Youth Initiated Mentoring: A meta-analytic study of a hybrid approach to youth mentoring

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EMPIRICAL RESEARCH

Youth Initiated Mentoring: A Meta-analytic Study of a Hybrid Approach to Youth Mentoring

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Abstract

Youth initiated mentoring is a hybrid approach that empowers youth to identify and recruit natural mentors, potentially combining the strengths of informal mentoring relationships with the infrastructure and support provided by formal mentoring programs. This meta-analytic review examined the association between youth-initiated programs and youth outcomes across four domains: academic and vocational functioning, social-emotional development, physical health, and psychosocial problems. Results indicated that youth-initiated programs are significantly associated with positive youth outcomes. There was a small-to-medium effect size of $g = 0.30$ for youth-initiated programs overall, which was based on 14 studies with 11 independent samples (3594 youth and 169 effect sizes) from 2006 to 2019. The effect size was somewhat larger ($g = 0.40$) when controlling for possible selection bias, and was moderated by participant gender and year of publication. Implications for theory and practice regarding this relatively new approach to mentoring are discussed.

Keywords Meta-analysis · Youth mentoring · Youth initiated mentoring · Natural mentoring · Positive youth development

Introduction

A mentoring relationship is generally characterized as a supportive connection between an older or more experienced individual and a younger or less experienced mentee or protégé over time (Rhodes 2002). This conceptualization of youth mentoring encompasses approaches that can vary in structure and context, ranging from formal relationships —in which mentees and mentors are matched and monitored through programs that provide guidelines (e.g., frequency and duration of contact)—to informal or natural mentoring relationships, which form organically between youth and older individuals within their existing social networks. In this study, the effectiveness of a new hybrid approach to mentoring was studied. In youth initiated mentoring (YIM) models, programs provide scaffolding and

support for youth to identify and recruit a mentor from their existing social network.

Youth mentoring programs can vary widely, but most seek to create caring relationships between young people (or mentees) and more experienced nonparental adults (mentors). Although such programs are widespread and serve millions of children each year (Raposa et al. 2017), research on their effectiveness has revealed relatively modest effect sizes ($g = 0.21$; Raposa et al. 2019) and considerable room for improvement (DuBois et al. 2011). Moreover, many formal programs have long waitlists, resulting from an insufficient number of volunteers to meet demands, combined with mentor attrition rates that approach 40% (Kupersmidt et al. 2017a). Recruitment efforts can increase capacity, but there remains a sizable gap between the number of mentors willing to make an often year-long commitment and the number of youth on waitlists.

In contrast, natural mentoring relationships arise through organic social connections rather than through formal mentoring programs. Research suggests that, under the right conditions, these naturally occurring relationships are associated with a range of positive developmental outcomes. Compared to their unmentored peers, youth with natural mentors experience better educational, vocational, and psychosocial outcomes during early adulthood (McDonald and Lambert 2014). Moreover, compared to

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formal mentoring, natural mentoring requires fewer resources and is more widely available than is formal youth mentoring. An estimated 75% of youth report having natural mentors versus roughly 5% with formal mentors (Putnam 2015). Nonetheless, research indicates disparities in natural mentoring based on socioeconomic status. Drawing on a large, longitudinal dataset, Raposa et al. (2018) found that youth in the top socioeconomic status quartile were slightly more likely than their more marginalized peers to report having a natural mentor. Those in the top quartile also reported greater access to natural mentors across every category of adults (e.g., teachers, coaches, and employers), with the exception of extended family members. Natural mentoring relationships also appear to vary considerably in quality, intensity, and focus (Raposa et al. 2018).

Van Dam et al. (2018) conducted the first comprehensive meta-analysis of natural mentoring. The study included 30 studies that, since 1992, measured the effects of natural mentoring on a range of youth outcomes, including social, academic, and vocational functioning. Although the presence of any natural mentor was associated with a small improvement ($g = 0.22$), there was a moderate positive effect ($g = 0.42$) when the quality of the natural mentoring relationship (i.e., frequency of contact, support, and relationship duration) was taken into account. Taken together, these results underscore the value of strengthening the capacity of adults in families, schools, youth programs, and other settings to engage in high-quality relationships with youth. Since natural mentoring relationships are far more common and require less infrastructure and investment than formal mentoring relationships, such settings should foster opportunities for youth, particularly more marginalized youth, to connect with caring adults. Improving adult-youth ratios in schools and other settings and offering training, standards, and incentives aimed at encouraging sustained, effective relationships would be helpful in this regard.

YIM models were developed, in part, as a response to the limitations of both formal and natural mentoring relationships. YIM spans a range of different program models, but they all share the same general goal to support youth in identifying, developing, and strengthening natural mentoring relationships, rather than assigning and introducing a new volunteer mentor. This approach stands in contrast to the assumption that natural mentoring relationships form organically and by definition cannot be facilitated by an intervention. Although most YIM models are fairly new, this approach has been successfully deployed for over two decades through the National Guard Youth ChalleNGe Program (NGYCP), an intensive program for adolescents who dropped out of high school. An evaluation of NGYCP suggested the potential of YIM for improving academic and career outcomes and reducing arrests (Schwartz et al. 2013).

Compared with traditional formal mentoring programs, the YIM approach resulted in longer lasting relationships, and a three-year follow-up showed that enduring YIM relationships were associated with less erosion of program effects (Schwartz et al. 2013). Importantly, relationships were more enduring when youth (rather than parents or program staff) played a more active role in selecting their own mentors. Since then, this model has been adapted to fit other contexts as well, for example as an indicated prevention approach to support youth with complex needs who are at risk for suicide (King et al. 2019) or out-of-home placements (van Dam et al. 2017) and as a suicide prevention strategy (King et al. 2019). YIM has also been deployed as a universal prevention strategy in educational settings to support first generation college students (Schwartz et al. 2017).

Current Study

Overall, research suggests that YIM holds considerable promise as a low-cost, ecologically-valid approach to serving youth, particularly more marginalized youth who have less access to the types of mentors (e.g., teachers, employers, and program staff) who can connect them to opportunities (Raposa et al. 2018). Although a range of positive effects has been reported across a variety of YIM approaches (see Table 1), outcomes (e.g., health, cognitive, academic, and social functioning), and youth of different ages (e.g., adolescents and young adults), as well as socioeconomic and family circumstances, no quantitative review (i.e., meta-analysis) to date has examined the overall effect of YIM and the conditions under which YIM is most likely to lead to positive outcomes. The present three-level meta-analysis therefore examines the effectiveness of the YIM approach, accounting for the impact of study, sample, publication, measurement, outcome, and program characteristics.

Method

Study Selection

A literature search was conducted for all relevant quantitative studies on the relation between YIM and youth outcomes, reported in English through 2019. The following databases were used: ERIC, PsycINFO, PubMed, Wiley Online Library, and Google Scholar. Wildcards were used similarly across all databases were used. The search string contained a mentor element and an outcome element. For the mentor element, the following terms were used: "natural mentor*," "informal mentor*," "youth mentor*," "important non-parental adult*," "naturally acquired mentoring relationship*," "mentoring adolescent*," "VIP/Very

Table 1 Characteristics of included studies

Author (year)	N	Peer review	Design	Informant	Continent	Type of outcome	Gender	Racial/ethnic minority	Mean age	At-risk type	Youth initiated mentoring approach
Greeson and Thompson (2017)	17	Yes	RCT	Youth	North America	Mixed	F/M 50/50	100	18.80	Youth in foster care	The C.A.R.E. model (Caring Adults 'R' Everywhere) focused on youth aging out of foster care. Youth are provided with support to identify caring non-parental adults, and follow a 12-week course to facilitate and nurture those relationships.
Millenky et al. (2014)	1173	Yes	RCT	Youth	North America	Mixed	F/M 12/88	58	16.70	School drop-out	The National Guard Youth ChalleNGe Program (NGYCP) focuses on youth who are not involved in school or work. They participate in a five-month residential program and a subsequent year-long post-residential program. Youth are trained to recruit mentors who provide support throughout the residential phase and work closely with the youth throughout the post-residential phase to support the process of reintegrating into the community and maintaining positive changes.
Schwartz et al. (2013)	1173	Yes	RCT	Youth	North America	Mixed	F/M 12/88	58	16.70	School drop-out	
Schwartz et al. (2017)	164	Yes	QE	Youth	North America	Mixed	F/M 63/37	88	18.30	First-generation college students; Transition to college	Connected Scholars focuses on teaching first-generation college students the skills and attitudes needed to recruit mentors and other forms of social capital to help advance students' academic and career goals, without actually creating a formal mentoring relationship. The intervention is delivered through a series of group-based workshops.
Van Dam et al. (2017)	200	Yes	QE	Governmental records	Europe	Psychological	F/M 37/63	–	15.40	Out-of-home placement	The InConnection approach provides wrap-around support to youth in multi-problem families with the goal of preventing out-of-home placements. Youth nominate natural mentors during treatment and professionals offer weekly guidance and support (face-to-face, telephone, online, etc.) to the natural mentors throughout the treatment period.
King et al. (2009)	448	Yes	RCT	Mixed	North America	Psychological	F/M 71/29	16	15.60	Suicidal youth	The Youth Nominated Support Team Intervention is designed to supplement routine care for suicidal adolescents after psychiatric hospitalization. With support from professionals, youth nominate caring adults who agree to attend individual and group psycho-educational sessions. Professionals provide weekly supervision to the caring adults along with tailored information about adolescent diagnosis and risk factors, treatment plan rationale, suicide warning signs, communicating with adolescents, and emergency services.
King et al. (2019)	448	Yes	RCT	Governmental records	North America	Health	F/M 71/29	16	15.60	Suicidal youth	
King et al. (2006)	448	Yes	RCT	Mixed	North America	Mixed	F/M 68/32	18	15.30	Suicidal youth	

Table 1 (continued)

Author (year)	N	Peer review	Design	Informant	Continent	Type of outcome	Gender	Racial/ethnic minority	Mean age	At-risk type	Youth initiated mentoring approach
King et al. (2018)	163	Yes	RCT	Youth	North America	Mixed	F/M 66/34	68	13.50	Mental health and suicidal ideation	LET's CONNECT (LC) is for early adolescents to improve mental health and reduce risk for suicidal ideation. LC matches at-risk youth with trained adult mentors from the community. This formal mentorship is paired with informal mentorship, involving adult family members or fictive kin, whose role is to support and encourage the youth's participation in connectedness activities.
De Vries et al. (2017)	101	Yes	RCT	Mixed	Europe	Mixed	F/M 33/67	83	15.58	Delinquent youth	New Perspectives is an intensive community-based program focusing on adolescents in early stages of
De Vries et al. (2018)	101	Yes	RCT	Mixed	Europe	Psychological	F/M 33/67	83	15.58	Delinquent youth	delinquency. Part of the program is a social network analysis with a focus on identifying and recruiting a Very Important Person (VIP) who collaborates with the adolescent throughout the program.
James et al. (2016)	127	Yes	RCT	Youth	Europe	Mixed	F/M 3/97	84	19.54	Delinquent youth	–
Wyman et al. (2010)	453	Yes	RCT	Youth	North America	Psychological	F/M 65/35	–	15.9	Suicidal ideation	Sources of Strength is a universal school-based suicide prevention approach. Peer leaders model and encourage friends to: (1) name and engage "trusted adults" to increase youth–adult communication ties; (2)
Petrova et al. (2015)	706	Yes	RCT	Youth	North America	Psychological	F/M 49/51	8	–	Suicidal ideation	reinforce and create an expectancy that friends ask adults for help for suicidal friends, thereby reducing implicit suicide acceptability; and (3) identify and use interpersonal and formal coping resources.

N = number of participants; Peer review = published in peer reviewed article (Yes/No); Design = Randomized Controlled Trials (RCT), quasi-experimental (QE); Informant = youth, parent, school, teacher, peer, staff, governmental records, or two or more different informants (mixed); Type of outcome = cognitive, health, mental health, psychological, school, social, or two or more different outcome domains (mixed); Sex = female (F), male (M), or female and male (F/M); Racial/ethnic minority = proportion of non-White

Important Person*," and/or "YIM/Youth Initiated Mentoring*." In-depth readings confirmed whether studies asked youth to recruit or cultivate natural mentors from within their existing social networks.

For the outcome element, the following broad terms were used: (1) academic and vocational—high school completion, school attendance, academic engagement, higher grades, absences, school importance, school belonging, economic benefits, fulltime employment, discontinuous employment; (2) social-emotional—social skills, prosocial behavior, negative life events, self-regulation, perceived social support, care, character, connection, life satisfaction, well-being, self-esteem; (3) physical health—general health, physical activity, birth control, condom use, Body Mass Index, infection (STIs); and (4) psychosocial problems—depression, anxiety, suicidal ideation, psychosomatic symptoms, mental health, sexual risk behavior, delinquency, problem behavior, aggression, rule breaking, global severity, SCL-90-R, substance use.

The selection and screening process of studies dating back to 1975 was conducted by the authors, who are highly experienced in the field, and two graduate students in child welfare. Figure 1 provides an overview of the study selection, and Table 1 provides an overview of the included studies and their characteristics. The initial search resulted in 788 items, which also contained reviews and qualitative studies, was narrowed down to 14 articles after inspection of the titles and abstracts. A total of 14 studies, with 11 independent samples, and 169 effect sizes, 2435 youth, met the inclusion criteria. These studies comprise a range of YIM models, including those that are embedded in other interventions and services or where the mentor serves as one member on a larger support team, as well as those in which YIM is the primary intervention. They also range from those that create a formalized mentoring relationship with substantial training and match support for mentors to those that simply teach youth how to identify and reach out to natural mentors without formalizing the mentoring relationship. As mentioned earlier, the unifying component is that all of the programs support youth in developing natural mentoring relationships, rather than assigning a previously unknown mentor. Of note, studies that simply measured the impacts of the presence of a natural mentor (as investigated in the meta-analysis of natural mentoring relationships by van Dam et al. 2018), without providing an intervention to support the development of those relationships, were excluded.

Coding Studies and Potential Moderators

All included studies were double coded according to suggestions of Lipsey and Wilson (2001). Raters discussed with each other and with experts on meta-analysis and youth mentoring to resolve ambiguities and discrepancies. Intercoder agreement exceeded $\kappa = 0.90$ and ICC = 0.80. Disagreements were discussed, and recoding took place after consensus had been reached. The outcome variables comprised youth outcomes in the following life domains: health, cognitive, academic, and social functioning.

Each study was coded for multiple characteristics. First, type of outcome was coded (psychological, health, cognitive functioning, school, and social). Second, outcome measurement characteristics were coded by type of assessment (questionnaires, other measures), information source (youth, other), and time of assessment (post-test, follow-up). Third, study characteristics were coded by study design (Randomized Controlled Trial, quasi-experimental) and intention to treat (yes, no). Fourth, three mentee characteristics were coded: percentage of White youth, gender distribution (predominantly female, predominantly male, equal gender distribution), and age distribution of youth (early or middle adolescence, late adolescence) in the sample. Fifth, publication characteristics were coded by continent in which the study was conducted (North America, Europe) and year of publication. Sixth, two main program characteristics were consistently coded: whether the YIM program was standalone or embedded within a broader program, and whether or not the broader program invited mentors to contribute to decisions affecting youth (e.g., with program staff, family members, teachers, or mental health professionals) or to operate more or less independently of the broader program.

Calculation of Effect Sizes and Data Analysis

Effect sizes were determined by calculating the standardized mean difference between the mentoring intervention group and the control group for each outcome, where a positive effect size indicates better performance for the mentoring intervention group than the control group. To adjust for small sample sizes, standardized mean differences were transformed into Hedges' g (Hedges and Olkin 1985). Authors of the included studies were contacted for information in cases in which necessary data to compute effect sizes (i.e., sample sizes, means, standard deviations, and other values) were not reported.

Given that many studies assessed more than one outcome, multiple effect sizes were calculated for each independent sample. To account for interdependency of these effect sizes, a three-level meta-analytic approach was used (Assink and Wibbelink 2016). This allows for the inclusion of all relevant effect sizes that can be obtained from the same study (i.e., dependent effect sizes) in the analysis, because statistical dependency is taken into account. As a result, effects can be better estimated and the statistical power in the analysis is increased relative to

traditional (two-level) meta-analytic techniques. An advantage is that more variables can be tested as potential moderators of the overall effect (Assink and Wibbelink 2016).

Three sources of variance were modeled in a three-level meta-analysis: (1) the sampling variance of the observed effect sizes, (2) the variance between effect sizes obtained from the same study, and (3) the variance between studies. To determine whether the variance on the second (within-study) and/or third (between-study) level of the three-level meta-analytic model is significant, two one-sided log-likelihood-ratio tests were conducted (Assink and Wibbelink 2016). Significant variance at level two or three indicates heterogeneity in the effect size distribution, meaning that the overall mean effect size is not a correct estimate of a common effect size. In such cases, moderator analyses can be performed in an attempt to explain within-study and/or between-study heterogeneity in effect sizes.

All analyses were conducted in R (version 3.6.2) using the metafor package. All model parameters were estimated using the restricted maximum likelihood estimate in random effects meta-analytic models (Assink and Wibbelink 2016). The Knapp and Hartung (2003) adjustment was used in testing the significance of individual regression coefficients

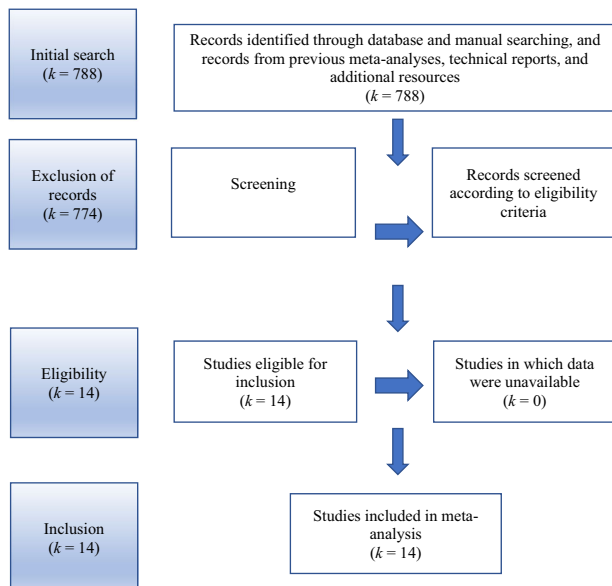Flowchart of the study selection process *of the youth initiated mentoring meta-analysis*

Fig. 1 Flowchart of the study selection process of the youth initiated mentoring meta-analysis. The comprehensive search for studies utilized computerized database searches (ERIC, PsycINFO, PubMed, Wiley Online Library, Google Scholar), as well as a manual search of other resources. Studies were screened for inclusion and exclusion criteria, and authors were contacted if additional data were needed for effect size calculation. Studies for which there were insufficient data (and when authors did not respond in a specified time frame) were excluded. This procedure yielded 14 studies for analysis

(Assink and Wibbelink 2016). The response categories of discrete variables were all transformed into dichotomous dummy variables (Tabachnick and Fidell 2013), and continuous variables were centered around their mean. As the mean age of youth in samples showed restriction of range problems, this variable was treated as a discrete moderator (i.e., young, middle, or late adolescents) and consequently transformed into dummy variables. Gender was also treated as a categorical moderator, because the percentage of male participants in primary study samples was non-normally distributed. Moderator analyses were conducted to test the moderating effect of the coded sample, publication, measurement, program, and outcome characteristics on the overall effect of YIM programs. Finally, a multiple moderator model was tested, with all moderators that came out as significant in the bivariate models included. In this way, the unique impact of each moderator above all other moderators was examined.

Publication Bias Analyses

The goal of meta-analysis is to synthesize the results from all studies that have been conducted concerning a specific subject (Lipsey and Wilson 2001). However, studies with significant and relatively large effects are published more often than studies with non-significant and relatively small effects (Rosenthal 1979). Although efforts were made to find and retrieve all conducted primary studies that were eligible for inclusion in this review, the absence of publication bias cannot be guaranteed. However, a search using the ResearchGate database was conducted for gray literature (i.e., dissertations and unpublished research reports) and unpublished articles. Moreover, multiple authors were contacted and asked for unpublished studies, and the full publication lists of experts in the field of youth mentoring were screened for additional studies that potentially could not be found in the databases. No unpublished studies were eligible for inclusion.

To estimate the influence of publication bias, a funnel plot was used (Egger et al. 1997), which is a scatter plot of the effect sizes against the effect sizes' precision (the inverse of the standard error). In case of publication bias, a gap in the effect size distribution would be present, showing asymmetry at the left side of the funnel. Right funnel plot asymmetry would suggest selection bias due to missing effect sizes, but not publication bias.

The trim and fill procedure (Duval and Tweedie 2000) corrects funnel plot asymmetry by imputing effect sizes that restore funnel plot symmetry. In case effect sizes were imputed by the trim and fill algorithm to restore the funnel plot symmetry, the overall effect was again estimated based on the original as well as the imputed effect sizes. This "adjusted" overall effect quantifies the influence of the "missing" effect sizes on the estimated overall effect.

Results

Overall Effects of YIM on Youth Outcomes

As shown in Table 2, the overall effect size of YIM across all 11 independent samples and 169 effect sizes was $g = 0.30$ ($p = 0.032$; 95% CI: 0.03–0.56), which is a significant small-to-medium effect: $t = 2.166$, $p = 0.032$. There was significant heterogeneity within studies (σ^2 level 2 = 0.037, $p < 0.001$) and between studies (σ^2 level 3 = 0.195, $p < 0.001$). Fifteen percent of the total variance in effect sizes was distributed at the within-study level (i.e., level 2 of the model), and 80% of the total variance was distributed at the between-study level (i.e., level 3 of the model). Random sampling error accounted for 5% of the total variance. A trim and fill procedure was performed to examine whether publication bias was present. Figure 2 shows missing effect sizes at the right side of the funnel, which indicates that publication bias is unlikely. When taking these missing effect sizes into consideration, the overall effect size of YIM increased from $g = 0.30$ to $g = 0.40$, which means that the estimated overall effect for YIM ($g = 0.30$) may have been affected by selection bias and may be a small under-estimation of the true effect.

The Role of Moderators

Table 3 presents the results of the moderator analyses. The omnibus F-test for type of outcome revealed no differences in effect of YIM between the five outcomes, implying that the effect of YIM is consistent across these five outcomes. Subsequent moderator analyses tested whether measurement characteristics moderated the overall effect. First of all, analyses showed larger effects for "other" measurement types, including observations, school records, governmental records, interviews, achievement tests, formal assessments, and combinations thereof ($g = 0.43$), than for questionnaires ($g = 0.27$). Second, the effect of YIM was larger when "others," such as parents, school, teachers, peers, staff, governmental records, or a combination, served as informants ($g = 0.40$), than when youth served as informants ($g = 0.27$). Lastly, results showed that time of measurement may influence the overall effect of YIM. Analyses revealed a trend that approached significance indicating that follow-up assessments may yield smaller effects ($g = 0.23$) than post-test assessments ($g = 0.36$).

Table 3 also presents the relation between study characteristics and the overall effect of YIM. Only the design of the study moderated the effect. The quasi-experimental studies yielded a significant and large effect ($g = 0.95$), whereas the RCTs produced a very small and non-significant effect ($g = 0.15$). Moderator analyses of mentee characteristics showed a significant and medium effect

for samples with predominantly female youth ($g = 0.60$), whereas samples with predominantly male youth or with an equal gender distribution did not yield significant effects. Finally, moderator analyses of publication characteristics revealed larger effect sizes for more recently published studies.

Multiple Moderator Model

Most moderators were interrelated, but only weakly to moderately, so there were no indications of multi-collinearity. A multivariate analysis on all significant moderators yielded a significant regression equation, $F(6, 162) = 8.147$, $p < 0.0001$, with only gender distribution and year of publication remaining as significant moderators. Predominantly female samples yielded larger effect sizes than samples with a predominantly male or equal gender distribution: $b = 0.48$, $t = 5.453$, $p < 0.0001$. Next, more recent studies produced larger effect sizes: $b = 0.04$, $t = 2.707$, $p < 0.01$.

Discussion

Effects of Youth Initiated Mentoring (YIM)

The present study represents a meta-analysis of YIM programs, a strategy that involves helping youth to identify, recruit, and maintain connections with caring adults. This three-level meta-analysis represents a review of 14 studies with 11 independent samples (3594 youth and 169 effect sizes); the review examined the effectiveness of the YIM approach, accounting for the impact of study, sample, publication, measurement, outcome, and program characteristics. The present study revealed an overall significant small-to-medium effect size ($g = 0.30$) for YIM, which may be a slight underestimation of the true effect size ($g = 0.40$).

The relatively larger effects of the YIM approach relative to meta-analyses of formal mentoring ($g = 0.21$; Raposa et al. 2019) and natural mentoring ($g = 0.22$; van Dam et al. 2018) may stem from the fact that most YIM programs have been designed to target specific problems (e.g., violence prevention in a high-violence area, prevention of suicide, and out-of-home placement). This targeted approach contrasts with most formal mentoring programs, including programs like Big Brothers Big Sisters, which tend to take a non-specific, friendship approach as they seek to serve youth with widely varying needs (Cavell and Elledge 2014; Rhodes 2020). Recent meta-analyses have shown that programs that target specific youth outcomes based on the population served are far more effective than non-specific programs ($g = 0.25$ versus $g = 0.11$; Christensen et al. 2020). Moreover, several of the interventions included in

Table 2 Overall effect of YIM programs on youth outcomes

Outcome	k	#ES	Mean g	95% CI	p	$\sigma^2_{level\ 2}$	$\sigma^2_{level\ 3}$	% Var. Level 1	% Var. Level 2	% Var. Level 3
Youth outcomes	11	169	0.30	0.03; 0.56	0.032	0.037***	0.195***	5.41	15.10	79.50

Youth outcomes = academic and vocational, social-emotional, physical health, psychosocial problems; k = number of studies; #ES = number of effect sizes; mean g = mean effect size (g); CI = confidence interval; $\sigma^2_{level\ 2}$ = variance between effect sizes extracted from the same study; $\sigma^2_{level\ 3}$ = variance between studies; % Var = percentage of variance distributed

***$p \leq 0.001$

this meta-analysis incorporated professional mental health treatment with the YIM approach, a focus that may have resulted in stronger treatment motivation, more positive adult-youth alliances, and improved goal orientation (Van Dam and Schwartz 2020).

Likewise, a number of the programs included in the meta-analysis embedded the YIM program within the context of other interventions which, in theory, could contribute to larger effect sizes. Surprisingly, however, moderator analyses failed to detect significant differences in programs that delivered YIM as a stand-alone intervention versus YIM as an embedded intervention, though the positive effect of YIM as an embedded intervention was two times larger. It is likely that lack of statistical power may have contributed to the non-significant effect.

Moderator analyses showed that the effectiveness of YIM programs did not differ significantly across the different outcome domains. Larger effect sizes were found for samples with higher percentages of female youth compared to samples with predominantly males or an equal gender distribution. This finding must be interpreted with caution as it is inconsistent with results from two previous meta-analyses of mentoring, which showed that programs serving more than 50% males had larger effects (DuBois et al. 2011; Raposa et al. 2019). Particularly given the targeted, mental health focus, girls may enter mentoring programs with more complicated relational histories than boys, which may initially increase mentors' capacity to assist them in setting goals (Bogat and Liang 2005), especially in the context of enduring relationships (Kupersmidt et al. 2017b). Of course, since the effects were derived from direct comparisons between males and females, as opposed to program gender composition, the differences may have more to do with unspecified individual or program characteristics. Further research is needed to fully untangle the ways in which mentor and youth gender might influence match outcomes.

Limitations, and Future Research Directions

The following limitations should be acknowledged when interpreting the study findings. First, the current meta-analysis included just 14 studies, with 11 independent samples for YIM, which may have attenuated differentiation in effect sizes across
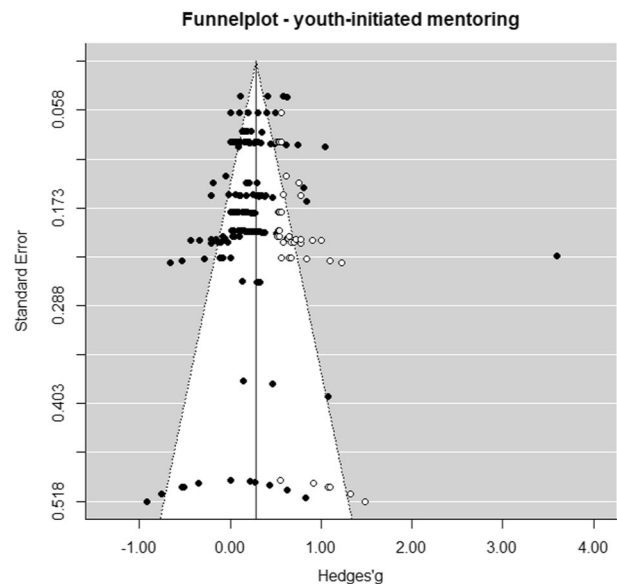

Fig. 2 Funnel plot youth initiated mentoring

different types of youth outcomes due to low statistical power to detect small effects. However, differences in effect sizes between the different youth outcomes were extremely small, ranging from $g = 0.24$ (cognitive functioning) to $g = 0.35$ (social outcomes). The restricted sample size is a consequence of the limited number of evaluations that have been conducted on YIM. Meta-analyses are dependent on the type, quality, and availability of information included in the analyses. YIM programs should be implemented and evaluated, with different program characteristics, serving a variety of populations and age groups. To date, YIM programs have been implemented with adolescents and young adults. Since young children and their parents may feel discomfort with this approach, it will be important to determine the age at which YIM can be safely and effectively implemented. It will also be important to test this approach independently and in combination with evidence-based interventions in robust experimental research that, to the maximum extent possible, can rule out alternative explanations for established intervention effects, accounting for the degree of program integrity (see Goense et al. 2016). Future studies should also include follow-up assessments that span several years to further explore the potential of YIM to sustain effects

Table 3 Moderators of the outcomes of youth initiated mentoring programs

Moderator variable	k	#ES	B_0/g	t_0^2	B_1	t_1	$F(df_1, df_2)$
Outcome domains[1]							$F(4, 164) = 0.539$
Psychological outcomes (RC)	8	83	0.28	1.972****			
Health	4	12	0.29	1.837****	0.01	0.073	
Cognitive functioning	6	33	0.24	1.638	−0.04	−0.430	
School	5	11	0.32	2.012*	0.04	0.409	
Social	7	30	0.35	2.437*	0.07	0.901	
Outcome measurement							
Type of assessment (RC)							$F(1, 167) = 7.472$**
Questionnaires	11	140	0.27	2.044*			
Other measures	5	29	0.43	3.019**	0.15	2.733**	
Information source							$F(1, 167) = 5.563$*
Youth (RC)	10	135	0.27	2.125*			
Other	5	34	0.40	3.004**	0.13	2.359*	
Time							$F(1, 167) = 2.946$****
Post-test (RC)	8	90	0.36	2.436*			
Follow-up	6	79	0.23	1.558	−0.13	−1.716****	
Study characteristics							
Design							$F(1, 167) = 8.723$**
RCT (RC)	9	158	0.15	1.394			
Quasi experimental	2	11	0.95	3.845***	0.80	2.953**	
Intention to treat							$F(1, 167) = 0.286$
Yes (RC)	7	115	0.28	1.947****			
No	6	54	0.32	2.194*	0.04	0.535	
Mentee characteristics							
Predominantly white	10	155	0.15	8.301***	−0.00	−0.002	$F(1, 153) = 0.000$
Gender							$F(2, 166) = 14.061$***
Predominantly female (RC)	5	60	0.60	3.057**			
Predominantly male	6	98	0.11	0.589	−0.49	−5.267***	
Equal gender distribution	1	11	−0.06	−0.093	−0.66	−1.017	
Age group							$F(1, 167) = 0.827$
Early or middle adolescence	5	103	0.44	2.097*			
Late adolescence	6	66	0.18	0.946	−0.26	−0.909	
Publication characteristics							
Continent							$F(1, 167) = 2.393$
North America (RC)	8	104	0.17	1.134			
Europe	3	65	0.63	2.492*	0.45	1.547	
Year of publication	11	169	0.27	1.953****	0.04	3.008***	$F(1, 167) = 9.045$***
Program characteristics							
Shared decision making							$F(1, 167) = 2.217$
Yes	3	51	0.62	2.443			
No	8	118	0.18	1.148	−0.44	−1.489	
Embedded							$F(1, 167) = 0.429$
Yes	6	124	0.38	1.976*			
No	5	45	0.19	0.909	−0.19	−0.655	

RC reference category, k = number of independent studies, #ES = number of effect sizes, B_0/Hedges' g = intercept/t_0 = t value Hedges' g, B_1 = estimated regression coefficient, t_1 = difference in Hedges' g with reference category, $F(df_1, df_2)$ = omnibus test

*$p < 0.05$. **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

over time. Additionally, comprehensive outcome measures are needed, based on multiple informants and objective measures, such as behavioral observation or official registration of particular outcomes (e.g., delinquency, school achievement, school drop-out, truancy, and out-of-home placement).

Although there was no indication that the results of this meta-analysis were affected by publication bias, there was some indication that the sample of studies may not have been representative of all mentoring programs being implemented and evaluated. Included studies may be at more preliminary stages of the YIM program implementation, suggesting that the

effect sizes found in the meta-analysis on youth initiated mentoring may be an underestimation of the true effect.

There may also be limitations associated with the methods. Recently, the three-level approach to meta-analysis has been criticized for not always taking statistical dependency into account to a sufficient degree (see Fernández-Castilla et al. 2020). For instance, sometimes a fourth or even fifth level may be necessary to account for statistical dependency of effect sizes derived from studies that have been carried out by the same research group, in the same country, or under similar conditions. In the case of this meta-analysis, adding a fourth or fifth level to

the multilevel model was not possible due to the small number of studies, resulting in lack of variance at these levels.

By providing the first meta-analytic assessment of the overall impact of YIM programs, as well as moderators of program effectiveness, this study is an important first step towards building an evidence base for YIM. Taken together, the current findings provide support for the efficacy of YIM, particularly as a relatively low-cost preventive intervention with the potential to redress the limitations of formal mentoring programs. Supporting youth in recruiting their own mentors will enable programs to reach larger groups of youth and may help to reduce the progression of difficulties and consequent need for more intensive treatments or system involvement. It is also essential that all youth be equipped not only with the skills but with the sense of entitlement necessary to actively reach out and form relationships with caring adults.

Past research has shown that navigating relationships and seeking support within schools or workplaces can be particularly difficult for young adults from low-SES and minority backgrounds. As a result, programs designed to teach networking skills and discuss barriers to help-seeking are particularly important in facilitating connections between low-income youth and caring adults outside of their home communities (Schwartz and Rhodes 2016). Since family and neighborhood economic disadvantages are associated with a lower likelihood of identifying a natural mentor, particularly a nonfamily natural mentor who can connect youth with new opportunities (Raposa et al. 2018), natural mentoring cannot be left to chance. Public support for inclusive mentor-rich settings, from sports teams and science and technology programs to therapeutic services, is likely to be a key factor in ensuring access to a broad range of caring adults for all youth.

Future research should continue to include rigorous, experimental evaluations of YIM programs, including measurement of youth, mentors, and program characteristics that may influence program impact. Within this context, additional research is needed to refine and identify the strengths and challenges of these YIM approaches, and to evaluate their effects across a broad range of youth samples and outcomes. Future studies should replicate and expand on these results as additional evaluations of YIM programs are conducted.

Conclusion

Natural mentoring relationships arise through organic social connections and can provide a range of positive developmental outcomes to youth. Unfortunately, too many youth report failure to develop mentoring relationships. YIM has

the potential to address some of the limitations of both formal and natural mentoring relationships. Although most YIM programs are in the early stages of development, this meta-analysis provides preliminary evidence that this approach protects against risks and fosters positive outcomes. By empowering youth to identify and subsequently draw on supports within their community, rather than relying on (costly) professional care and treatment, YIM may be a sustainable way to help connect youth with the support they need while strengthening intergenerational relationships and community cohesion.

Compliance with Ehical Standards

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