conducted to examine the collective effects of these program characteristics. Results from post-hoc analyses revealed that providing more support for mentors was more effective when the expected program duration and length of each mentoring session were held constant ($b = 0.252$, $p = 0.004$). In contrast, when controlling for mentor support, shorter program duration ($b = -0.017$, $p < 0.001$) and shorter length of mentoring session ($b = -0.729$, $p = 0.015$) were found to be more effective. Additionally, post-hoc analyses were conducted to examine whether specific programs (i.e., Fostering Healthy Futures (FHF), My Life curriculum) yielded larger effects, with results indicating that specific programs did not significantly influence mentoring outcomes (FHF: $b = -0.078$, $p = 0.740$; My Life: $b = 0.192$, $p = 0.338$).

Results also indicated that effect sizes did not significantly differ by outcome category, indicating that the effects of mentoring were relatively similar across internalizing symptoms and mental wellbeing, academics and career, externalizing and behavioral problems, service utilization, and social competencies indicators. Finally, methodological characteristics of the included studies, including study sample size, research design (i.e., randomized controlled trial or quasi-experimental design) and follow-up length (i.e., months from baseline) were not statistically significant moderators.

Publication Bias Analyses

Results from moderator analyses revealed that the effects of mentoring did not significantly differ by publication type. Meanwhile, trim-and-fill analysis showed some indication of publication bias, where five effect sizes were missing at the left side of the of the funnel plot (see Fig. 2). Accounting for publication bias by means of a trim-and-fill analysis yielded a smaller non-significant mean effect size of Hedges' $g = 0.098$ ($p = 0.307$). However, the funnel plot method assumes homogeneity of the overall effect size, and is an assumption that was violated in the current study. Therefore, this finding should be interpreted with caution.

Finally, results from leave-one-out sensitivity analyses indicated that the overall effect remained significant after each rerun (see Table 4); therefore, none of the studies had an individual, disproportionate, impact on the overall findings. Moreover, the interval of effect sizes obtained through
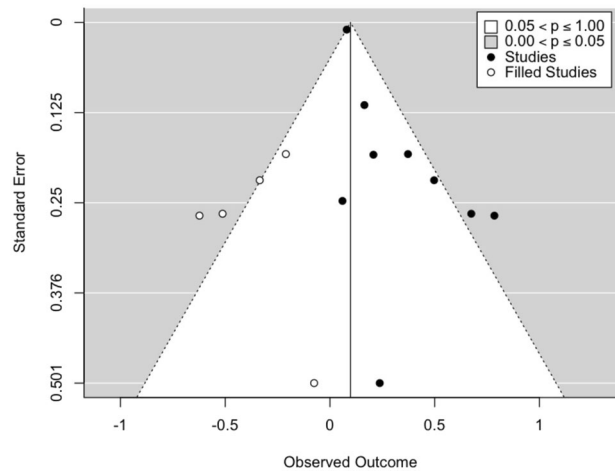

Fig. 2 Funnel plot analysis of publication bias

the sensitivity analyses ($0.285 < g < 0.378$) contains the overall effect size based on the total set of studies ($g = 0.342$) and overlaps with the 95% confidence interval of the total effect size (95% CI: 0.177–0.508).

Discussion

Mentoring is a service that has been commonly provided to youth involved in the foster care system to help address their experiences of traumatic circumstances. The goal of this study was to examine the effectiveness of this approach and the circumstances that may moderate its impact. A comprehensive meta-analysis of formal mentoring programs for youth involved with the foster care system in the U.S was conducted, and revealed a small-to-medium overall effect of mentoring programs for youth involved with the foster care system ($g = 0.342$) with no differences in mentoring impact across different types of youth outcomes. Several program characteristics moderated effect sizes, with larger effects for programs that deployed near-peer mentors, provided more program support, and expected shorter match duration. Smaller effects were found in programs serving a high proportion of youth who experienced emotional abuse. The results highlight the potential benefits of formal mentoring for youth involved with the foster care system, and important recommendations for future research and practice.

Mentoring programs for youth involved in foster care demonstrated stronger overall effects than those revealed in recent meta-analytic studies of general youth mentoring programs (i.e., Raposa et al., 2019). These stronger effects may have resulted from these programs having specifically designed activities and program components to address the particular needs and challenges of the youth they serve. For example, in many programs, youth were

Table 4 Leave-one-out
sensitivity analyses

	No. of studies	No. of ES	ES	SE	p	95% CI
Mentoring programs for youth involved with the foster care system	9	148	0.342	0.084	<0.001	0.177–0.508
Excluding Ayna, 2017	8	143	0.324	0.093	<0.001	0.143–0.505
Excluding Blakeslee & Keller, 2018	8	119	0.379	0.088	<0.001	0.207–0.551
Excluding Geenen et al., 2013	8	122	0.336	0.095	<0.001	0.149–0.523
Excluding Geenen et al., 2015	8	118	0.285	0.073	<0.001	0.141–0.429
Excluding Greeson Thompson, 2017	8	137	0.353	0.092	<0.001	0.172–0.534
Excluding Powers et al., 2012	8	134	0.302	0.084	<0.001	0.136–0.467
Excluding Taussig Culhane, 2010	8	122	0.365	0.095	<0.001	0.178–0.551
Excluding Taussig et al., 2019	8	142	0.366	0.093	<0.001	0.183–0.548
Excluding Truong, 2014	8	147	0.372	0.089	<0.001	0.198–0.546

ES effect size, *SE* standard error, *CI* confidence interval

provided with workshops on employment and exiting foster care (e.g., Blakeslee & Keller, 2018), guest speakers with expertise on mental health and self-care and the college application process (Geenen et al., 2015) and skills groups covering topics such as problem solving, change and loss, and abuse prevention (e.g., Taussig & Culhane, 2010). This possibility is consistent with recent evidence of the effectiveness of more targeted mentoring interventions (Christensen et al., 2020; Lyons et al., 2019), and may suggest that programs should continue to find ways to design activities and goals to match youths' presenting concerns and identities.

The study results also indicated that near-peer mentors are more effective than intergenerational mentors in formal mentoring programs for youth involved with the foster care system. Near-peer mentors refer to mentors who are close in age with mentees; these mentors may also have shared experiences as youth currently or formerly involved in the foster care system. As a result, near-peer mentors may act as credible messengers since their guidance is often grounded in shared experience (Austria & Peterson, 2017). It may also be the case that near-peer mentors received relatively more training and supervision than older adult mentors (Burton, 2020). These possibilities are best illustrated through the two studies included in this meta-analysis that used near-peer mentors. Near-peer mentors in the TAKE CHARGE mentoring program were foster care alumni who completed high school and were presently in college or working. They provided their mentees support and information about their life circumstances and received ongoing support from program staff (Geenen et al., 2013). In the Better Futures program, near-peer mentors had shared experiences with mentees of being in foster care and/or mental health challenges and received weekly individual and group supervision from the intervention manager (Geenen et al., 2015). Notably, both programs intentionally recruited near-peer mentors who had shared experiences of

the foster care system, which may have critically contributed to the success of the mentoring processes. However, given that this moderation effect was based on only two studies in the current sample, additional studies that explicitly focus on the program implementation and practices are needed. Although more research is needed to help uncover the specific mechanisms through which near-peer mentoring may be effective, mentoring programs for youth involved with the foster care system may consider ways to bring in support from mentors who are close in age and/or have shared experiences that can help support mentees' positive outcomes and transition out of the system into independent living.

Weaker effects were found for programs that enrolled a higher proportion of youth who experienced emotional abuse. This finding highlights the unique challenges mentors may face when working with such youth. For example, youth who experience significant childhood interpersonal violence often struggle to build trust and rapport in their social connections (Blakemore et al., 2017; Wilson & Scarpa, 2015), including with their mentors. For example, a recent study of the national longitudinal Add Health data found that, among youth with natural mentors, those who had experienced childhood abuse from a caregiver had lower interpersonal closeness, shorter duration, and less frequent contact with their mentors (Weber Ku et al., 2021). Mentoring programs working with youth involved with the foster care system who have experienced emotional abuse should consider training their mentors in trauma-informed approaches and in approaches that incorporate attunement and practical communication strategies (Gilkerson & Pryce, 2020). Trauma-informed care seeks not to treat symptoms directly related to abuse, but instead, provide support in an accessible and responsive way to youth who have experienced trauma by being aware of potential triggers and re-traumatization (Buffalo Center for Social Research, 2021). Such trainings could help mentors integrate knowledge

about trauma into their practices and implement the five guiding principles of trauma-informed care in their mentoring relationships: safety, choice, collaboration, trustworthiness, and empowerment (Buffalo Center for Social Research, 2021). Along these lines, results also indicated that providing more support to mentors may help promote stronger positive program effects. This finding is consistent with earlier research studies which indicate that mentor support is a crucial element in enhancing mentoring program effectiveness (Herrera et al., 2013). Examples could involve tailored mentor support or supervision around developing self-awareness of mentors' own relational styles and personal trauma histories. Additionally, professional development workshops and trainings around working effectively with trauma-exposed or trauma-reactive youth and addressing potential burnout could be particularly helpful. Lastly, programs' intentional selection of mentors may help to improve the effectiveness of mentoring for trauma-exposed foster care youth. Although it was not possible to explore the moderating role of specific mentor characteristics in the current study, programs who enlist mentors in the helping professions (e.g., social work students), such as Taussig and colleagues' Fostering Healthy Futures program, may see more positive mentoring experiences for these youth.

Expected program duration, expected mentoring session length, and expected mentor support collectively, but not independently, moderated the effects of mentoring. This finding suggests that program expectations of duration, session length and mentor support should not be considered in isolation, and a systems approach is needed to clearly examine how program expectations collectively influence outcomes. In particular, when mentor support was held constant, shorter expected program duration and shorter expected mentoring session length were associated with stronger effects. Although counterintuitive, this finding is consistent with results in a recent meta-analysis of general formal mentoring programs (Raposa et al., 2019) which found that programs with expectations for longer meeting times yielded smaller effect sizes. It is possible that mentoring programs with longer session expectations may feel emotionally taxing or burdensome to youth participants or mentors. Lengthy meetings may also reflect infrequent and/or inconsistent meetings in which matches engage in long sessions episodically or irregularly (Raposa et al., 2019). These types of program models may be particularly ineffective for this population of youth who may take longer to build trust and strong relationships. It is also possible that short-term programs are more targeted and effective than longer, less focused programs (Christensen et al., 2020) and, because they are time-limited, circumvent the potential harmful effects of early termination (Kupersmidt et al., 2017). Although additional research is warranted, these findings suggest that with adequate training and support,

mentoring programs may not need to be lengthy as commonly assumed, and that shorter meetings may actually be more effective in promoting positive youth outcomes.

Study Limitations and Strengths

When interpreting the findings of this study, it is important to acknowledge a few limitations. The study sample was limited to youth specifically in the United States. Given that child welfare systems operate in significantly different ways across various countries, the inclusion and exclusion criteria were intentionally designed to eliminate this major confounding variable. Future studies investigating the effectiveness of mentoring programs and other psychosocial interventions for youth involved with the foster care system, out-of-home care, or the child welfare systems in other countries would add to the existing literature.

Additionally, there were a number of limitations to the primary studies included in this meta-analysis. For example, it was not possible to conduct moderator analyses for potentially important variables, including a range of key mentor attributes and program practices, due to a lack of reported information in included evaluations. In particular, no study in this meta-analysis reported mentor age and race/ethnicity. Furthermore, only one study reported mentor gender, two studies reported proportions of mentors who are formerly involved with the foster care system, and three studies reported proportion of mentors who had experiences in the helping profession. Additionally, although foster care status was coded, no included studies met the criterion of youth aging out of the foster care system. As a result, more exploration is needed for youth in this specific developmental transition. Studies of natural mentoring for youth aging out of the foster care system do exist (e.g., Munson & McMillen, 2009; Collins et al., 2010) which may inform formal mentoring program practices.

Program practices were also not reported in extensive detail. As such, in addition to youth mentee characteristics, evaluations of mentoring programs for youth in the foster care system should include more detailed information about mentor characteristics, as previous mentoring research has indicated that mentor gender and race/ethnicity can influence mentoring outcomes (Raposa et al., 2019; Scannapieco & Painter, 2014). Likewise, more detailed documentation of program activities will shed light on the mechanisms underlying the change processes in mentoring programs, and would be in line with recent recommendations from mentoring scholars of shifting to evaluating specific program practices rather than whole programs to better understand their influence (Lyons & McQuillin, 2021).

Additionally, the current study focused on evaluations of formal mentoring programs, and excluded studies examining the effects of natural mentoring relationships

for youth involved with the foster care system. It is possible that natural mentors serve different supportive functions or operate in different ways that have different effects on youth. Consequently, it will be important for future research to continue exploring the role of diverse methods of mentoring and youth-adult partnerships in promoting positive outcomes for foster care involved youth.

Finally, this meta-analysis included only nine empirical studies, with some measuring outcomes at multiple post-intervention timepoints, yielding a relatively large number of effect sizes. While this study attempted to account for this limitation through first examining the effects using a four-level multilevel meta-analytic strategy, the small k to effect size ratio should be interpreted with caution. As a result, more primary empirical studies using rigorous methodologies should be conducted to examine the effects of formal mentoring for youth involved in the foster care system in the future.

Despite these limitations, there are a number of strengths to the current study. This meta-analytic study systematically examined of the effectiveness of mentoring programs for youth involved in the foster care system, employing multilevel meta-analysis, a highly rigorous statistical method allowing for variance to be accounted for at multiple levels (i.e., within- and between- studies). A broad range of outcomes and moderating variables were also examined to identify factors that may influence the magnitude of observed effects. The results suggest that, overall, mentoring is effective intervention for foster care youth and points the field toward specific mentoring practices that may improve outcomes in this population.

Conclusion

This meta-analytic study consolidated current evidence of the effectiveness of formal mentoring programs for youth involved in the foster care system in the United States and yielded a significant, small-to-medium overall effect. The study findings highlight how mentoring programs can be a potentially protective factor for this population of youth, providing a secure relational base and helping to facilitate important developmental transitions. The results from meta- and moderator analyses further revealed near-peer mentors to be particularly effective in delivering this intervention, and that youth with fewer experiences of emotional abuse may derive relatively more benefits from mentoring. These results underscore the need for additional research on near-peer-mentoring interventions and highlight the importance of training and supervision related to emotional attunement and trauma-informed mentoring practices.

Compliance with Ethical Standards

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