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Youth relationship education: A meta-analysis

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ABSTRACT

Recent focus on the developmental importance of adolescent romantic relationships led to the formation and implementation of curricula and programs that educate high school-aged youth about healthy romantic relationships. This meta-analytic study examines the efficacy of youth-focused relationship education (YRE) on multiple outcomes: conflict management, faulty relationship beliefs, and healthy relationship attitudes. Searches revealed 33 studies of YRE, however, meta-analytic procedures only included 15 studies which provided sufficient data on the outcomes of focus. Hedge's g effect sizes were significant for two of the three outcomes and are comparable with effects of other prevention programs. Overall, YRE programs are effective in changing conflict management and faulty relationship beliefs.

1. Introduction

Rapid cognitive, social, and physical development during adolescence make this developmental stage an ideal period for intervention and prevention efforts. Programs targeting adolescent audiences often focus on preventing drug and alcohol use, unplanned pregnancy, juvenile delinquency, bullying, and dating violence. Whereas research on the effectiveness of programs focused on adolescent sexual health, drug and alcohol use, and bullying is highly prevalent (e.g., Bauer, Lozano, & Rivara, 2007; Botvin et al., 2000; Hecht et al., 2003), less is known about the overall effectiveness of programs that educate youth about healthy romantic relationships.

Within a prevention science framework, a strong emphasis is placed on identifying risk and protective factors and preventing the development of maladaptive behaviors and mental health problems (Coie et al., 1993; Kellam, Koretz, & Mościcki, 1999). According to this perspective, interventions should precede the development and stabilization of risk factors and capitalize on protective factors (Coie et al., 1993). Youth-focused relationship education (YRE) interventions are designed to reduce risk factors such as endorsement of faulty relationship beliefs and dating aggression while increasing protective factors such as conflict management skills. Relationship interaction patterns formed during adolescence can influence relational outcomes later in life (Madsen & Collins, 2011); therefore, implementation of YRE programs during adolescence may inhibit the stabilization of maladaptive relationship interaction patterns that may present in adult relationships. An important stage in prevention research is to conduct ongoing evaluation of programs targeting certain populations and issues. The present study capitalizes on multiple evaluation studies to provide an analysis of the overall effectiveness of YRE programs.

1.1. Adolescent romantic relationships

As adolescents spend more time with peers, it is common for them to engage in romantic and sexual relationships. Data from the National Longitudinal Study of Adolescent Health (Add Health) indicates that approximately one third of adolescents have experienced a romantic relationship at the age of 12. By age 18, 70% of adolescents report having had a romantic relationship (Carver, Joyner, & Udry, 2003). Once considered “puppy love,” research indicates that adolescent romantic relationships are characterized by emotional intimacy, expressions of love, time spent together, and commitment (Carver et al., 2003; Collins, 2003; Collins, Welsh, & Furman, 2009). Although adult-like relational characteristics are typical in adolescent dating relationships, there are issues unique to adolescence that distinguish these relationships. Developmental issues experienced in adolescence such as identity formation, connectedness, and social cognitive errors (e.g., idealism, personal fable) can affect the qualities of romantic relationships during this period. Research indicates that not only do youth have idealistic expectations for dating partners and relationships, they lack important knowledge and skills necessary to build healthy relationships (Adams & Williams, 2011; Connolly, Friedlander, Pepler, Craig, & Laporte, 2010; Ma, Pittman, Kerpelman, & Adler-Baeder, 2014). This lack of knowledge and information may place adolescents at risk for negative relational outcomes.

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Some potential negative outcomes linked to involvement in dating relationships include depression, dating violence, and consequences associated with having unprotected sex such as sexually transmitted infections (STIs) and unintended pregnancy (Banyard & Cross, 2008; Bouchey & Furman, 2003). Because of the extreme emotional intensity involved in these relationships, they account for a large amount of stress in adolescents' daily lives (Larson, Clore, & Wood, 1999). Experiencing unrequited love, infidelity, and/or relationship dissolution are also associated with adolescent depressive symptoms (Bouchey & Furman, 2003; Welsh, Grello, & Harper, 2003). Another potential negative outcome of these relationships is dating aggression. In recent years, the occurrence of dating violence perpetration and victimization in adolescent romantic relationships has been deemed a significant public health problem (Foshee, Linder, MacDougall, & Bangdiwala, 2001). In some studies, as many as 57% of adolescents report experiences of dating violence as either the perpetrator or the victim and as many as 15% report experiencing serious physical injury stemming from the altercations (Foshee et al., 2001; Wolfe et al., 2003). Furthermore, a lack of sexual communication (i.e., refusal skills, contraceptive negotiation) can lead to sexual health consequences like STI transmission or unintended pregnancy (DiClemente et al., 2001).

Although some aspects of adolescent romantic relationships can be associated with negative outcomes, there are also multiple healthy and positive aspects of interpersonal development that emerge as a result of experience in romantic relationships. These relationships can serve as arenas to practice interpersonal competencies such as conflict management skills, emotional expression, and communication skills (Barber & Eccles, 2003). Depending on the characteristics of the partner and qualities of the relationship, dating relationships can potentially influence academic achievement, career plans, and identity formation (Collins et al., 2009; Furman & Shaffer, 2003; Giordano, Phelps, Manning, & Longmore, 2008). Overall, these relationships can offer both risk and protective factors for adolescents.

Romantic relationships in adolescence can affect individual outcomes in many ways and can have lasting effects on adolescents' health and relationship experiences (Ashley & Foshee, 2005; Ha et al., 2016; Ha, Dishion, Overbeek, Burk, & Engels, 2014; Kerpelman, Pittman, Adler-Baeder, Eryigit, & Paulk, 2009). These relationships can influence the quality of adult romantic relationships by forming internal working models, establishing patterns of interaction, and triggering health issues that can persist into adulthood (Collins & Van Dulmen, 2006; Madsen & Collins, 2011; Roisman, Collins, Sroufe, & Egeland, 2005; Welsh et al., 2003). Within a prevention approach, thwarting the stabilization of maladaptive relationship habits is essential for later functioning in committed adult relationships. For this reason, it is especially important to promote healthy relationships and prevent negative outcomes among adolescents by intervening either before or during the time when these relationships are initiated.

1.2. Youth-focused relationship education

There are two major prevention approaches to educating youth about healthy relationships and preventing dating violence (DV). Research indicates that both YRE and DV prevention programs effect change in targeted outcomes (e.g., use and acceptance of aggression and stereotypical gender role beliefs; Cornelius & Resseguie, 2006; Gardner, Giese, & Parrott, 2004). Following participation in either type of program, youth report increased knowledge about unhealthy and healthy relationships, decline in the use of verbal and physical aggression, less acceptance of the use of violence in relationships, and less stereotypical gender roles beliefs (Adler-Baeder, Kerpelman, Schramm, Higginbotham, & Paulk, 2007; Cornelius & Resseguie, 2006; Kerpelman et al., 2009; Ting, 2009). It is important to note that the absence of aggressive behavior in relationships does not necessarily imply the presence of healthy relational behaviors. YRE programs take a comprehensive approach to educating youth about relationships by encouraging healthy relationship behaviors, recognizing negative interaction patterns, and preventing adolescent DV. YRE provides a foundation of knowledge and skills for youth to develop healthy relationships above and beyond preventing dating abuse (Kerpelman, 2007). Beyond the gains experienced from a DV prevention program, YRE programs promote important social competencies (e.g., communication and conflict resolution skills) that can sustain healthy relationships (Adler-Baeder et al., 2007; Kerpelman et al., 2009).

Efforts to prevent negative outcomes and promote healthy relationship development has led to increased implementation of YRE programs that aim to promote relational competencies and healthier attitudes towards romantic relationships. Over the last two decades, funding has allowed for the implementation and formal evaluations of such programs, shedding light on the effectiveness of YRE. Within large-scale, federally funded community relationship education initiatives, a youth component often exists in which youth-specific curricula are taught to high school students or adolescent community groups. Example curricula include *Relationship Smarts Plus* (Pearson, 2007/2013) and *Connections: Relationships and Marriage* (Kamper, 1996). These curricula cover topics such as identifying key values, communication skills, conflict management skills, and unhealthy relationship patterns. To date, evaluations of many YRE programs have provided evidence of significant improvement in these targeted areas (e.g., Adler-Baeder et al., 2007; Futris, Sutton, & Richardson, 2013; Gardner et al., 2004; Kerpelman et al., 2009). However, significant findings are not consistent across all evaluation studies. For example, mixed results emerge regarding attitudes about resisting sexual pressure (Gardner et al., 2004; Schramm & Gomez-Scott, 2012) and nonsignificant associations are reported regarding the effect of YRE on perpetration of dating violence (e.g., Gardner, Johnson, & Growcock, 2012). Because YRE programs focus on broader populations of adolescents, have a more comprehensive approach to healthy relationship behaviors, and have greater variety of targeted outcomes. Thus, the current meta-analysis will include only evaluations of YRE programs.

1.3. Aims of the current study

This meta-analytic study aims to determine the effectiveness of YRE programs on targeted outcomes including conflict management, faulty relationship beliefs, and attitudes towards marriage, counseling, and dating violence. Although Hawkins, Blanchard, Baldwin, and Fawcett (2008) conducted a meta-analysis of adult marriage and relationship education (MRE) programs, there is a need for a meta-analysis of relationship education programs targeting late adolescent audiences (i.e., ages 15–18).

2. Methods

We searched for research conducted on the effectiveness of YRE. Studies were identified by searches conducted in PsycINFO, Google Scholar, Web of Science, and subsequent reviews of bibliographies. We used several combinations of keywords including, “adolescent,” “relationship education,” “evaluation,” “curriculum,” “youth,” “high-school,” “dating,” and “romantic relationships.” Studies of dating violence prevention programs and adult relationship education evaluations often appeared during these search commands, but they were not included in the study. Searches for unpublished work included a review of the evaluations conducted and linked to a website of a well-known publisher of relationship education curricula (The Dibble Institute).

Table 1
Detailed summary of included and excluded studies considered in the current meta-analysis.

Author (year)	Included?	Measures analyzed (n = # of effect sizes)	M effect size
Adler-Baeder, F., Kerpelman, J. L., Schramm, D. G., Higginbotham, B., and Paulk, A. (2007)	Yes	Conflict management (n = 3) Relationship beliefs (n = 1)	g = 0.118 g = 0.255
Antle, B., Sullivan, D., Dryden, A., Karam, E., and Barbee, A. (2011)	Yes	Conflict management (n = 4) Relationship attitudes (n = 1)	g = 0.247 g = 0.191
Bradford, A. B., Erickson, C., Smith, T. A., Adler-Baeder, F., and Ketring, S. A. (2014)	No – main effects not reported	N/A	N/A
Braithwaite, S. R. and Fincham, F. D. (2007)	No – sample of young adults	N/A	N/A
Chan, A. E., Adler-Baeder, F. M., Duke, A. M., Ketring, S. A., and Smith, T. A. (2016)	Yes	Relationship beliefs (n = 1)	g = 0.773
De La Rue, L., Polanin, J. R., Espelage, D. L., and Pigott, T. D. (2016)	No – meta analysis on dating violence prevention programs	N/A	N/A
Futris, T. G., Sutton, T. E., and Richardson, E. W. (2013)	No – did not measure targeted outcomes	N/A	N/A
Gardner, S. P. (2001)	No – included same sample in Gardner et al. (2004)	N/A	N/A
Gardner, S. P., Giese, K., and Parrott, S. M. (2004)	Yes	Conflict management (n = 2) Relationship attitudes (n = 3)	g = 0.314 g = 0.240
Gardner, S. P. and Boellaard, R. (2007)	Yes	Conflict management (n = 1) Relationship attitudes (n = 3)	g = 0.091 g = 0.144
Gardner, S. P., Johnson, A., and Growcock, H. (2012)	No – included same sample as in Gardner et al. (2016)	N/A	N/A
Gardner, S. P., Bridges, J. G., Johnson, A., and Pace, H. (2016)	Yes	Conflict management (n = 3) Relationship attitudes (n = 2) Relationship beliefs (n = 2)	g = 0.142 g = 0.361 g = 0.464
Grimm, A. J. (2011)	Yes	Relationship attitudes (n = 1)	g = 0.051
Halpern-Meekin, S. (2011)	Yes	Conflict management (n = 1)	g = 0.470
Kerpelman, J. L., Pittman, J. F., and Adler-Baeder, F. (2008)	No – main effects not reported	N/A	N/A
Kerpelman, J. L., Pittman, J. F., Adler-Baeder, F., Eryigit, S., and Paulk, A. (2009)	Yes	Conflict management (n = 1) Relationship beliefs (n = 3)	g = 0.044 g = 0.083
Kerpelman et al. (2010)	Yes	Conflict management (n = 1) Relationship beliefs (n = 1)	g = 0.094 g = 0.095
Ma, Y., Pittman, J. F., Kerpelman, J. L., and Adler-Baeder, F. (2014)	No – did not measure targeted outcomes	N/A	N/A
McBride, C. K., Miller, C., and Vorderstrasse, V. (2011)	No – only abstract provided	N/A	N/A
McElwain, A. D. (2015)	Yes	Conflict management (n = 1) Relationship attitudes (n = 2) Relationship beliefs (n = 2)	g = 0.012 g = 0.136 g = 0.436
McElwain et al. (2016)	Yes	Conflict management (n = 1) Relationship attitudes (n = 1) Relationship beliefs (n = 1)	g = 0.143 g = 0.033 g = 0.197
McLeod, D. A., Jones, R., and Cramer, E. P. (2015)	No – dating violence prevention program	Relationship attitudes (n = 2)	N/A
Morrison, S. U. (2014)	No – did not measure targeted outcomes	Relationship beliefs (n = 2)	N/A
Mutanski, B., Greene, G. J., Ryan, D., and Whitton, S. W. (2015)	No – sex education program	N/A	N/A
Pittman, J. F., and Kerpelman, J. L. (2013)	No – main effects not reported	N/A	N/A
Rice, T. M., McGill, J., and Adler-Baeder, F. (2016)	No – did not measure targeted outcomes	N/A	N/A
Schramm, D. G. and Gomez-Scott, J. (2012)	Yes	Conflict management (n = 2) Relationship attitudes (n = 2) Relationship beliefs (n = 3)	g = 0.180 g = 0.094 g = 0.337
Sparks, A., Lee, M., and Spjeldnes, S. (2012)	Yes	Relationship attitudes (n = 1)	g = 0.048
Stover, C. L. (2008)	No – included same sample as Bradford et al. (2014)	N/A	N/A
Toews, M. L. and Yazedjian, A. (2010)	No – qualitative	N/A	N/A
Toews, M. L., Yazedjian, A., and Jorgensen, D. (2009)	No – qualitative	N/A	N/A
Trella, D. (2009)	Yes	Relationship beliefs (n = 2)	g = 0.135
Whittaker, A., Garneau, C., and Adler-Baeder, F. (2014)	No – main effects not reported	N/A	N/A

Searches for unpublished studies also included theses, dissertations, and conference presentations. We initially reviewed 33 studies in total (for details see Table 1). Data from each of the included studies were extracted and entered into an Excel spreadsheet. Number of study participants, means and standard deviations at pre- and post-participation for outcome scores, and other pertinent data such as regression coefficients, F statistics, and t statistics were included in the spreadsheet.

2.1. Selection and inclusion criteria

2.1.1. Psychoeducational intervention

This meta-analysis included studies that assessed the effectiveness of psychoeducational programs aiming to improve adolescent romantic relationships. Studies about programs or interventions delivered in a clinical setting by a therapist were not included.

2.1.2. Methodological design

We excluded literature reviews and qualitative studies (k = 4). Regarding methodological design, very few studies included follow-up measures after the post-program assessment; therefore, we chose to only assess the effect of YRE from pre-program to post-program.

2.1.3. Publication status

Analyses included published and unpublished studies measuring outcomes of interest and with sufficient data for calculating effect sizes. We searched for both published and unpublished work (e.g., theses,

dissertations, conference presentations) and discovered a small number of unpublished studies ($n = 8$).

2.1.4. Outcome data

We identified outcomes common across studies and programs and settled on three general outcomes: 1) conflict management skills; 2) faulty relationship beliefs; and 3) healthy relationship attitudes. We included studies with sufficient information to calculate effect sizes for specific outcomes. There were a small number of studies ($n = 3$) that assessed outcomes of interest but did not provide sufficient data to include in the meta-analysis. We attempted to obtain more detailed information by contacting the authors of these studies. Authors responded and provided necessary data in one case. These selection criteria resulted in 16 usable studies.

2.2. Measures

A strength of meta-analytic techniques is the ability to group conceptually similar constructs in order to statistically test for the magnitude of change, even though the original results use different measures to assess the same construct. In this study, the measures varied for conflict management skills, faulty relationship beliefs, and healthy relationship attitudes.

2.2.1. Conflict management measures

Five studies used the Conflict Tactics Scale (Straus, 1979), and four studies used the Buhrmester, Furman, Wittenberg, and Reis (1988) measure of Interpersonal Competence to assess changes in conflict management skills after YRE participation. Less commonly used measures of conflict management skills included the Conflict Resolution Styles Inventory (Kurdek, 1994) and the Relationship Questionnaire measure (Rel-Q; Selman, 1980).

2.2.2. Faulty relationship beliefs measures

This measure encapsulated several faulty relationship beliefs including beliefs related to cohabitation, the idea that “love is enough,” and there is a “one and only,” in addition to other more general unhealthy relationship beliefs. The majority of the studies (5) used Cobb, Larson, and Watson's (2003) faulty relationship belief scale which has subscales related to “love is enough,” “one and only,” and general faulty relationship beliefs. Gardner, Bridges, Johnson, and Pace (2016) used a relationship belief scale they developed in 2001, and Adler-Baeder et al. (2007) conducted a confirmatory factor analysis of the questions. Two studies (Chan, Adler-Baeder, Duke, Ketring, & Smith, 2016; Trella, 2009) used general questions about understanding what is unhealthy or healthy in relationships.

2.2.3. Healthy relationship attitudes measures

This measure encapsulated several relationship attitudes related to domestic violence, counseling, marriage, and divorce. Attitudes towards domestic violence were measured in one of two ways: using the Dating Abuse Attitudes scale (Gardner et al., 2004) or with the Acceptance of Couple Violence scale (Foshee et al., 1998). The measurements of healthy attitudes related to counseling, marriage, and divorce were developed by Gardner et al. (2004) for the evaluation of youth relationship education programs.

3. Results

3.1. The mean effect size

Effect sizes in meta-analytic studies are used to calculate the magnitude of a relationship or association. Selecting an effect size metric is important and is based on the type of question being asked (Rosnow & Rosenthal, 2003). The effect size statistic employed in the following analyses is the standardized mean group difference (Hedge's g). We employed random effects estimates, rather than fixed effects, to allow for the possibility that differences in effect sizes from study to study are due to sampling error and variations in study or intervention methods. Comprehensive Meta-Analysis (CMA) was used for analyses. Results reflect analyses conducted using 15 studies. In general, it appears YRE positively influences conflict management skills and faulty relationship beliefs.

Table 2
Results from the random effects model.

	Effect size and 95% CI				Significance	
	k	Std diff in means	Lower limit	Upper limit	*z*	*p*
Conflict management	20	0.158	0.105	0.211	5.840	0.000
Faulty relationship beliefs	16	0.287	0.117	0.457	3.305	0.001
Healthy relationship attitudes	18	0.024	− 0.071	0.118	0.491	0.623

As seen in Table 2, using 20 effect sizes from 11 studies the effect of YRE on *conflict management skills* was $g = 0.158$, $p < 0.001$, which is a small (Cohen, 1988) but statistically significant effect size. The test of heterogeneity, or across-study variation, was significant ($Q = 47.92$, $p < 0.001$), suggesting the true effect of YRE on conflict management skills differs across studies. Further, using 16 effect sizes from 9 studies the average effect of YRE on *faulty relationship beliefs* ($g = 0.287$; $p < 0.001$) was small yet statistically significant. The test of heterogeneity was significant ($Q = 1354.97$, $p < 0.001$), suggesting the true effect of YRE on faulty relationship beliefs differs across studies. Finally, using 18 effect sizes from 10 studies the effect of YRE on *healthy relationship attitudes* ($g = 0.024$; $p < 0.623$) was not statistically significant. The test of heterogeneity was significant ($Q = 118.85$, $p < 0.001$), suggesting the true effect of YRE on healthy relationship attitudes differs across studies.

3.2. Publication bias

For the purposes of this study, we used funnel plots and Rosenthal's fail-safe number to assess the presence of publication bias in YRE evaluation. The funnel plot is a visual representation of the association between effect size and sample size and Rosenthal's fail-safe number indicates how many “nonsignificant” studies would need to be published to make the results of the meta-analysis in question null. Rosenthal's failsafe number is calculated in CMA and compared to the suggested equation of $5n + 10$ (Rosenthal, 1979), with n representing the number of studies included in the meta-analytic analyses for each outcome. Taken together, it appears that publication bias may be present in this meta-analytic study.

Specifically, for *conflict management skills*, the funnel plot is somewhat asymmetric (Fig. 1), which is interpreted to mean there may be publication bias present. Conversely, the calculated fail-safe number is 105, whereas the Rosenthal's fail-safe number calculated in CMA is 308, suggesting there is an absence of publication bias. For *faulty relationship beliefs*, the funnel plot is somewhat asymmetric (Fig. 2), which is interpreted to mean there may be publication bias present. Conversely, the calculated fail-safe number is 85, whereas the Rosenthal's fail-safe number calculated in CMA is 3762, suggesting there is an absence of publication bias. Finally, for *healthy relationship attitudes*, the funnel plot is somewhat asymmetric (Fig. 3), which is interpreted to mean there may be publication bias present. Conversely, the calculated fail-safe number is 90 (Rosenthal, 1979), whereas the Rosenthal's fail-safe number calculated in CMA is 325, suggesting there is an absence of publication bias.

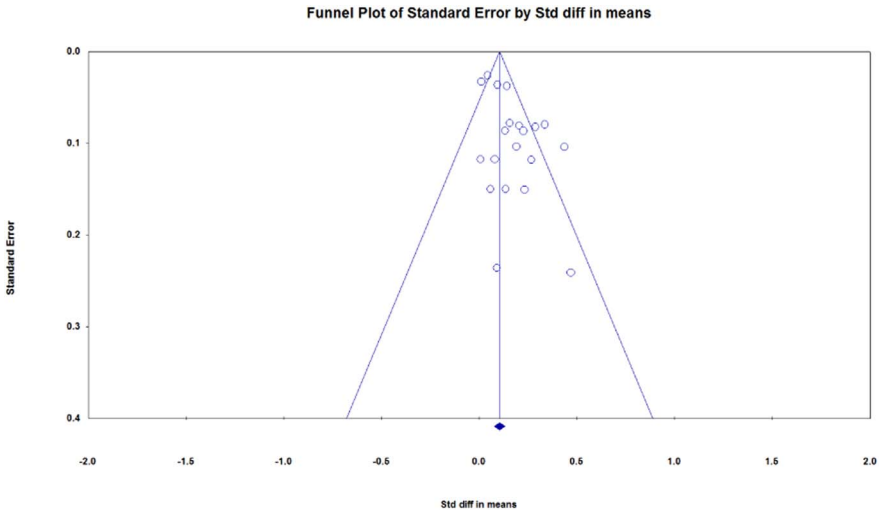

Fig. 1. Funnel plot displaying the association between the standard error and mean standard difference for the conflict management outcome.

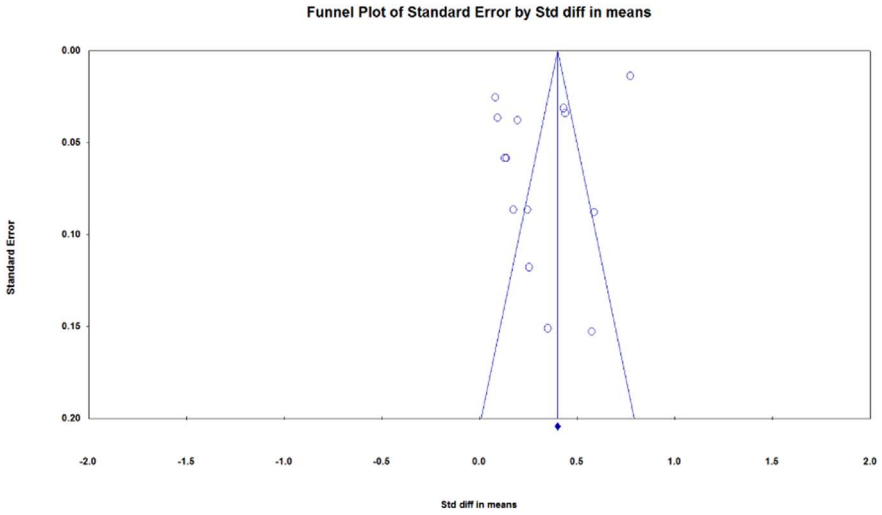

Fig. 2. Funnel plot displaying the association between the standard error and mean standard difference for the faulty relationship beliefs outcome.

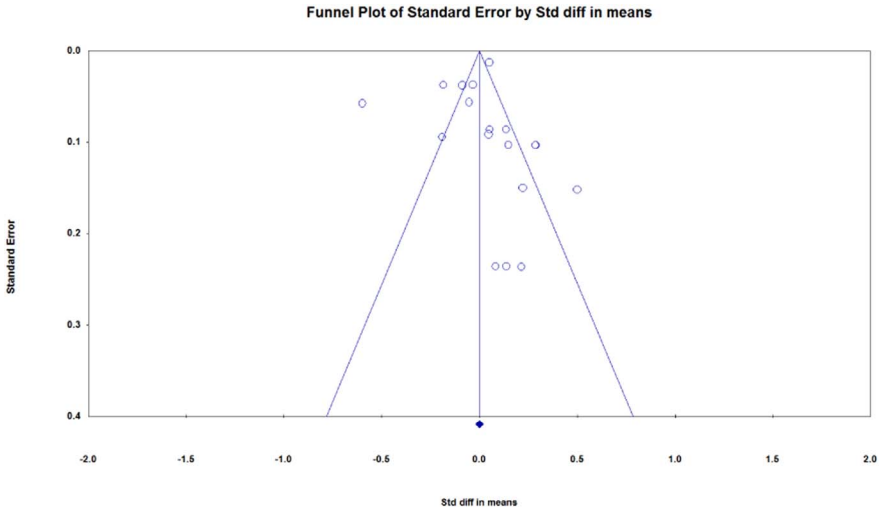

Fig. 3. Funnel plot displaying the association between the standard error and mean standard difference for the healthy relationship attitudes outcome.

4. Discussion

This meta-analytic study included 16 studies yielding over 50 effect sizes used to examine the effectiveness of YRE programs. We first review the major findings and then discuss the overall limitations in the existing YRE literature. Finally, we discuss implications of these results and offer suggestions for future directions in YRE program development, implementation, and evaluation.

4.1. Overview of results

The results of the current meta-analysis support the importance of providing YRE because it can help correct idealistic attitudes about dating relationships and improve essential social competencies that are needed for maintaining healthy romantic relationships. Statistically significant effect sizes ranged from 0.158 to 0.287, and even though the effect sizes are small, these changes are comparable to other educational programs focusing on prevention (i.e., 0.25; Wolf, 1986). Furthermore, the number of common outcomes and magnitude of significant effect sizes were similar to the Hawkins et al. (2008) meta-analysis of adult marriage and relationship education programs.

4.1.1. Conflict management

Overall, results indicate that adolescent conflict management skills improve as a result of participation in YRE programs, although the effect size was somewhat small ($g = 0.158$). In comparison to the other two outcomes in this study, which are focused on attitudinal changes, conflict management is a skill or behavior that may take more time to observe significant or large changes and because we only utilized pre- to post-test information this could explain the relatively small effect size. It is also important to note that participants generally had relatively high self-reported conflict management skills at pretest (Kerpelman et al., 2009, 2010; McElwain, 2015). This suggests that participants may overestimate their conflict management abilities before the programs, creating a ceiling effect and limiting the capacity for change across assessment periods. This measurement issue is common to program evaluation utilizing traditional pretest-posttest study design (Pratt, McGuigan, & Katzev, 2000). Furthermore, few studies included follow-up data that could be used in this meta-analysis to track longer term changes in conflict management. However, results are promising across the studies included in our analyses, indicating that this social skill improves as a result of YRE programs.

4.1.2. Faulty relationship beliefs

Attitudes about relationships and dating partners appear to change after participating in YRE programs. The effect size ($g = 0.287$) for this outcome was the largest of the three outcomes analyzed in this study. Three specific attitudes comprised the measure of faulty beliefs included in this meta-analysis. These beliefs capture the idealistic notions that there is only one person in the world with whom you are meant to marry, the idea that love alone is enough to sustain a marriage, and the misconception that cohabitation increases the likelihood of having a stable and successful marriage. These beliefs may be amenable to change because they stem from inexperience and adolescent idealistic thinking. Participating in a program in which facilitators with authority on relationships describe realistic expectations for relationships appears to effectively alter these beliefs to some extent.

4.1.3. Healthy relationship attitudes

The final outcome, a general measure of healthy relationship attitudes, assessed adolescents' marital attitudes, dating aggression attitudes, and attitudes towards marital counseling. The effect size for this outcome was not statistically significant ($g = 0.024$, $p = 0.623$). This is possibly because participants respond in ways that they believe are socially acceptable or normative, particularly regarding issues like dating violence acceptance, suggesting a ceiling effect from pre-test to post-test. Furthermore, beliefs about counseling and marriage may be more deeply rooted than idealistic, faulty relationship beliefs. There are many reasons why someone would not want to attend counseling in the future, including religious and cultural beliefs about seeking help in addition to perceived stigma about seeking counseling. Finally, the effect size for this variable may have been non-significant because three separate outcome variables were collapsed into one "healthy relationship attitude" variable due to the low number of studies including the individual variables. As such, there may be a less accurate representation of change in each of these outcomes.

4.2. Research design

The YRE programs were generally similar across the included studies. Five studies summarized programs in which presenters were not certified teachers, rather trained guest educators in classrooms or after-school programs (Antle, Sullivan, Dryden, Karam, & Barbee, 2011; Chan et al., 2016; Grimm, 2011; McElwain et al., 2016; Whittaker, Garneau, & Adler-Baeder, 2014). The remainder of studies involved certified high school teachers delivering the curriculum to their regular family and consumer science, psychology, or heath classes. The major similarity in delivery is that all educators were trained generally as teachers or trained specifically in teaching the YRE curriculum. Studies describe results of changes in attitudes and behaviors following implementation of one of four curricula: Relationships Smarts Plus ($n = 9$; Pearson, 2007/2013), Connections: Relationships and Marriage ($n = 4$; Kamper, 1996), What's Real ($n = 1$; Pool, 2009), and Go for the Gold ($n = 1$; Harsh & Sacksteder, 2008). These curricula are similar in the major learning objectives; for instance, the focus across curricula is on helping youth develop healthy relationship skills, identify warning signs of abusive relationships, promote positive attitudes towards marriage and relationship enrichment, and learn how to handle conflict in relationships. In terms of populations across studies, the populations are similar in age (approximately 15.5–16.5 across included studies). Overall, the samples were typically comprised of more females than males and ethnicity was varied across the geographic locations of the populations. For instance, samples were majority European American in Oklahoma whereas minority populations were represented in higher proportions in samples drawn in Florida (Halpern-Meekin, 2011). It is promising that even with some variation in program implementation and adolescent populations, there are some significant changes in targeted outcomes.

Although many similarities exist regarding program delivery, searching for studies with similar outcomes revealed that the evaluation of YRE programs may lack some consistency in measuring important outcomes. Despite most evaluations using one of two curricula (i.e., *Relationship Smarts* or *Connections*) some differences existed in measuring the effectiveness of these curricula. For example, we could not determine the effectiveness of YRE programs on dating aggression perpetration or victimization because there was insufficient data available. If studies included dating aggression as an outcome, the measures focused on either attitudes or perpetration (i.e., physical, verbal aggression), yielding small numbers of studies for either outcome and even fewer for specific victimization/perpetration items. Additionally, we also could not determine if there were significant changes in attitudes about resisting sexual pressure because few studies included this variable. Future evaluation work must aim for more consistency in the targeted outcomes and corresponding measures to understand relevant outcomes of YRE programs.

Similarly, there are inconsistencies in study design and reporting of results. The inclusion of a comparison group was relatively uncommon in the studies we included in our meta-analysis; however, the use of a comparison group can further help establish efficacy of YRE, and we encourage this type of investment in the evaluation process. Also, very few studies employed longitudinal designs that consider the influence of program participation beyond the immediate post-test assessment.

Therefore, we were only able to include the pre- to post-test change. Utilizing some type of follow-up survey will inform the field about sustained, delayed, or diminishing effects in addition to informing subsequent meta-analyses focused on the long-term effects of YRE participation.

Although we included several unpublished studies, publication bias appears to be an issue in this study. Moving forward we suggest researchers evaluating YRE programs publish all findings, not just those that are statistically significant. Doing so will provide a more complete picture of how YRE influences the youth participating in the programs. We also suggest future studies invest in assessing subpopulations of participants who may be experiencing greater change that can be masked by nonsignificant findings. Therefore, we encourage, along with previous studies (Markman & Rhoades, 2012), the use of moderation analyses to investigate differences based on gender, ethnicity, socio-economic status, relationship status, etc. in addition to the intersectionality of these identities.

Small effect sizes, although consistent with educational prevention efforts (e.g., adult relationship education, parenting programs, etc.), may indicate that universal YRE programs may not adequately address the idiosyncratic nature of interpersonal dynamics observed in adolescent romantic relationships. Individual variability in relationship skills/functioning and both individual and relational antecedents (e.g., family relationships, attachment, stress exposure) pose a challenge to program development and implementation (Collins et al., 2009). In particular, evaluation studies should include variables associated with relationship functioning to better understand whether these programs are more effective for some youth than others. The results of this meta-analysis include samples of youth in the general population, which may also include youth who are in need of therapeutic interventions and/or family focused interventions. As such, these more at-risk youth may not experience significant changes from the primary prevention approach of YRE. However, YRE programs/curricula that target general, nonclinical or at-risk adolescent populations promote realistic ideas about romantic relationships and improvements in conflict management.

4.3. Future directions

4.3.1. Focus on youth in relationship education programming

It is important to note that there are fewer YRE evaluation studies in comparison to adult couple and relationship education (CRE) programs. For instance, in a meta-analysis by Hawkins et al. (2008), 117 CRE studies provided over 500 effect sizes. Because of this substantial number, they were able to investigate differences between quasi-experimental and experimental designs, as well as examine moderators of program change (e.g., publication status, gender, dosage). In comparison, we found 15 studies with 54 effect sizes for 3 outcomes of interest and were unable to investigate differences based on program methodology due to low statistical power/small sample size. We encourage future meta-analyses, once more YRE evaluation studies have been conducted, to consider possible moderators of program effects to assess across-study variation. Informed by the adult relationship education literature (Adler-Baeder et al., 2010; Gregson, Adler-Baeder, Parham, Ketring, & Smith, 2012; Hawkins & Erickson, 2015), possible moderators may include: curricula, gender, race, and indicators of risk (e.g., low-income, dating violence exposure, etc.). Overall, YRE program evaluation research is far less common than adult-focused CRE program evaluation; however, from a prevention standpoint, adolescence is an ideal time to affect the development of romantic relationships. Prevention efforts often focus on preventing youth DV, whereas YRE programs aim to improve overall relationship skills. Although youth DV prevention programs and YRE programs examine some similar outcomes (e.g., verbal aggression, physical aggression, dating violence acceptance), several outcomes included in this study are not typically explored in DV prevention programs (e.g., cohabitation attitudes, counseling attitudes, marriage attitudes). However, for those outcomes measured in both types of programs, studies of DV prevention programs provide evidence of desirable change in those specific target areas (e.g., Cornelius & Resseguie, 2006). Therefore, it is essential that programs and rigorous research continue to advance the field of YRE. These prevention efforts and evaluations must consider the developmental timing and long-term effects of YRE programs.

4.3.2. Timing of delivery

In terms of prevention, programs are typically offered prior to initiation of an issue that may lead to maladaptive patterns (Coie et al., 1993; Kellam et al., 1999). With relationship education for youth, this may mean implementing age-appropriate programs prior to the normative timing of dating relationships in adolescence. The majority of studies included in this meta-analysis included high school age samples with mean participants ages around 15 to 16 years. However, programs implemented during middle school/junior high school could also be beneficial, as a many youth begin dating by the 9th grade (Carver et al., 2003).

4.3.3. Long term outcomes

Future research endeavors can begin to assess how these effects last after the program has ended. Two longitudinal studies show that there can be some lasting effects up to four years after the program in some outcomes (e.g., increased self-esteem and family cohesion, decreased relationship aggression; Gardner & Boellaard, 2007; Kerpelman et al., 2009). However, many effects tend to fade across time as adolescents transition into emerging adulthood. One of the aims of YRE programs are to improve the long-term relational outcomes for youth so their adult relationships/marriages are healthier. However, research is limited on the long term effects. Longitudinal studies indicate that benefits gained in YRE programs tend to diminish over the years following delivery (Gardner & Boellaard, 2007; Kerpelman et al., 2009). If programs are delivered earlier in adolescence, program developers could offer corresponding booster curricula that aim to improve the longevity of results from YRE programs across late adolescence and into emerging adulthood.

4.3.4. Moderators of program change

The aim of this study was to assess the effectiveness of YRE for average participants. Though this is an important first step, the next step of YRE research should consider moderators of program effectiveness. Several recent studies have begun to address the effects of moderating variables on program-related change such as the parent-adolescent relationship, dating experience, classroom context, and social address (Kerpelman et al., 2010; Ma et al., 2014; McElwain, 2015). For example, a recent study found that dating experience moderates changes in faulty relationship beliefs such that youth in dating relationships during program implementation persist in holding faulty beliefs more so than youth with past or no dating experience (McElwain, 2015). Considering for whom the program works best is an essential endeavor that needs to be further developed. In particular, romantic relationship experiences could likely impact the effectiveness of these programs. It is a limitation across studies that indicators of relationship dynamics, functioning, and partner characteristics were notably absent from the published evaluation studies. This information can help educators target participants in greatest need, and helps program developers alter programmatic information to effectively reach participants. The importance of understanding the audience and knowing for whom the program works best is a valuable step forward in YRE research.

5. Conclusions

Adolescence is an important window for preventing negative relationship outcomes and capitalizing on interpersonal skills that help sustain healthy relationships as youth transition to adulthood. Results

from this meta-analysis indicate that YRE is related to small improvements in some key outcomes, which is an indicator of general program success. However, the review of YRE evaluation literature identified several areas for improvement. YRE evaluation can improve by identifying common outcomes, consistently and comparably measuring these outcomes, and increasing the use of experimental designs. Continued implementation using research-informed or evidence-based curricula is also essential, as is the development of curriculum series that aims to achieve long-term results. Overall, this meta-analysis is an encouraging and important step in the process of moving the field of YRE evaluation forward.

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