

MENTORING RELATIONSHIPS, POSITIVE DEVELOPMENT, YOUTH EMOTIONAL AND BEHAVIORAL PROBLEMS: INVESTIGATION OF A MEDIATIONAL MODEL

Gizem Erdem

Koç University

David L. DuBois

University of Illinois at Chicago

Simon Larose

Université Laval

David De Wit

Centre for Addiction and Mental Health

Ellen L. Lipman

McMaster University

Mentoring programs show promise for preventing emotional and behavioral problems among at-risk youth, but little is known about processes that may be most critical to achieving this end. This study explored indicators of positive youth development (PYD; competence, confidence, connection, care and compassion, character) as mediators of associations of mentoring support with youth emotional and behavioral problems. The sample included 501 youth participating in a study of the Big Brothers Big Sisters program in Canada (mean = 11.16 years old; 52% girls, and 44% White). Measures were youth self-report, with the exception of the use of both youth and parent report measures of emotional and behavioral problems. Results of structural equation modeling analyses were consistent with PYD mediating the association between mentoring

Funding for this research was supported by grants from the Canadian Institutes of Health Research (MOP 81115 and MOP 130435) (D. De Wit, Principal Investigator).

Please address correspondence to: Gizem Erdem, Koç University, College of Social Sciences and Humanities, Department of Psychology, Rumelifeneri Yolu, Sarıyer-Istanbul, Turkey 34450. E-mail: gizemerdem@ku.edu.tr

support and emotional and behavioral problems, regardless of informant. The association between mentor support and PYD, however, was limited to youth in active mentoring relationships. © 2016 Wiley Periodicals, Inc.

INTRODUCTION

As youth transition to adolescence, they are increasingly susceptible to emotional and behavioral difficulties (Merikangas et al., 2010), and substantial numbers of youth experience mild to moderate levels of anxiety, depression, and behavioral problems (e.g., Bertha & Balázs, 2013). Such mental health issues in adolescence are associated with compromised functioning in areas such as academic achievement (Masten et al., 2005), parental and peer relationships (Kochel, Ladd, & Rudolph, 2012; Willoughby & Hamza, 2011), and overall well-being (Greenberg, Domitrovich, & Bumbarger, 2001) and are predictive of onset of mood and impulse control disorders in early adulthood (Merikangas et al., 2010).

Given these considerations, there is a need for effective preventive intervention efforts to reduce levels of emotional and behavioral difficulties among youth as they transition to adolescence. One key resource for helping youth to avoid these difficulties is building strong connections with nonparental adults (Spencer, 2007; Zimmerman, Bingenheimer, & Notaro, 2002). Mentoring programs provide such opportunity for youth—especially for those with limited access to social support within their families and communities—through pairing them with nonprofessional adult volunteers (Rhodes, 2002). Meta-analyses of quasi-experimental and experimental evaluations of mentoring programs support their potential to reduce emotional symptoms and behavioral problems among at-risk youth (DuBois, Portillo, Rhodes, Silverthorn, & Valentine, 2011; Meyerson, 2013; Tolan, Henry, Schoeny, Lovegrove, & Nichols, 2014).

Nevertheless, the observed magnitude of mentoring program effects has been typically modest (standardized mean difference effect sizes for outcomes relevant to emotional and behavioral problems ranging from .15 to .21 in DuBois et al., 2011, and from .16 to .29 in Tolan et al., 2014). Such findings suggest a need to better understand relational and developmental processes that are key to promoting positive impacts in mentoring programs as this information could then be used to guide program design and development.

Prior research suggests the significance of several features of mentoring relationships in processes linking program participation to youth outcomes, including those pertaining to emotional and behavioral difficulties. Findings from these studies point to the importance of indicators of relationship intensity such as frequency and consistency of mentor–youth contact and the overall duration of relationships (Grossman & Rhodes, 2002) as well as various indicators of relationship quality, including emotional and instrumental support received from the mentor (Herrera, Grossman, Kauh, Feldman, & McMaken, 2007; Nakkula & Harris, 2005), feelings of emotional closeness (Bayer, Grossman, & DuBois, in press; Parra, DuBois, Neville, Pugh-Lilly, & Povinelli, 2002), and perceptions of compatibility and similarity (Langhout, Rhodes, & Osborne, 2004).

Results, however, have been somewhat inconsistent and associations between those indicators are typically moderate in magnitude (DuBois et al., 2011; Eby, Allen, Evans, Ng, & DuBois, 2008). Such findings may, in part, reflect limitations associated with not considering potential mediators between features of mentoring programs and youth

outcomes. Those processes may be important in linking mentoring relationships to youth outcomes of interest, such as prevention of youth's levels of emotional and behavioral problems. As discussed below, one important mechanism in this regard may be the extent to which mentoring relationships foster indicators of positive youth development (PYD; Larson, 2006; Rhodes, 2005).

PYD

PYD is a strength-based theoretical perspective for understanding adolescent development and has provided a new direction in research with at-risk adolescents over the past two decades (Tolan et al., 2014). One of the major premises of the PYD framework is that youth development takes place in a system of bidirectional processes between youth and their ecological context through which youth build strong relationships with parents, peers, teachers, and other adults and connect to communities, schools, and other institutions (Larson, 2000; Lerner, et al., 2005; Roth, Brooks-Gunn, Murray, & Foster, 1998). Youth, as constructive agents of their development, use such ecological assets and resources to achieve healthy development in academic, psychological, social, and moral domains and continue to both grow and ultimately contribute to civil society as young citizens (Lerner, et al., 2005).

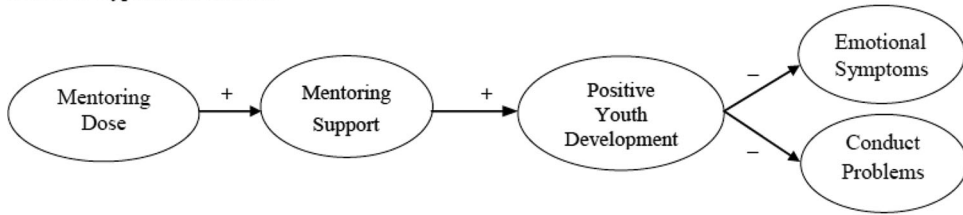
Supported by empirical research, Lerner and colleagues (Bowers et al., 2010; Lerner et al., 2005; Lerner, Napolitano, Boyd, Mueller, & Callina, 2013) and Roth and Brooks-Gunn (2003) have proposed that PYD itself is characterized by five key developmental assets (5Cs): competence (social, academic, and/or cognitive skills); confidence (positive self-worth, self-efficacy); connection (positive bonds with people and/or institutions); character (sense of morality and integrity); and care and compassion (sense of sympathy and empathy for others). In longitudinal research (Blum, 2003; Jellic, Bobek, Phelps, Lerner, & Lerner, 2007; Phelps et al., 2007), participation in youth programs has been linked to improvements on indicators of positive development among youth. In addition, youth who have high levels of PYD have been found to exhibit low levels of delinquency, substance use, and depressive symptoms over time (Phelps et al., 2007). Recent findings from the 4-H Study (Lerner et al., 2013) further suggest that ecological assets (along with youth's individual strengths) promoted positive development, which in turn was associated with high levels of youth civic engagement and prosocial activities.

PYD, Mentoring Relationships, and Youth Emotional and Behavioral Problems

Despite this growing body of research on PYD, few studies have systematically examined the role of mentoring as a potential ecological asset for youth within this framework. Several researchers (Larson, 2006; Larose & Tarabulsy, 2014; Lerner, 2013; Rhodes, 2005) have discussed conceptual models linking mentoring and PYD and emphasized that mentoring relationships, along with other relationships in the ecology of youth, affect youth's strengths, capabilities, and other developmental assets. Consistent with these theoretical approaches, research has shown that supportive relationships with natural mentors are predictive of youth self-esteem (confidence), academic achievement (competence; DuBois & Silverthorn, 2005), and behaviors reflective of character care, and compassion (Bowers et al., 2012).

In their study of 928 applicants participating in a randomized trial evaluation of the Big Brothers Big Sisters (BBBS) mentoring program, Rhodes, Reddy, and Grossman's (2005) explored the direct and indirect associations of mentoring relationships with

Model 1: Hypothesized model



Model 2: Alternative model

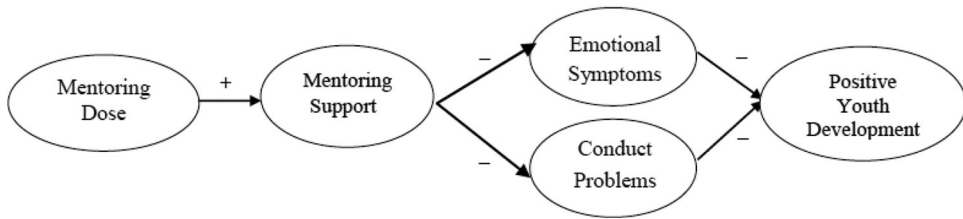


Figure 1. Conceptual models.

youth substance use. This study found support for a mediating role of program effects on parental relationships (connection) and youth self-worth (confidence) but only for youth in matched relationships 12 months or longer. Similarly, in an earlier experimental study of 959 youth, Rhodes, Grossman, and Resch (2000) found that participation in a BBBS mentoring program was positively associated with parent attachment (connection) and perceived academic achievement (competence), which in turn predicted reductions in unexcused school absences. Furthermore, in a randomized controlled trial of a peer mentoring program, findings suggested that mentor attendance at program sessions facilitated growth in measures aligned with four of the five Cs among mentees: social skills (competence), rule compliance (character), self-esteem (confidence), and overall connectedness to school and peers (connection; Karcher, 2005).

Taken together, there is some research evidence supporting a role of indicators of PYD as a mechanism of change linking mentoring relationships to reduced susceptibility to emotional and behavioral difficulties. Yet, with the exception of one study (Rhodes et al., 2005), a direct test of this mediational hypothesis has not been conducted. Of further note is that no study to date has examined the association between mentoring relationships and PYD more broadly (e.g., indicators of all 5Cs). Such analysis could be important because the role of different PYD indicators in processes linking mentoring relationships to fewer emotional or behavioral difficulties may be distinct yet co-occurring and cumulative and thus not readily detected when considering them in isolation.

The preceding discussion suggests that promotion of PYD is a process through which mentoring relationships with greater intensity and support may reduce youth problems (Figure 1 for the hypothesized model). Consistent with prior research (Grossman & Rhodes, 2002; Langhout et al., 2004; Parra et al., 2002), it is hypothesized that youth build stronger and more supportive relationships with their mentors because matches meet more often and consistently; thus, mentoring dose (higher intensity in mentoring relationships) was expected to be associated with greater perceived mentoring support. Process-oriented models of mentoring (e.g., Parra et al., 2002) have also shown that

closeness and support mediate the relationship between mentor–youth contact and youth outcomes, suggesting an indirect path between dose and youth problem behaviors.

On the other hand, mentoring dose itself was not hypothesized to be directly associated with indicators of PYD: We theorized that mentoring is most likely to be an ecological asset for youth that fosters positive outcomes through building connections and support, rather than simply being available as a resource in youth's ecological context. This prediction is in accordance with Lerner and colleagues' (Bowers et al., 2010; Lerner et al., 2005, 2013) emphasis on the need to consider the quality of a youth's social interactions with institutions, adult role models, and the community as influences on indicators of positive development.

As noted above, we hypothesize that PYD may be important as a process through which supportive mentoring relationships contribute to youth experiencing fewer emotional and behavioral problems. It is also possible, however, that such mentoring relationships may function to more directly protect youth from mental health issues and concerns with this, in turn setting the stage for growth on indicators of PYD (see Figure 1 for this alternative model). Tests on the role of PYD in mediating contributions of mentoring relationships to fewer youth emotional and behavioral problems should also ideally examine the extent to which data may be consistent with direct benefits of mental health serving as a pathway toward improvements in PYD.

A further important issue to consider is the extent to which a mediational role of PYD may be moderated by processes involved with developing and sustaining mentoring relationships. Studies have documented often limited sustainability of positive influences of mentoring programs once relationships have ended (DuBois et al., 2011) and considerable variation in youth outcomes as a function of match duration (Grossman, Chan, Schwartz, & Rhodes, 2012; Rhodes, 2005; Schwartz, Rhodes, Spencer, & Grossman, 2013).

Illustratively, Grossman and colleagues found that youth whose relationships with mentors in the BBBS school-based program were still intact toward the end of a first school year demonstrated improved academic achievement (competence; Grossman et al., 2012) and social acceptance by peers (connectedness) compared with youth whose relationships had terminated. It could be, for example, that mentoring relationships are best able to foster indicators of PYD when active due to the benefits of offering ongoing support to youth. Given such considerations, research on the possible role of PYD in mediating contributions of mentoring relationships to fewer youth problems should be sensitive to the possibility for such processes to be differentially evident for youth in ongoing and dissolved mentoring relationships.

Current Study

The present study investigated the relationship between mentoring intensity (dose), mentoring support, 5Cs of PYD, and youth emotional and behavioral problems using primarily cross-sectional data from a study of the BBBS Canada community-based mentoring program. The study had two main objectives: (a) examine the extent to which associations among measures were consistent with the hypothesized model as depicted in Figure 1, with a particular focus on PYD as a mediating mechanism between mentoring support and youth outcomes; and (b) explore whether such associations differed across subgroups of youth in ongoing and terminated match relationships, respectively, with the expectation that any differences found would be in the direction of stronger linkages (e.g., mentoring support and PYD) among youth in ongoing relationships.

This study used both youth and parent report data to assess youth emotional and behavioral problems such that multiple perspectives on youth outcomes would provide more confidence in the testing of the hypothesized model and reveal whether findings are robust. Because of the cross-sectional, correlational design, it is important to keep in mind that analyses tested only for associational (i.e., predictive) relations among measures and, thus, did not provide a basis for causal inference. However, results of the current study's analyses were expected to provide a valuable foundation for future research using longitudinal data.

METHOD

Study Design

Data came from a longitudinal study of the community-based mentoring program of the BBBS of Canada, a program that provides youth with one-to-one (i.e., dyadic) mentoring from community volunteers. Both parents and youth ($n = 997$) were recruited from 20 BBBS agencies in Canada from May 2007 to November 2010. To be eligible for participation, families had to be new admissions to the BBBS agency (i.e., not enrolled in any BBBS service including waitlist programs within the last 12 months); youth had to be between the ages of 6 and 17 years; and the consenting parent had to be child's primary legal guardian. The initial study assessment took place at the time of study enrollment, before youth were paired to an adult mentor. Mentors were approved, screened, and trained by the BBBS agency and those who agreed to participate in the study were paired to a study child.

Follow-up assessments were conducted at 6, 12, 18, 24, and 30 months postbaseline, regardless of whether the youth was paired with a mentor at a given assessment point. More details on study design and procedures can be found elsewhere (Ferro, Wells, Speechley, Lipman, & De Wit, 2013).

Participants

The sample used in the current study was drawn from the fourth time of data collection (18-month follow-up). This follow-up was preferred because it was the first data point in the study when measures were administered that assessed all constructs in the theoretical model of interest. The sample was limited to those youth who, at the fourth time of assessment, had been matched with a BBBS mentor, which represented 501 of the 635 youth for whom data were collected at this time point of the study. Two thirds of the youth in the current sample ($n = 333$; 66.5%) reported being in an ongoing match relationship with the same BBBS mentor since their enrollment in the program (mean [M] = 11.99, standard deviation [SD] = 5.31 months), with the remaining ($n = 168$; 33.5%) reporting having been in a match that had terminated ($M = 9.38$, $SD = 4.61$ months). Of those 168 youth in dissolved relationships, 68 were rematched to a different mentor but were terminated before the 18-month follow-up assessment, while the remaining youth were never matched again.

Based on youth reports, the most common reasons for match dissolution were mentor-related ($n = 104$, 64.2%), which included factors such as mentor being too busy to commit time to meet and mentor moving away. Other reported reasons for termination were as follows: youth-related factors ($n = 32$, 19.8%; i.e., youth was not happy with the match)

and relational issues ($n = 10$, 6.2%; i.e., youth and mentor had scheduling conflicts and problems). Of the 168 youth in dissolved match relationships, 16 (9.8%) reported other reasons such as agency ending the contract or parent not being happy with the match.

Youth were 11.16 ($SD = 2.13$) years of age on average and 52.1% were girls. Based on the parent report, approximately one third of the youth (31%) belonged to a minority group (i.e., African, Hispanic, Asian, or Arab Canadian), whereas 43.9% was White, 10.8% Canadian, and 14.3% other ethnicity. The majority of the youth (69.5%) came from single parent families, with nearly half (47.7%) of the parents reporting gross annual income below \$30,000 and slightly more than one-quarter (27.4%) reporting that they were receiving governmental social assistance.

Procedures

BBBS staff approached potentially eligible families immediately after they passed the agency's qualifying assessment. Staff followed a standardized recruitment script that described the study objectives, procedures, and participants' rights and responsibilities. Those interested in participating in the study provided formal consent (written consent for parents and verbal and written assent for youth) and continued with the baseline assessment. Research assistants interviewed the youth and administered the questionnaires, whereas parents completed self-administered surveys.

Assessments were conducted in the family's home or at other preferred location. To preserve confidentiality and privacy, youth were interviewed separately from parents in a different room and were reminded that their responses would be kept confidential unless there was an immediate threat to their safety and well-being. Youth assessments took 2 hours to complete and participants received two movie tickets. The parent questionnaire required approximately 45 minutes to complete, for which parents received a \$5 gift card to a fast food restaurant. The Research Ethics Board of the Centre for Addiction and Mental Health approved all study procedures.

Measures

Mentoring dose. To facilitate assessment of mentoring dose during the entire course of each match relationship, youth reports of meeting frequency and duration were averaged across all available time points up to the 18-month follow-up assessment. In that way, we were able to estimate dose of mentoring for youth in both ongoing and dissolved match groups. Specifically, the items were as follows: "In the past month, about how many *days each week* have you spent time doing things/going places with your BB/BS?" (frequency); "In the past month, about how many *hours each week* have you spent with your BB/BS?" (meeting duration); and "How many months have you been in your *current* match relationship with your BB/BS?" (match length).

The nine response categories for meeting frequency ranged from 1 (*less than every other week*) to 9 (*more than five days a week*). Response options for meeting duration comprised less than one hour per week, 1–2 hours, 3–4, 5–6, 7–8, 9–10, and more than 10 hours a week and were coded as 1 to 7 on this scale. For both ongoing and dissolved match groups, self-reported duration of match at 18 months, assessed in months, was used to assess match length as part of the mentoring dose.

Mentoring support. We assessed mentoring support using selected scales from the youth report version of the Quality of Mentoring Relationship Engagement Scale (Q-MeRES;

Ferro et al., 2013). Response categories for the 21 items on the Q-MeRES ranged from 1 (*not very true*) to 3 (*very true*). An exploratory factor analysis of data on Q-MeRES for youth participants in the larger study from which the present sample is drawn identified five subscales (De Wit, 2014): Problem-Oriented and Counseling, Practical-Oriented Support, Happy and Positive Relationship, Developmental Support, and Similar Interests.

For the current study, we selected the following subscales: Developmental Support (three items; “Tries to find out what I like to do”); Practical-Oriented Support (three items; “Teaches me a skill or how to do things”); and Similar Interests (two items; “Is a lot like me in many ways”). The remaining two subscales were not included because preliminary analyses revealed that a substantial proportion of youth in the sample ($n = 72$; 35.1%) uniformly endorsed all items on both of these scales as “very true,” thus suggesting a lack of sensitivity to variation in these dimensions of mentoring relationships. As with reports of mentoring meeting frequency and duration, scores on each scale were averaged across available time points. The internal consistencies of the Developmental Support, Practical-Oriented Support, and Similar Interests subscales, based on average responses to items across all available assessments, were .56, .74, and .76 respectively.

PYD. We selected measures that corresponded as closely as possible to the construct definitions of the 5Cs of PYD (competence, confidence, connection, care and compassion, character) provided by Lerner and his colleagues (2005). All measures were taken from the youth survey at the fourth time of assessment; in all instances, higher scores indicated better reported functioning for the relevant construct.

Competence. We used the Cognitive-Behavioral Problem Solving subscale of the Coping Scale for Children and Youth (Brodzinsky et al., 1992) to measure competence. The subscale comprised eight items, each rated on a 4-point Likert scale ranging from 0 (*never*) to 3 (*very often*). Sample items included “I take a chance and try a new way to solve a problem” and “I figure out what has to be done and then I do it.” The internal consistency of the scale in the current sample was .88.

Character. We used the five-item Prosocial subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001, 1997) to assess the character domain of PYD. Sample items included “I usually share with others” and “I am helpful if someone is hurt, upset or feeling ill” and response options ranged from 0 (*not true*) to 2 (*certainly true*). The internal consistency of the Prosocial subscale in the current sample was .63.

Confidence. We used Rosenberg’s (1965) 10-item Self-Esteem Scale to assess youth’s reported levels of self-confidence (e.g., “I feel that I’m a person of worth”). Responses were measured on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The internal consistency of the scale in the current sample was .88.

Connection. We assessed the connection domain of PYD via two instruments. The first instrument, the Wills Parental Social Support Scale (Wills, Vaccaro, & McNamara, 1992), captured the perceived availability of emotional (e.g., “I can share my feelings with my mother”) and instrumental support from the mother (e.g., “If I talk to my mother, she has suggestions about how to handle problems”). This 15-item instrument was rated on a 4-point Likert scale ranging from 0 (*not at all*), to 3 (*very much*). The internal consistency of the scale in the current sample was .92.

The second instrument, the School Attachment Scale, assessed youth's levels of school connectedness and positive attitudes toward school. We adapted the 5-item scale (e.g., "Doing well at school is important") for the present study (De Wit, 2014). All items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal consistency of the scale in the current sample was .81.

Care and compassion. The care and compassion domain was measured using three items from the Social Skills Scale for Youth (De Wit, 2014): "If I hurt other kids by accident or on purpose, I say sorry"; "When other kids are feeling bad, I try to cheer them up"; and "I ask other kids to join a game I am playing." Responses were rated on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*all the time*). The internal consistency of the scale was .61.

Youth outcomes. Measures of youth outcomes came from Time 4 of the study and included the Emotional Symptoms and Conduct Problems subscales of both youth and parent report versions of the SDQ (Goodman, 2001). Each SDQ subscale comprised five items rated on a 5-point Likert scale ranging from 0 (*not true*) to 2 (*certainly true*).

The Emotional Symptoms subscale captures youth's levels of anxiety and depressive symptoms (e.g., "I am [my child is] often unhappy, downhearted, or tearful"). The internal consistency estimates for this subscale in the current sample were .72 and .76 for youth and parents, respectively. The Conduct Problems subscale taps youth's levels of problem behaviors (e.g., "I am often accused of lying or cheating or My child often lies or cheats"). In the current sample internal consistency estimates for this subscale were .60 and .72 for youth and parents, respectively. Higher scores on the subscales indicated greater reported levels of emotional symptoms and conduct problems.

Data Analysis

In preliminary analyses, descriptive statistics (frequencies, means, and standard deviations) were used to examine the characteristics of the sample and distributions of variables. Point biserial correlations, Pearson correlations, and chi-square tests were also performed to compare ongoing and dissolved match subgroups in their demographic characteristics and scores on all study measures.

Primary analyses were conducted using AMOS version 22 (Arbuckle, 2013). Fit indices, comparative fit index (CFI), and normed fit index (NFI) above .90 (Schumacker & Lomax, 1996) and root mean square error of approximation (RMSEA) less than .08 (Browne & Cudeck, 1993) were taken to indicate an adequate model fit to the data. We first tested a measurement model in which relevant measures were specified as indicators of three latent variables (mentoring dose, mentoring support, and PYD). Once a measurement model with adequate fit was identified, the model was refit with the addition of both youth and parent report measures of emotional symptoms and conduct problems, to be able to assess the extent of their associations with the latent variables in the model.

Next, a structural equation model was tested, which included all of the hypothesized paths in the conceptual model (Figure 1, Model 1). The model was tested twice, once using youth report measures and the other using parent report measures to assess youth outcomes. This statistical approach was preferred because correlations between youth- and parent-reported measures, although significant, were low to moderate in magnitude (Pearson r s ranged from .12 to .36), thus not allowing for an approach that combines the two factors as indicators of one latent outcome variable.

We performed bootstrapping analysis, using 95% confidence Interval (CI) and 1000 random samples, to estimate the indirect association of mentoring dose with youth outcomes. We also tested the hypothesized role of PYD in mediating the associations among mentoring support and youth emotional and conduct problems. As recommended by Hayes (2009; see also MacKinnon, Krull, & Lockwood, 2000 and Shrout & Bolger, 2002), we did not require the predictor variable (e.g., mentoring support) to exhibit a significant overall zero-order association with the outcome variable (e.g., conduct problems) in testing for mediation. This contemporary approach was preferred because it is likely that direct and indirect (meditational) paths may operate in opposite directions and thus result in a nonsignificant overall predictor–outcome association. Bootstrapped estimates of indirect effects and their standard errors, therefore, served as the basis for our tests for mediation.

The final step in the analyses involved testing for differences across ongoing and dissolved match groups in the magnitude and direction of pathways in the structural model. Before fitting the structural models, we ran a series of measurement models and compared the estimated factor loadings of indicators on latent variables between ongoing and dissolved match groups. Once measurement models of both groups were identified as equivalent with minimal differences, an omnibus (chi-square difference) test was used to evaluate whether the path coefficients in each structural model (i.e., the models using both youth- and parent-reported outcome measures) differed significantly across groups. In addition, bootstrapping was performed for the groups separately to investigate potential subgroup differences with respect to mediation.

The amount of missing data ranged from .4% ($n = 2$; youth-reported conduct problems) to 8.6% ($n = 43$; duration of mentoring sessions). Little's (1988) missing completely at random test showed that data were not missing completely at random, $\chi^2(330) = 448.51$, $p < .001$. Missing data were addressed by using full information maximum likelihood estimation while testing the measurement and structural models. Bootstrapping was performed using multiple imputed datasets ($n = 5$) and bootstrapped estimates were pooled, following Rubin's (1987) rules. Given the nested nature of the data, unconditional (empty) models were run to compare variability among participants in their reports of outcome measures across 20 program sites. Analysis yielded low intraclass correlation scores, ranging from .0 (Similar Interests subscale) to .033 (self-esteem). Therefore, there was no indication of nonindependence in the data and the analysis was conducted at an individual level.

RESULTS

Preliminary Analyses

Mentoring session attendance and dose. The average duration of matches was 11.01 months ($SD = 5.34$) and approximately half of the youth (51.8%) were meeting with their mentors at least once a week, with the remaining youth (48.2%) meeting less often (e.g., every other week, less than every other week). Regarding the duration of mentoring sessions, 37.3% lasted less than 3 hours, 40% lasted between 3 and 4 hours, and 19.4% lasted longer than 4 hours on average.

Association of study measures with demographic characteristics. The duration of matches and mentoring sessions were longer among girls compared with boys (point biserial $r_s = -.18$

Table 1. Comparison of Means and Standard Deviations of Observed Dependent and Independent Variables in Total Sample and Subgroups

	Total sample n = 501	Ongoing match n = 333	Dissolved match n = 168	t test	Cohen's d
Mentoring dose					
Frequency of meetings (days)	3.26 (1.05)	3.31 (.98)	3.14 (1.19)	1.58	.15
Duration of meetings (hours)	2.77 (.75)	2.84 (.69)	2.62 (.85)	2.89**	.27
Match length (months)	11.13 (5.23)	11.99 (5.31)	9.38 (4.61)	5.36*	.51
Mentoring support					
Developmental support	2.79 (.28)	2.80 (.27)	2.76 (.3)	1.58	.15
Practical-oriented support	2.45 (.44)	2.48 (.42)	2.37 (.48)	2.52*	.24
Similar interests	2.62 (.43)	2.64 (.39)	2.58 (.49)	1.27	.12
Positive youth development					
Coping skills	1.67 (.67)	1.67 (.65)	1.66 (.69)	.2	.02
Prosocial behavior	1.62 (.35)	1.62 (.35)	1.63 (.35)	-.16	-.01
Self-esteem	3.25 (.49)	3.26 (.49)	3.22 (.5)	.92	.09
Mother's social support	2.48 (.56)	2.49 (.54)	2.47 (.59)	.39	.04
School attachment	3.99 (.73)	4.01 (.71)	3.93 (.78)	1.19	.11
Caring behavior	3.21 (.67)	3.21 (.68)	3.20 (.64)	.04	.004
Youth adjustment					
Emotional symptoms–Youth report	.49 (.45)	.47 (.45)	.55 (.46)	-1.71	-.16
Conduct problems–Youth report	.39 (.34)	.36 (.32)	.45 (.36)	-2.78**	-.26
Emotional symptoms–Parent report	.51 (.47)	.53 (.47)	.47 (.46)	1.23	.11
Conduct problems–Parent report	.43 (.40)	.43 (.39)	.43 (.41)	-.01	-0.001

* $p < .05$. ** $p < .01$.

and $-.12$, respectively). Girls also scored higher than boys on the prosocial ($r = -.19$) and caring behavior ($r = -.11$) measures and on self-reported emotional symptoms ($r = -.20$). Age was negatively and significantly associated with lower scores on all six of the measures of PYD (Pearson r s ranged from $.13$ to $.29$) but positively correlated with scores on the Developmental Support subscale of mentoring support ($r = .22$). Youth whose parents reported receiving governmental assistance had significantly less frequent meetings with their mentors and had higher levels of emotional symptoms than their counterparts (point biserial r s = $.09$ and $-.09$, respectively).

Comparison of ongoing and dissolved match groups. The dissolved match group had a significantly higher percentage of girls than the ongoing match group, 63.7% versus 46.2%, $\chi^2(1) = 13.62$, but did not differ on any of the other demographic variables. In terms of study measures, as shown in Table 1, youth in ongoing match relationships scored higher in the Practical-Oriented subscale of mentoring support but lower on the Conduct Problems subscale of the SDQ compared with those in dissolved match relationships. As expected, match duration and mentoring sessions were also significantly longer in the ongoing match group.

In view of these associations between demographic variables and study measures and differences among subgroups, additional structural equation models were tested that controlled for youth gender, age, and family receipt of governmental assistance. Results for these models were substantively equivalent to those obtained in our primary analyses in which these controls were not included, which led us to conclude that we could retain

Table 2. Zero-Order Correlations Among Latent Variables and Youth Outcomes

	1	2	3	4	5	6	7
1. Mentoring dose	—						
2. Mentoring support	.26**	—					
3. Positive youth development	.09	.40***	—				
4. Emotional symptoms–Youth report	.01	–.001	–.37***	—			
5. Conduct problems–Youth report	–.17*	–.06	–.51***	.41***	—		
6. Emotional symptoms–Parent report	.03	–.04	–.21***	.27***	.15***	—	
7. Conduct problems–Parent report	–.04	.02	–.20***	.12**	.36***	.39***	—

* $p < .05$. ** $p < .01$. *** $p < .001$.

our original (more parsimonious) model specification. (Full results of the models that included demographic controls are available from the first author upon request.)

Primary Analyses

Measurement models. The initial model demonstrated an adequate fit to the data ($CFI = .95$, incremental fit index [IFI] = .95, $RMSEA = .04$) and all factors were significantly associated with the hypothesized latent variables. We made adjustments by adding two error term correlations and the new model yielded improved fit to the data ($CFI = .97$, $IFI = .97$, $RMSEA = .03$). Standardized loadings of measures on their hypothesized factors for this model were moderate to high in magnitude (ranging from .49 to .77), with the exception of a relatively low loading of match duration on the mentoring dose latent variable (.13, $p < .05$).

As shown in Table 2, and in accordance with what was expected based on our hypothesized model, the latent factor for mentoring dose was positively associated with the latent factor for mentoring support and this factor was positively associated with the latent factor for PYD. The PYD factor in turn was associated negatively and significantly with both youth and parent report measures of emotional symptoms and conduct problems. Also of note are the weak and generally nonsignificant associations of the mentoring factors with youth and parent report measures of emotional symptoms and conduct problems. These latter findings, however, did not rule out the potential in structural modeling analyses for mentoring dose and support to exhibit hypothesized indirect linkages with reported levels of emotional and behavioral difficulties through their associations with PYD.

Structural models. The hypothesized structural models using youth and parent report measures of emotional symptoms and conduct problems provided adequate fit to the data ($CFI = .92$, $IFI = .92$, $RMSEA = .06$ and $CFI = .96$, $IFI = .96$, $RMSEA = .04$, respectively). As presented in Figure 2, all paths in each model were significant and in expected directions, with the exception of the direct path from mentoring support to youth emotional and conduct problems. Specifically, mentoring support was positively associated with youth-reported problems, but not with parent-reported measures of outcomes.

We conducted bootstrapping analysis to test for mediational associations. The results indicated that indirect paths from mentoring support to fewer youth emotional symptoms and conduct problems were significant for both youth ($b = -.16$, $SE = .03$, $CI [-.226, -.101]$ and $b = -.21$, $SE = .03$, $CI [-.275, -.131]$, respectively) and parent report measures ($b = -.086$, $SE = .02$, $CI [-.139, -.045]$ and $b = -.082$, $SE = .02$, $CI [-.142, -.039]$). That is, results showed that PYD mediated the relationship between mentoring support and

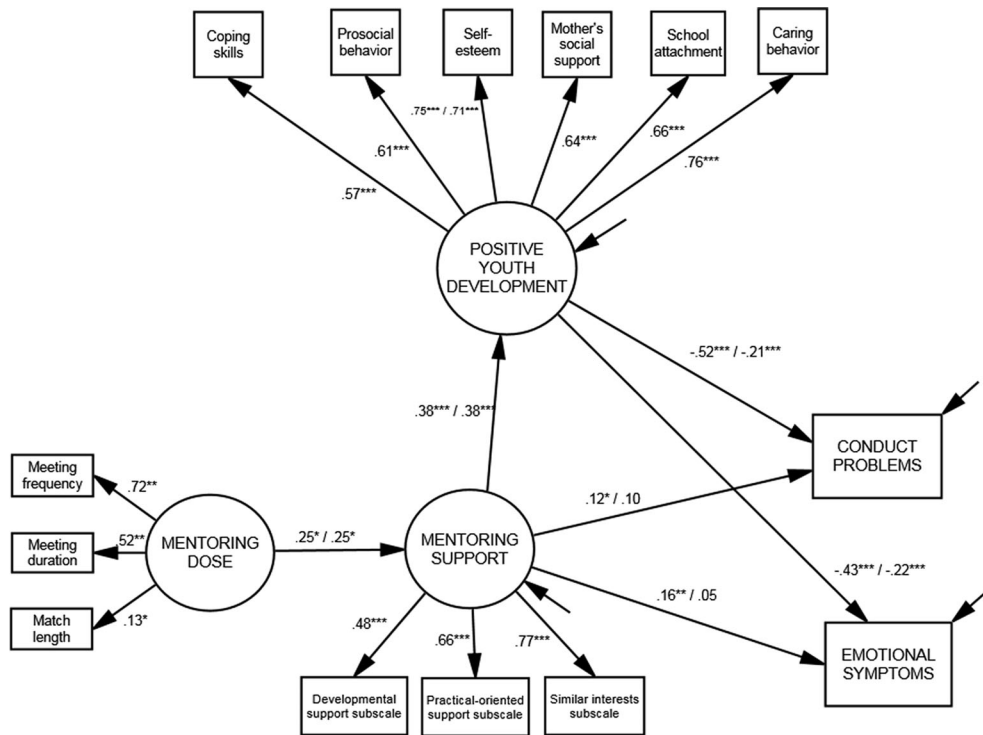


Figure 2. Results of final structural models with standardized path coefficients.

Note. Standardized path coefficients are presented as youth/parent to indicate order. If factor loadings of latent variables are identical in value for a particular path between models using both youth and parent report measures of emotional symptoms and conduct problems, then only one standardized coefficient is presented in the figure. Error terms and disturbances are not shown.

Model fit: CFI = .92, IFI = .92, RMSEA = .06 and CFI = .96, IFI = .96, RMSEA = .04 for youth and parent, respectively.

† $p = .09$. * $p < .05$. ** $p < .01$. *** $p < .001$.

youth emotional and behavioral problems. In contrast, indirect paths from mentoring dose to both youth- and parent-reported emotional and conduct problems were not significant (CI $[-.058, .027]$ across models), thus indicating that there was not a role of PYD in mediating between dose and youth emotional and behavioral problems.

When testing the alternative model specification (Figure 1, Model 2), it was found that overall fit to the data was both adequate and similar to that of the original model; specifically, fit indices were as follows: for the youth-reported model, CFI = .92, IFI = .92, and RMSEA = .06, and for the parent-reported model, CFI = .96, IFI = .96, and RMSEA = .04. However, standard regression coefficients, particularly those representing the direct paths from mentoring support to youth emotional symptoms ($\beta_{\text{youth-report}} = -.07$; $\beta_{\text{parent-report}} = -.04$) and conduct problems ($\beta_{\text{youth-report}} = .001$; $\beta_{\text{parent-report}} = .025$), were not significant for both parent and youth reports. Consequently, bootstrapping analyses testing indirect paths from mentoring support to PYD yielded nonsignificant results, suggesting no evidence of mediation for the alternative model (table not shown).

Subgroup analyses. We now turn to the analyses that distinguished between the dissolved and ongoing match groups. When all factor loadings were allowed to vary across these two groups, the fit of the measurement model was significantly improved compared with a

fully constrained model ($\Delta\chi^2 = 17.51, p = .041$). Further analysis, however, revealed that only two loadings—those of prosocial behavior and caring behavior on the PYD factor—differed significantly across the groups (for prosocial: $\beta_{\text{ongoing}} = .65$ vs. $\beta_{\text{dissolved}} = .50$; for caring behavior: $\beta_{\text{ongoing}} = .74$ vs. $\beta_{\text{dissolved}} = .64$). In view of these differences, we allowed prosocial and caring behavior factors to vary while constraining all other factors to be equivalent between dissolved and ongoing match groups. The model suggested minimal differences, resulting in only .02 change in goodness-of-fit indices compared with the fully constrained model; therefore, measurement models were assumed to be equivalent between the groups.

Having determined the best fitting measurement model, we compared path estimates for the structural model across the ongoing and dissolved match groups. The only path found to differ significantly across groups was the path from mentoring support to PYD. For youth in ongoing match relationships, higher levels of mentoring support were associated with higher levels of PYD, whereas there was no such association among youth in dissolved match relationships (for the youth-reported problems model: $\beta_{\text{ongoing}} = .49$ vs. $\beta_{\text{dissolved}} = .17$; for the parent-reported problems model: $\beta_{\text{ongoing}} = .50$ vs. $\beta_{\text{dissolved}} = .17$).

Results of mediation analysis using the data from the ongoing match group were consistent with the mediation analysis using the full sample. Bootstrapping analyses indicated a significant indirect path from mentoring support to both youth emotional symptoms (for the youth-reported model: $b = -.86$, standard error $[SE] = .25$, CI $[-1.49, -.047]$; for the parent-reported model: $b = -.4$, $SE = .18$, CI $[-.82, -.11]$) and youth conduct problems (for the youth-reported model: $b = -.73$, $SE = .21$, CI $[-1.26, -.43]$; for the parent-reported model: $b = -.37$, $SE = .15$, CI $[-.74, -.14]$). On the other hand, results for the dissolved match group indicated a marginally nonsignificant ($p = .054$) indirect path from mentoring support to youth-reported conduct problems ($b = -.21$, $SE = .15$, CI $[-.62, .002]$). Other indirect pathways from mentoring support to youth outcomes (parent-reported emotional symptoms, parent-reported conduct problems, and youth-reported emotional symptoms) were significant, with indirect path coefficients ranging from $-.21$ to $-.12$.

DISCUSSION

Findings of the current study add to a growing literature that points to benefits of mentoring relationships for the emotional and behavioral functioning of at-risk youth. Most notably, results offer preliminary support for the idea that promotion of indicators of PYD can serve as one pathway through which supportive mentoring relationships can reduce susceptibility to emotional and conduct problems among youth from disadvantaged backgrounds. The present findings are consistent with prior research suggesting that mentoring relationships can function as an ecological asset that enhances indices of PYD in ways that in turn alleviate risk behaviors and emotional symptoms among youth (Rhodes et al., 2000, 2005). The study significantly extends these investigations, however, through its consideration of the association between mentoring relationships and a relatively broad and more comprehensive assessment of PYD (i.e., indicators of all 5Cs) and the attention that is given to whether the benefits of supportive mentoring relationships for youth development remain evident even after the termination of mentoring relationships.

Turning to more specific aspects of the findings, it is noteworthy that assessed levels of PYD mediated associations between mentoring support and reported levels of emotional

and behavioral problems, regardless of whether youth or parents served as the informant for the latter outcomes. This aspect of findings lends robustness to the evidence supporting our hypothesized model, and such consistency was evident despite only moderate associations between youth and parent ratings of youth problems. Therefore, results indicate the importance of considering other potential factors related to parent–child relationships that may enhance the effect of mentoring relationships on youth outcomes, such as parenting styles, parental monitoring, and family cohesion (Bowers et al., 2014; Langhout et al., 2004).

The differences found between subgroups also merit attention. Perceived supportive relationships with mentors was associated with PYD only for youth who were involved in ongoing mentoring relationships, but such an association was not evident for those in terminated relationships. This finding is consistent with prior research (e.g., Grossman & Rhodes, 2002) suggesting the importance of stability and consistency of mentoring relationships to achieve positive outcomes.

As noted by Rhodes (2005), mentoring relationships may become a "corrective experience" for youth who may have unsatisfactory and/or dysfunctional relationships with their parents or other nonparental adults. One possibility is that mentors can model caring relationships and provide support for youth and challenge such negative views youth have about themselves and their relationships (Rhodes, 2005). Another possibility is youth in relationships that terminate prematurely may feel a sense of rejection and lack of support and caring by their mentors (Goldner & Mayseless, 2009; Grossman & Rhodes, 2002), and such perceptions of rejection might impair the growth of their developmental assets. As the current findings suggest, mentoring programs with a broader focus on youth's skills and long-term support, along with other ecological resources through institutions, can be beneficial for youth.

The fit of the model that used youth-reported measures of emotional and behavioral problems was enhanced by adding direct paths from mentoring support to each of these outcomes. These paths, contrary to expectation, were positive in direction. Youth enrolled in mentoring programs typically show varying degrees of mental health concerns (Rhodes, 2002, 2005). One possibility is that relational processes that are not linked to promoting PYD carry the potential for unfavorable consequences for youth. Such a process could involve mentors attempting to directly address mental health concerns of youth, which could be counterproductive because it disrupts the mentoring relationship or youth perceive themselves less favorably.

Although speculative, similar processes have been apparent in *prescriptive* mentoring relationships, which are characterized by mentors setting unrealistic expectations and goals to "transform" youth (Rhodes, 2005) or assume the role of a "helper" and pass down advice to the mentees (Shelmerdine & Louw, 2008). Research has shown that these types of relationships are less satisfying for mentors and mentees and tend to terminate sooner than *developmental* relationships (Morrow & Styles, 1995), which include mutually enjoyable interactions between mentors and mentees.

Limitations and Strengths

Several limitations of the study should be noted while interpreting the findings. First, the aim of the study is to conduct an initial test of mediation, using a primarily cross-sectional design. Therefore, the preliminary findings are correlational in nature and do not indicate causality. Future research should examine the potential bidirectional relationships between youth mental health symptoms, positive development, and mentoring

support using a longitudinal design. Second, the measures, with the exception of parent-rated youth emotional symptoms and conduct problems, came from the youth survey and findings may be biased due to self-report.

Third, the study was conducted in the context of one particular mentoring program in urban settings and findings cannot be generalizable to other mentoring programs, especially those with different aims, settings (i.e., rural), target populations, and formats (i.e., school-based mentoring). Finally, some measures had lower than ideal estimated reliability. The preceding considerations indicate the value of using multi-informant data and measures that show adequate psychometric properties for use with at-risk youth.

Despite these limitations, the current study is a contribution to the literature with several noteworthy strengths. The study was guided by a strong theoretical framework and empirical research on PYD and youth mentoring. The use of mentoring intensity and support measures from all available time points from baseline to 18-month follow-up, although not indicating causality, strengthened the study beyond a typical cross-sectional analysis and conceptualization. In addition to the hypothesized model, the current study tested for an alternative model of mentoring relationships and PYD. Sensitivity analysis examining subgroup differences also provided more confidence on robust findings.

Implications for Practice and Conclusions

In sum, findings from the present study reinforce findings of prior research suggesting that mentoring relationships can improve components of youth development and reduce youth mental health concerns. Whereas some mentoring programs adopt a direct focus on ameliorating (or preventing the emergence of) behavioral or emotional concerns among at-risk youth, other programs aim more to foster youth's strengths and skills. The current findings provide some support for this latter approach such that when mentoring relationships are able to cultivate youth's developmental assets (i.e., 5Cs), it appears that such improvements may also facilitate reduced levels of problems. Building on this idea, it may be that the effectiveness of mentoring programs can be enhanced when there is a concerted effort to target specific developmental assets and positive development outcomes such as having mentors engage with mentees in activities designed to enhance the social and emotional competence of youth.

At the same time, in line with other recent research (e.g., Bayer et al., in press), for more directive strategies to be successful, it is essential to ensure that a supportive bond is established between mentor and youth, even if the strategies are focused on promoting youth's strengths and assets. Related to this consideration, the current findings also suggest that the continuity of the mentoring relationship may be key for promotion of desired outcomes, thus underscoring a need for practices such as ongoing staff support that other research has indicated to be important for achieving stable match relationships (Herrera, DuBois, & Grossman, 2013; Herrera et al., 2007). Only when such continuity is achieved may the full potential benefits of mentoring ties for promoting youth development be realized.

REFERENCES

- Arbuckle, J. L. (2013). Amos 22.0 [software]. Chicago: SPSS.
- Bayer, A., Grossman, J. B., & DuBois, D. L. (in press). Using volunteer mentors to improve the academic outcomes of underserved students: The role of relationships. *Journal of Community Psychology*.

- Bertha, E. A., & Balázs, J. (2013). Subthreshold depression in adolescence: A systematic review. *European Child & Adolescent Psychiatry*, 22, 589–603. doi:10.1007/s00787-013-0411-0
- Blum, R. W. (2003). Positive youth development: A strategy for improving adolescent health. In F. Jacobs, D. Wertlieb, & R. M. Lerner (Eds.), *Handbook of applied developmental science: Promoting positive child, adolescent, and family development through research, policies, and programs* (pp. 237–252). Thousand Oaks, CA: Sage.
- Bowers, E. P., Li, Y., Kiely, M. K., Brittian, A., Lerner, J. V., & Lerner, R. M. (2010). The five Cs model of positive youth development: A longitudinal analysis of confirmatory factor structure and measurement invariance. *Journal of Youth and Adolescence*, 39, 720–735. doi:10.1007/s10964-010-9530-9
- Bowers, E. P., Geldhof, G. J., Schmid, K. L., Napolitano, C. M., Minor, K., & Lerner, J. V. (2012). Relationships with important nonparental adults and positive youth development: An examination of youth self-regulatory strengths as mediators. *Research in Human Development*, 9, 298–316. doi:10.1080/15427609.2012.729911
- Brodzinsky, D. M., Elias, M. J., Steiger, C., Simon, J., Gill, M., & Hitt, J. C. (1992). Coping scale for children and youth: Scale development and validation. *Journal of Applied Developmental Psychology*, 13, 195–214. doi:10.1016/0193-3973(92)90029-H
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- DuBois, D. L., Portillo, N., Rhodes, J. E., Silverthorn, N., & Valentine, J. C. (2011). How effective are mentoring programs for youth? A systematic assessment of the evidence. *Psychological Science in the Public Interest*, 12, 57–91. doi:10.1177/1529100611414806
- DuBois, D. L., & Silverthorn, N. (2005). Natural mentoring relationships and adolescent health: Evidence from a national study. *American Journal of Public Health*, 95, 518–524. doi:10.2105/AJPH.2003.031476
- DeWit, D. (2014). Mentoring relationships and the well-being of Canadian youth: An examination of Big Brothers Big Sisters community match programs. Unpublished evaluation report. Ontario: Big Brothers Big Sisters Canada.
- Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. L. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior*, 72, 254–267. doi:10.1016/j.jvb.2007.04.005
- Ferro, A., Wells, S., Speechley, K. N., Lipman, E., & DeWit, D. (2013). The measurement properties of mentoring relationship quality scales for mentoring programs. *Prevention Science*, 14, 1–11. doi:10.1007/s11121-013-0392-8
- Goldner, L., & Mayseless, O. (2009). The quality of mentoring relationships and mentoring success. *Journal of Youth and Adolescence*, 38, 1339–1350. doi:10.1007/s10964-008-9345-0
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581–586. doi:10.1111/j.1469-7610.1997.tb01545.x
- Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40, 1337–1345. doi:10.1097/00004583-200111000-00015
- Greenberg, M. T., Domitrovich, C., & Bumbarger, B. (2001). The prevention of mental disorders in school-aged children: Current state of the field. *Prevention & Treatment*, 4, 1a. doi:10.1037/1522-3736.4.1.41a
- Grossman, J. B., Chan, C. S., Schwartz, S. E., & Rhodes, J. E. (2012). The test of time in school-based mentoring: The role of relationship duration and re-matching on academic outcomes. *American Journal of Community Psychology*, 49, 43–54. doi:10.1007/s10464-011-9435-0
- Grossman, J. B., & Rhodes, J. E. (2002). The test of time: Predictors and effects of duration in youth mentoring relationships. *American Journal of Community Psychology*, 30, 199–219. doi:10.1023/A:1014680827552

- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76, 408–420. doi:10.1080/03637750903310360
- Herrera, C., DuBois, D. L., & Grossman, J. B. (2013). *The role of risk: Mentoring experiences and outcomes for youth with varying risk profiles*. New York: MDRC.
- Herrera, C., Grossman, J. B., Kauh, T. J., Feldman, A. F., & McMaken, J. (2007). *Making a difference in schools: The Big Brothers Big Sisters school-based mentoring impact study*. Philadelphia, PA: Public/Private Ventures.
- Jelicic, H., Bobek, D. L., Phelps, E., Lerner, R. M., & Lerner, J. V. (2007). Using positive youth development to predict contribution and risk behaviors in early adolescence: Findings from the first two waves of the 4-H Study of Positive Youth Development. *International Journal of Behavioral Development*, 31, 263–273. doi:10.1177/0165025407076439
- Karcher, M. J. (2005). The effects of developmental mentoring and high school mentors' attendance on their younger mentees' self-esteem, social skills, and connectedness. *Psychology in the Schools*, 42, 65–77. doi:10.1002/pits.20025
- Kochel, K. P., Ladd, G. W., & Rudolph, K. D. (2012). Longitudinal associations among youth depressive symptoms, peer victimization, and low peer acceptance: An interpersonal process perspective. *Child Development*, 83, 637–650. doi:10.1111/j.1467-8624.2011.01722.x
- Langhout, R. D., Rhodes, J. E., & Osborne, L. N. (2004). An exploratory study of youth mentoring in an urban context: Adolescents' perceptions of relationship styles. *Journal of Youth and Adolescence*, 33, 293–306. doi:10.1023/B:JOYO.0000032638.85483.44
- Larose, S., & Tarabulsky, G. M. (2014). Academically at-risk students. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring* (pp. 303–315). Thousand Oaks, CA: Sage.
- Larson, R. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55, 170–183. doi:10.1037/0003-066X.55.1.170
- Larson, R. (2006). Positive youth development, willful adolescents, and mentoring. *Journal of Community Psychology*, 34, 677–689. doi:10.1002/jcop.20123
- Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83, 1198–1202. doi:10.2307/2290157
- Lerner, R. M., Lerner, J. V., Almerigi, J. B., Theokas, C., Phelps, E., . . . von Eye, A. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth-grade adolescents: Findings from the first wave of the 4-H study of Positive Youth Development. *The Journal of Early Adolescence*, 25, 17–71. doi:10.1177/0272431604272461
- Lerner, R. M., Napolitano, C. M., Boyd, M. J., Mueller, M. K., & Callina, K. S. (2013). Mentoring and positive youth development. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring* (pp. 17–27). Los Angeles, CA: Sage.
- MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, 1, 173–181. doi:10.1023/A:1026595011371
- Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., . . . Tellegen, A. (2005). Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology*, 41, 733–746. doi:10.1037/0012-1649.41.5.733
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., . . . Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49, 980–989. doi:10.1016/j.jaac.2010.05.017
- Meyerson, D. A. (2013). *Mentoring youth with emotional and behavioral problems: A meta-analytic review* (Unpublished doctoral dissertation). Chicago, IL: DePaul University.
- Nakkula, M. J., & Harris, J. T. (2005). Assessment of mentoring relationships. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring* (pp. 100–117). Thousand Oaks, CA: Sage.

- Parra, G. R., DuBois, D. L., Neville, H. A., Pugh-Lilly, A. O., & Povinelli, N. (2002). Mentoring relationships for youth: Investigation of a process-oriented model. *Journal of Community Psychology*, 30, 367–388. doi:10.1002/jcop.10016
- Phelps, E., Balsano, A. B., Fay, K., Peltz, J. S., Zimmerman, S. M., . . . Lerner, J. V. (2007). Nuances in early adolescent developmental trajectories of positive and problematic/risk behaviors: Findings from the 4-H study of positive youth development. *Child and Adolescent Psychiatric Clinics of North America*, 16, 473–496. doi:10.1016/j.chc.2006.11.006
- Rhodes, J. E. (2002). *Stand by me: The risks and rewards of mentoring today's youth*. Cambridge, MA: Harvard University Press.
- Rhodes, J. E. (2005). A model of youth mentoring. In D. L. DuBois & M. J. Karcher (Eds.), *Handbook of youth mentoring* (pp. 30–43). Thousand Oaks, CA: Sage.
- Rhodes, J. E., Grossman, J. B., & Resch, N. L. (2000). Agents of change: Pathways through which mentoring relationships influence adolescents' academic adjustment. *Child Development*, 71, 1662–1671. doi:10.1111/1467-8624.00256
- Rhodes, J. E., Reddy, R., & Grossman, J. B. (2005). The protective influence of mentoring on adolescents' substance use: Direct and indirect pathways. *Applied Developmental Science*, 9, 31–47. doi:10.1207/s1532480xads0901_4
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Roth, J. L., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science*, 7, 94–111. doi:10.1207/S1532480XADS0702_6
- Roth, J., Brooks-Gunn, J., Murray, L., & Foster, W. (1998). Promoting healthy adolescents: Synthesis of youth development program evaluations. *Journal of Research on Adolescence*, 8, 423–459. doi:10.1207/s15327795jra0804_2
- Rubin, D. B. (1987) *Multiple imputation for nonresponse in surveys*. New York: Wiley.
- Schumacker, R. E., & Lomax, R. G. (1996). *A beginner's guide to structural equation modeling*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Schwartz, S. E., Rhodes, J. E., Spencer, R., & Grossman, J. B. (2013). Youth initiated mentoring: Investigating a new approach to working with vulnerable adolescents. *American Journal of Community Psychology*, 52, 155–169. doi:10.1007/s10464-013-9585-3
- Shelmerdine, S., & Louw, J. (2008). Characteristics of mentoring relationships. *Journal of Child and Adolescent Mental Health*, 20, 21–32. doi:10.2989/JCAMH.2008.20.1.5.490
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7, 422–445. doi:10.1037/1082-989X.7.4.422
- Spencer, R. (2007). Naturally occurring mentoring relationships involving youth. In T. D. Allen & L. T. Eby (Eds.), *The Blackwell handbook of mentoring: A multiple perspectives approach* (pp. 99–117). Oxford, UK: Wiley-Blackwell. doi:10.1002/9780470691960.ch7
- Tolan, P. H., Henry, D. B., Schoeny, M. S., Lovegrove, P., & Nichols, E. (2014). Mentoring programs to affect delinquency and associated outcomes of youth at risk: A comprehensive meta-analytic review. *Journal of Experimental Criminology*, 10, 179–206. doi:10.1007/s11292-013-9181-4
- Willoughby, T., & Hamza, C. A. (2011). A longitudinal examination of the bidirectional associations among perceived parenting behaviors, adolescent disclosure and problem behavior across the high school years. *Journal of Youth and Adolescence*, 40, 463–478. doi:10.1007/s10964-010-9567-9
- Wills, T. A., Vaccaro, D., & McNamara, G. (1992). The role of life events, family support, and competence in adolescent substance use: A test of vulnerability and protective factors. *American Journal of Community Psychology*, 20, 349–374. doi:10.1007/BF00937914

Zimmerman, M. A., Bingenheimer, J. B., & Notaro, P. C. (2002). Natural mentors and adolescent resiliency: A study with urban youth. *American Journal of Community Psychology*, 30, 221–243. doi:10.1023/A:1014632911622