Symposium title:
Advances in school-based mentoring: Overcoming methodological and practical barriers associated with one widely funded school-based prevention intervention.

Symposium justification:
Youth mentoring programs are services that pair a caring adult with a youth who wants or needs additional support. In general, mentoring programs are theorized to produce positive social, emotional, and academic outcomes through a close relationship that forms over an extended period. Given the strong theoretical and empirical evidence to suggest that close, positive adult relationships have the potential to produce a variety of positive outcomes in youth, school-based mentoring (SBM) programs are a widely appealing approach for ensuring all youth have access to at least one positive adult influence in their life. This empirical and theoretical support, along with $2.6-billion of funding by the federal government, has increased the number of youth who are in active mentoring relationship from around 300,000 in the early 1990s to around 3 million in the 2010s. Although mentoring programs provide mentors to youth in school and community contexts, SBM programs are the most funded, most studied, and fastest growing form of mentoring in the United States.

Despite widespread support and advocacy of youth mentoring programs, evaluations of SBM (i.e., mentoring programs that occur within in the school environment) reveal small, null, and harmful effects on youth outcomes. The largest randomized study of youth mentoring, for example, found null effects on 17 academic, social, and psychological outcomes they measured. In one meta-analysis of SBM programs, the authors found small effect sizes for behavioral ($r: .06 - .13$), attitudinal ($r: .14 - .19$), and interpersonal ($r: .09$) outcomes (Eby, Allen, Evans, Ng, & DuBois, 2008). In summarizing the findings from the three largest evaluations, Wheel, Keller, and Dubois (2010) wrote that “arguments could seemingly be made for or against the continued investment in SBM as a strategy for promoting resilience among at-risk youth” (p. 6).

Although policy makers and advocates referred to youth mentoring as a “proven strategy” (e.g. Grossman & Garry, 1997), the scientific community struggled to verify these claims. This symposium will examine the methodological, logistical and empirical challenges associated with evaluating the effects of SBM programs. In the first paper, the authors will present describes challenges associated with the conceptualization and the treatment construct validity of SBM. In the second paper, the authors will examine the effect of relationship quality on student academic outcomes using data from the largest randomized evaluation of SBM (called, The Student Mentoring Program, N = 2,573). The results this work suggests a need to consider additional approaches (beyond relationship quality) for promoting student outcomes when developing SBM programs. In the third paper, the authors will present preliminary data from an on-going evaluation of one SBM program.

Attendees will gain new insights into the conceptualization and evaluation of SBM programs. Papers were selected to provide attendees novel approaches for conceptualizing (see paper 1), evaluating (see paper 2), and refining these programs (see paper 3). Although this symposium is organized around a common school-based prevention intervention (i.e., school-based mentoring), presenters will discuss how these findings can be applied to other school-based prevention interventions.
Background

Most youth mentoring programs do not have prescribed practices to specifically target outcomes. Because of this, researchers face a conundrum when making generalizable causal inferences about the effects of these programs on youth outcomes. On the one hand, researchers cannot make valid experimental inferences if they do not describe what they manipulate (e.g. what mentors do with mentees). On the other hand, experiments that include prescribed protocols (i.e. treatment manuals) do not generalize to most mentoring programs. In this paper, we review how researchers specified treatments in evaluations of school-based mentoring (SBM) programs and provide recommendations to advance the science of SBM.

Treatment construct validity in non-specific interventions.

We posit that the most significant problem in SBM research is that existing evaluations of this service lack sufficient treatment specification (i.e. descriptions of the intervention operations), which has muddled the treatment construct validity of mentoring as an intervention and made generalizable inferences from these studies useless. Until treatment constructs are adequately specified, researchers are incapable of accurately informing the public regarding the value, safety, effects, or best practices of this widely popular and publicly funded service.

When researchers evaluate general (i.e. non-specific) interventions, they infer effects from a practice that varies widely across implementation to outcomes that are not necessarily targeted by specific attributes of the intervention. In these interventions, what constitutes a “treatment” represents a broad range of events, rather than a specific set of procedures. To enhance the treatment construct validity of SBM programs, researchers have begun to specify mentor activities through manualized treatment protocols. Although these protocols lead to stronger treatment construct validity, often, these protocols are not flexible enough to allow mentors to adapt treatments according to the specific needs of their mentee.

When researchers do not include protocols or manuals while testing non-specific interventions, they are not necessarily conducting poor research. Rather, this decision may reflect the inferences they wish to make – that is, the effect of a treatment construct that varies widely across implementation. In fact, some interventions, like SBM, are designed to be tailored (i.e. adapted to a particular situation), rather than standardized.

Importantly, researchers do not have to sacrifice treatment construct validity in order to study non-specific interventions. Rather, regarding treatments that are not specific, Shadish, Cook, and Campbell (2002) wrote “In all...cases...efforts should be made to measure the components of the treatment package and to explore how the various components are related to changes in outcomes.” (p.50). Specifying treatment constructs is necessary to make generalizations from the locally observed effects of a treatment to a population of treatments, and it is also helpful better understand which features of the intervention affect outcomes.

Purpose of the Current Study

The purpose of the current study is to evaluate the extent to which treatment constructs are specified in experimental, quasi-experimental, and non-experimental program evaluations of SBM, evaluate the quality of treatment specification on the basis of whether or not the specifications can be replicated, and provide possible solutions to the conundrum of preserving the flexible construct of mentoring while specifying treatments. To identify areas of strength or
weakness in specifying treatment constructs within SBM, we conducted a comprehensive literature search of SBM articles published from 1991 to 2016. The articles that were identified were coded according to the National Mentoring Resource Center’s Elements of Effective Practice for Mentoring™.

Method

We conducted a comprehensive search of SBM articles from 1991 to 2016 using the search terms “school-based mentoring” and “school mentoring” in the database PsychINFO. Researchers who conducted an experimental, quasi-experimental, or qualitative study of SBM were included in the review. Review articles, meta-analyses, and editorials were excluded from review. Preliminarly, 48 studies met the inclusion criteria.

Results

Initial results from 48 SBM indicated that, in general, authors do not report information regarding program procedures for recruiting, screening, training, matching, or supporting mentors in SBM programs. Across all of the studies reviewed, authors most frequently discussed the activities mentors and mentees did with each other (58% of articles described these activities) and parental consent procedures for study participation (58% of articles described these activities). However, critical aspects of treatment specification were frequently not reported. Across all studies, 65% of studies did not describe eligibility criteria, 96% of studies did not specify a minimum time commitment, 78% did not describe on-going training or support offered to mentors, and 77% of studies did not describe guidelines for each mentoring session.

Conclusions

The results of the study suggest that current evaluations of SBM insufficiently address treatment construct validity. In general authors do not thoroughly describe the program practices in the treatment condition nor do they sufficiently describe activities that take place in the control. As a result, the

Implications. Based on our assessment of treatment specifications in the existing literature, and our consideration of the unique aspects of non-specific interventions like youth mentoring, we recommend four pragmatic suggestions for moving the field forward in future SBM evaluation research: 1) Describe mentoring contact events, 2) Conduct mentor-level randomization, 3) Experimental evaluation of mentoring practices, 4) Evaluation of proximal mechanisms of action.
Paper 2: A reanalysis of the Student Mentoring Program: Estimating treatment effects by the quality of the mentoring relationship
Michael D. Lyons, Samuel D. McQuillin, and Andrea Lamont

Background
Youth who have positive relationships with extra-familial adults tend to be more resilient to developmental risk-factors when compared to youth who lack these relationships (Bowen & Chapman, 1996; Garmezy & Masten, 1986; Jean B. Grossman & Bulle, 2006; Parra, DuBois, Neville, Pugh-Lilly, & Povinelli, 2002; Scales & Gibbons, 1996). This connection between relationships and resilience is a logical basis for youth mentoring programs defined as, structured services designed to promote positive relationships between youth and non-parental adults (Jean B. Grossman & Bulle, 2006). On average, youth mentoring programs have modest positive effects on student outcomes (DuBois, Holloway, Valentine, & Cooper, 2002; Eby et al., 2008). However, considerable variability in program effects have also been observed. As a result of this inconsistency, mentoring programs have faced increased scrutiny (Cavell & Elledge, 2013). One form of mentoring that has recently faced increased scrutiny is school-based mentoring (SBM).

Youth mentoring is thought to produce these positive outcomes through interpersonal processes that occur in dyadic meetings between youth and extra-familial adults (Rhodes, 2004). These interpersonal processes include vicarious learning, positive affective experiences, and social persuasion aimed at promoting positive attitudes and behaviors (Bandura, 1969, 1997; Rhodes, 2004). In this way, mentoring may be viewed as a context for enhancing youth outcomes through many of the processes that are active in typical child development.

Relationship quality and school-based mentoring
In SBM, evaluations of the effects of mentors on student academic outcomes show that, on average, mentors have small or null effects on student outcomes. One hypothesis to explain the null effects of SBMs is that the school environment is not conducive to building long-lasting, close relationships between a mentor and mentee. In particular, the school environment is characterized by frequent breaks (e.g., school holidays, summer breaks) and scheduling issues between adults and students. As a result, mentors may not develop a close relationship with their mentee and this may explain the null effects of SBM.

However, individual variation in relationship quality is observed across mentor and mentee pairs. According to Rhodes (2005), mentors who have close relationships with mentees are hypothesized to positively influence their mentee’s social-emotional and behavioral performance in school. Thus, mentor-mentee pairs who have a higher quality mentoring relationship should produce better student outcomes. Likewise, mentor-mentee pairs with lower relationship quality should have weak effects on student outcomes.

The Student Mentoring Program and relationship quality
The largest federally funded, randomized study of SBM occurred between 2004 through 2007. This evaluation, titled “The Student Mentoring Program”, consisted of 2,573 students randomly assigned to a SBM. The program focused on academic, social, and psychological outcomes of students. The average age of participants was 11.2 years old, 47% were male, 86% were eligible for free or reduced lunch, and 60% were identified as academically “at-risk” (i.e., below proficiency in math and/or English). The results of this study revealed no statistically significant differences in 1) academic achievement, 2) interpersonal relationships, and 3) delinquent behavior.
Given that the quality of the mentoring relationship is theorized to be a critical component of mentor effectiveness, there is a need to understand how treatment effects vary as a function of relationship quality. However, there are practical and methodological challenges to doing this. First, traditional data analytic approaches (e.g., ANOVA, multiple regression) are not sufficient for explaining relations between treatment effects and relationship quality because including relationship quality in these models only provides an estimate of the effect of relationship controlling for the mentoring intervention. Second, statistical methods designed to estimate treatment effects as a function of another variable (e.g., instrumental variables, propensity scores) require researchers to make comparisons across categories. As such, these methods require researchers to dichotomize a continuous variable to make comparisons across groups. Because relationship quality is measured on a continuous or interval scale, these approaches limit the inferences that can be made between treatment effects and relationship quality.

**Method and results**

The purpose of the current study was to estimate the treatment effect of the Student Mentoring Program on academic and behavioral outcomes as a function of relationship quality by reanalyzing the SMP evaluation. In this paper, we use a novel statistical approach, proposed by Hill (2011), designed to estimate treatment effects as a function of relationship quality while maintaining strong interval validity. Specifically, Hill proposed a Bayesian nonparametric model, Bayesian Additive Regression Trees (BART), to estimate the treatment effect as a function of a continuous third variable.

The results are somewhat consistent with hypotheses regarding the relations between mentor and mentee relationship satisfaction and student outcomes. Consistent with the Student Mentoring Program impact evaluation, we find no differences between treatment and control conditions on student outcomes. Yet, we found a positive trend in the estimates of effect sizes as a function of relationship satisfaction. This supports the finding that, on average, mentors had null effects on student outcomes; but, a positive relation may exist between relationship quality and mentors.

**Conclusions and implications**

The results of this study are consistent with the previous evaluation of the Student Mentoring Program that found null effects on all academic, behavioral, and social-emotional outcomes. However, this study extended the findings of the evaluation of the Student Mentoring Program and demonstrated that the estimated treatment effect across all outcomes remained small (effect sizes range from approximately -.1 to .1) even among students with the highest levels of relationship quality.

The results of this study suggest that only a small relation between relationship quality and school-related outcomes. Furthermore, theoretical models that include relationship satisfaction are difficult to test empirically (Cavell & Elledge, 2013). As such, mentoring researchers may consider other mechanisms of action when designing SBM programs. For example, Cavell and Ellidge proposed that mentoring programs be used as a context through which mentors engage in evidence-based activities designed to target specific outcomes. In contrast to developmental models of mentoring, SBM programs that incorporate evidence-based practices to target specific skills may change school outcomes more effectively in comparison to traditional SBM programs.
School-based group mentoring as an intervention for middle school girls: Using multiple methods to understand processes and outcomes
Nancy L. Deutsch, Joanna L. Williams, Edith C. Lawrence, Lauren Molloy Elreda & Michael D. Lyons

Background
Group mentoring, wherein multiple youth interact and form relationships with one or more adults (Kuperminc & Thomason, 2013), is growing in popularity. Despite critiques of group-based interventions due to potential contagion effects (Dishion & Tipsord, 2011), the limited research on group mentoring demonstrates some positive outcomes (Kuperminc & Thomason, 2013). Group mentoring has been associated with improvements in psychosocial outcomes, including social skills, empathy, and self-regulation (Herrera, Vang, & Gale, 2002; Weiler, Zimmerman, Haddock, & Krafchick, 2014). The presence of multiple peers House, Kuperminc, & Lapidus, 2005) and collaborations between multiple adults (Hirsch, Deutsch, & DuBois, 2011) may promote positive outcomes within mentoring groups. Further, the group may sustain one-on-one relationships by participating opportunities for mentors and protégés to observe other relationships, normalizing relational ups-and-downs (Comstock, Duffey, & St. George, 2002). Given the limited research on group mentoring, the concern of potential contagion effects, and the more complex processes that may be present in groups, additional research on outcomes and processes of group mentoring is needed to build a model of the mechanisms that promote positive outcomes in group-based programs.

Purpose of the Current Study
The Young Women Leaders Program (YWLP) is a combined group and one-on-one mentoring program aimed at improving competence, connection, and autonomy (Ryan & Deci, 2000) for adolescent girls. A combined group and one-on-one model may meet adolescents’ developmental, relational needs (Gardner & Steinberg, 2005) and amplify beneficial dyadic mentoring processes (e.g., Rhodes, 2005), allowing both group and one-on-one relational processes to foster positive outcomes.

In YWLP, 8-10 girls and their mentors meet weekly at the girls’ school and follow a curriculum including activities on issues facing adolescent girls (e.g., self-esteem, body acceptance, peer relations, etc.). Girls also spend at least four hours a month in one-on-one time with their mentor outside of group and there is group time for mentors and protégés to connect.

Over the past decade, YWLP instituted a program of multi-method research aimed at understanding the outcomes and processes of its approach. In this paper we discuss how each approach contributes unique information on whether and how YWLP impacts participants.

Methods and Results
In 2007, YWLP began a three-year randomized control trial (RCT) of program effects. Girls identified by schools counselor as being “at risk” for behavioral, social-emotional, or academic issues were randomly assigned to treatment and control groups. Youth surveys and school records were used to assess outcomes including risky behaviors, self-esteem, attachment, competence, grades, and disciplinary infractions. To capitalize on the benefits of mixed methods for understanding both impact and processes of interventions (Tolan & Deutsch, 2014), including implementation fidelity and social processes that could impact outcomes (Grissmer, Subotnik, & Orland, 2009), an embedded qualitative component (observations, interviews) was added in Year 2. Expected impacts were not found quantitatively, with the exception of academic impacts following the addition of a tutoring component. Yet the qualitative data revealed that girls
perceived a number of program outcomes that had not been predicted, and therefore not assessed quantitatively, including self-regulation and multiple social skills, especially within peer relationships (Deutsch, Reitz-Krueger, Henneberger, Ehrlich, & Lawrence, 2016). Observations of the groups yielded insights about what social processes may foster or impede positive relational experiences (Deutsch, Wiggins, Henneberger, & Lawrence, 2012).

A second RCT was implemented in 2011. Instruments were added to capture outcomes identified by girls qualitatively in the prior study and to respond to measurement issues (e.g., low levels of risky behaviors). The procedure for collecting data was shifted to a community versus a school-based model. Researchers conducted surveys with girls and parents in their homes. This added parent perspectives, but also created challenges for tracking participants and required a larger time investment. Findings revealed some positive program effects, however, there were also mixed findings showing both positive and negative changes across girls as a function of parent education level.

In 2013, YWLP added a longitudinal evaluation, following-up five years after program completion with girls (program and control groups) who were in the original RCT. Surveys and school records were used to assess program impact. Interviews with protégés and mentors from the dyads that reported the highest and lowest relational satisfaction at the end of the program were used to assess program processes, based on retrospective reflections on their experiences. The addition of relational graphs allowed for visual depictions of relational growth and dips, adding a new dimension to our understanding of mentoring relationship development.

In 2014, we collected social network data bi-weekly from protégés and mentors. Based on findings from earlier observations, network surveys probed interactions, feelings of closeness, and efforts to connect between all group members (i.e., protégé-mentor, protégé-protégé, mentor-mentor). Data analysis is still under way but initial results indicate that mentor-protégé relational dynamics in the group are related to perceptions within dyads; for instance, mentors who make greater efforts to reach out to more protégés in a group are rated less favorably by their own protégé and rate their own protégé less favorably.

Currently, YWLP is studying a goal-setting enhancement. This arises from the earlier studies of YWLP, which indicated that academic outcomes may emerge in response to academically-focused program components. Further, goal-setting was one area in which changes were reported by girls in interviews, making it an outcome that could be enhanced by targeted intervention. Mentors have been randomly assigned to receive training related to evidence-based counseling approaches for discussing goals with middle school students as well as specific procedures for setting effective goals (McQuillin & Lyons, 2016). Outcomes are being assessed using youth survey and school records.

Conclusions and implications
YWLP has built a program of multi-method, multi-strand research (Teddlie & Tashakkori, 2003). Using an iterative, integrated approach to conceptualization, data collection, analysis, and conclusion-drawing YWLP has gained important insights about potential outcomes and mechanisms of change within group and one-on-one programs. Implications for researchers on how such approaches can increase our knowledge about school-based interventions will be discussed.
References


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