

Summer 8-23-2013

## **Mentoring Youth with Emotional and Behavioral Problems: A Meta-Analytic Review**

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MENTORING YOUTH WITH EMOTIONAL AND BEHAVIORAL  
PROBLEMS:  
A META-ANALYTIC REVIEW

A Dissertation  
Presented in  
Partial Fulfillment of the  
Requirements for the Degree of  
Doctor of Philosophy in Clinical Psychology

BY  
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2013

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### ACKNOWLEDGEMENTS

Although this dissertation did not take six years to complete, it represents six years worth of work and sacrifice. What I have learned over this time and through this experience is that I have not, nor could I have, reached this point on my own. I am honored to thank my mentors who have supported me throughout my graduate school career and for your continued love and support. Specifically, I would like to thank the following people:

Kathy Grant, you have been in my corner since my first day at DePaul. Thank you for saying Yes to me six and a half years ago, for trusting me with your life's work, and for allowing me to be a part of it. Your unwavering energy and enthusiasm for the challenging work that we do continues to inspire me daily. It truly has been an honor.

Bernadette Sánchez, Patrick Fowler, Robyn Brown, and Harold London, I feel very privileged to have worked with such a wonderful Dissertation Committee. Thank you for volunteering your time to review this dissertation, for turning this document into a lively discussion, and for being a part of this transition in my life from student to professional.

Chelsea LaValle, I am extremely fortunate that you agreed to be my research assistant on this project. I know you think I did you a favor, but trust me; it's the other way around. Best of luck on your next steps. You will make a remarkable graduate student and psychologist one day. I look forward to reading your dissertation in six or seven years.

DePaul Psychology Faculty, thank you for pushing me to expand myself, treating me like a colleague, and giving me a home in Chicago. When I am away from campus, I am proud to talk about my DePaul education. No matter where I end up, I will always consider myself a part of the DePaul psychology community.

DePaul and Columbia Friends, if I forget everything I learned in grad school, I will still remember the friendships I made. Thank you for commiserating, ordering food when working late hours, and making me go out on weekends. Graduate school is too long to not have balance. You gave me that balance.

Non-DePaul Friends, thank you for your understanding. When I moved to Chicago, when I called you back a week later, when I had to stay in and study, or when I had to miss out on a trip, I deeply appreciated your understanding. One of the hardest parts of graduate school has been time away from all of you. Thanks for always picking up right where we left off.

Rache, you might be younger than me, but you are still one of my mentors and inspirations. You are smart, conscientious, and daring, and I am very proud to call you my sister. When I grow up, I hope to be like you.

Grandma Sunny, true to your name, you are the source of light in my life. Scientists are still exploring how to harness your energy. Thank you for being a ray of sunshine on a cold Chicago day, for coming to the U.S. so that many years later your grandson could pursue his dream, and most importantly, for showing up.

Mom (stop crying) and Dad, I could thank you for your unconditional love, your enormous generosity, or for giving me life. But I'm not going to do that here. What I want to thank you for most of all, is for being my heroes. Your dedication to public service and to family is the stuff of giants and the model by which I try to live. You are both living proof that selflessness brings happiness. I look forward to the day I become my parents.

Elizabeth, like I said when I got down on bended knee and asked you to marry me, you are the coolest girl I ever met, and I am so thankful to be spending the rest of our lives together. Thank you for making my life easier and fuller. I adore you.

VITA

David Meyerson was born in Ridgewood, New Jersey, October 14, 1982. He graduated from Pascack Valley High School in 2001 and received his Bachelor of Arts degree from the University of Pennsylvania in 2004 and Masters of Arts degree from DePaul University in 2010. He completed his clinical internship at Columbia University Medical Center in 2013.

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“We should always have three friends in our lives – one who walks ahead who we look up to and we follow; one who walks beside us, who is with us every step of our journeys; and then, one who we reach back for and we bring along after we’ve cleared the way.”

-- Michelle Obama, National Mentoring Summit,

January 25, 2011

For Sunny and Cuss

## OVERVIEW

- Our current service delivery models are falling short of helping youth with mental health problems. *Mentoring* is one option that may be effective at helping us address this shortcoming.
- Youth mentoring theory and research have typically treated mentoring as a prevention intervention (i.e., preventing school dropout, academic decline, psychopathology development, etc.), and research has found youth mentoring to be effective in a variety of domains.
- The benefits of mentoring may also be applicable to youth with known mental health problems. Research has begun to tackle this question.
- This meta-analysis addresses the questions of the effectiveness of mentoring programs targeting youth with emotional and behavioral problems and the program characteristics and practices that increase effectiveness.
- Results indicated a small-to-moderate effect of these specialized mentoring programs across youth outcomes, commensurate with other meta-analyses of intervention effectiveness. Moderator analyses yielded several program characteristics and practices that improve effectiveness, including setting, youths' gender, and parental involvement, among others.
- Overall, mentoring programs that target youth with emotional and behavioral problems are viable candidates for serving as alternative or adjunctive interventions to improve the current mental healthcare service delivery system.

## CHAPTER I

### INTRODUCTION

#### Service Utilization of Youth with Mental Health Problems

In 1999, the Surgeon General published a report on the state of mental health in America. This report established mental health – particularly for youth – as a priority for the country. The Surgeon General stated that mental health services have greatly improved over the past 20 years; however, the current system of mental health care service delivery has significant shortcomings in terms of meeting the needs of youth. The limitations of the current service delivery model are evidenced by the high rates of psychopathology among U.S. children and adolescents.

Specifically, the Methodology for Epidemiology of Mental Disorders in Children and Adolescents (MECA) Study determined that the six-month prevalence rate of diagnosable mental or addictive disorders among American youth ages 9-17 was almost 21%, approximately one quarter of which suffer from “extreme” functional impairment (Shaffer et al., 1996). A later investigation estimated the lifetime prevalence by age 16 to be 36.7% (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Clearly, there remains a high, unmet need for adequate mental health care for youth living in the U.S.

One key reason for the high rate of psychopathology among youth is the low rate of service utilization in the United States. In the Surgeon General’s report (U.S. DHHS, 1999), he stated:

The foremost finding is that most children in need of mental health services do not get them... The most likely reasons for underutilization relate to the perceptions that treatments are not relevant or are too demanding or that stigma is associated with mental health services; the reluctance of parents and children to seek treatment; dissatisfaction with services; and the cost of treatment (Kazdin, Holland, & Crowley 1997; Pavuluri, Luk, & McGee, 1996). (p. 180)

A recent study showed that approximately 49.4% of youth ages 8-15 who met criteria for a psychiatric disorder in the past year did not obtain professional-level services (Merikangas, He, Brody, Fisher, Bourdon, & Koretz, 2010). Furthermore, nearly 80% of youth from low-income families do not receive mental health services within a year period (Kataoka, Zhang, & Wells, 2002), and of those who do obtain services, approximately 50% do not complete treatment due to various practical and structural obstacles (e.g., stigma, insufficient information, language barrier, inaccessible location of services, and high cost of or lack of reliable transportation). Thus, the US's service utilization problem is a larger systems issue that disproportionately affects low-income youth, and the mental health service delivery system might benefit from improvements in accessibility and reach to these youth with the highest rates of emotional and behavioral problems.



### Recommendations for Improving Mental Health Services

Following discussion of the shortcomings of the current mental health care system, in his report the Surgeon General continued with considerations for augmenting services for children and adolescents. The Surgeon General stated that the key to decreasing stigma and increasing engagement of families, especially those from racial and ethnic minority groups, in mental health services lies in the ability of new programs to align and collaborate with existing, respected community supports (Bentelspacher et al., 1994; U.S. DHHS, 1999). For instance, school-based mental health services help improve youths' access to treatments (Catron & Weiss, 1994) and have demonstrated effectiveness in reducing mental health problems (Rones & Hoagwood, 2000; *cf.* Farahmand, Grant, Polo, Duffy, & DuBois, 2012). Additionally, a number of case management strategies (e.g., wraparound services, Burns, Schoenwald, Burchard, Faw, & Santos, 2000; and multi-systemic therapy [MST], Henggeler & Lee, 2003) have enhanced access to, acceptability of, and effectiveness of mental health treatments among youth and families from high stress environments with serious behavioral and regulation difficulties (Koroloff, Elliot, Koren, Friesen, 1996; Lambert & Guthrie, 1996; McKay, Nudelman, McCadam, Gonzales, 1996).

Although the above services have their benefits, they, as well as more traditional services (e.g., individual psychotherapy), are associated with significant costs. Beyond the financial burden per youth (Aos, Phipps, Barnoski, & Lieb, 2001; Foster & Connor, 2005; McCrone, Weeramanthri,

Knapp, Rushton, Trowell, Miles, and Kolvin, 2005), treatments administered by professionals require high resources in terms of personnel and training, substantial commitment on the part of parents and caregivers, and are often restricted by professional boundaries (e.g., minimal flexibility of time and development of longer-term relationships between adult service providers and youth service consumers). Thus, youth mental health services that can provide care in alternative settings, build social support networks, and work with established community partners, all with high flexibility and minimal costs, may boost treatment utilization and effectiveness.

The Surgeon General's report further focused on addressing the need for social support services for youth. Evidence of the positive effect of social support for youth has been demonstrated in the coping and resilience research bases (for reviews, see Compas, Conner-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Masten & Coatsworth, 1998). Such research has supported the ability of close connections with non-parental adults to help youth manage and transcend stressful life experiences. In fact, "[o]ften natural social supports ameliorate emotional distress and have been found to reduce the need for formal mental health treatment (Birkel & Reppucci, 1983; Cohen & Wills, 1985; Linn & McGranahan, 1980)." (U.S. DHHS, 1999, p.186)

The above recommendations are closely aligned with ecological systems theory (Bronfenbrenner, 1979), which introduced the notion that individuals (in this case youths) are nested in multiple, larger systems (i.e.,

families, peer circles, schools, communities), and in order to fully and effectively address an individual's internal states, therapy must address the contextual issues that directly and indirectly influence the individual. Connecting youth with psychiatric problems with caring adults, in addition to receiving more individual and internally-focused treatment, may provide youth with the resources and support they need to change or better adapt to their external life circumstances (Kerr & King, in press).

One notable option for addressing the needs presented by the Surgeon General is *mentoring*. Youth mentoring programs match youth with supportive adults with the goal of fostering positive youth outcomes via a trusting relationship (Rhodes, 2005). Mentors can provide certain services and a flexibility that traditional service providers (e.g., therapists, social workers, counselors) cannot provide. For example, mentoring programs allow for easier access to services and variable parental involvement, and mentors and youths are encouraged to develop longer-term relationships with minimal role boundaries. Furthermore, mentoring programs come at a comparatively lower cost (Fountain & Arbreton, 1999).

The current review will examine whether mentoring is a viable option as an adjunctive or alternative service to more traditional services, with the potential to improve the current mental health service delivery system. To frame this investigation, this manuscript begins with a discussion of the definition of youth mentoring and follows with a discussion of mentoring theory and research, while focusing on mentoring

as a service specifically for youth with identified emotional and behavioral problems. Finally, a rationale for conducting a quantitative, meta-analytic review of the current research in this sub-field is provided.

### What is Youth Mentoring?

The term *mentoring* has been conceptualized and defined in a number of ways. Below are three examples of common definitions of *youth* mentoring:

- Mentoring is a structured and trusting relationship that brings young people together with caring individuals who offer guidance, support, and encouragement aimed at developing the competence and character of the mentee (MENTOR/National Mentoring Partnership, 2003).
- [Mentoring] has generally been used in the human services field to describe a relationship between an older, more experienced adult and an unrelated, younger protégé – a relationship in which the adult provides ongoing guidance, instruction, and encouragement aimed at developing the competence and character of the protégé. Over the course of their time together, the mentor and protégé often develop a special bond of mutual commitment, respect, identification, and loyalty which facilitates the youth's transition into adulthood (Rhodes, 2002, p. 3).
- [Mentoring is a] program or intervention that is intended to promote positive youth outcomes via relationships between young persons (18-years-old and younger) and specific non-parental adults (or older

youth) who are acting in a non-professional helping capacity (DuBois, Portillo, Rhodes, Silverhorn, & Valentine, 2011).

Although these and other definitions possess some unique qualities, they share at least three common factors (DuBois & Karcher, 2005). First, (older) mentors are individuals with more *experience* and wisdom than their (younger) mentees. Secondly, mentors are expected to provide *guidance* to their mentees with the goal of fostering mentees' growth, positive development, and transition into a mature adult. Lastly, the relationship between mentors and mentees consists of an *emotional bond* that is founded on core relationship principles such as trust and respect.

Although mentors are typically older adults, they are not intended to be parental figures to their younger mentees, nor are they peers in the traditional sense. Rather, mentors serve as a transitional figure with parent- and peer-like qualities (Levinson, Darrow, Klein, Levinson, & McKee, 1978). Mentor-mentee relationships may include "formal" mentoring, that is organized by a program such as Big Brothers Big Sisters and typically involves mentor training, supervision, and support; and "informal" or "natural" mentoring by a non-parental adult who is an established figure in the young person's life such as a teacher, coach, or uncle (Zimmerman, Bingenheimer, & Behrendt, 2005). Mentoring can be conducted in a variety of formats: one-on-one, group (one mentor and multiple mentees), team (multiple mentors and one or multiple mentees), peer (youth mentor other youth), and online/e-mentoring (via email and the internet) (Sipe, 2005, Handbook Ch5). Furthermore, mentoring can

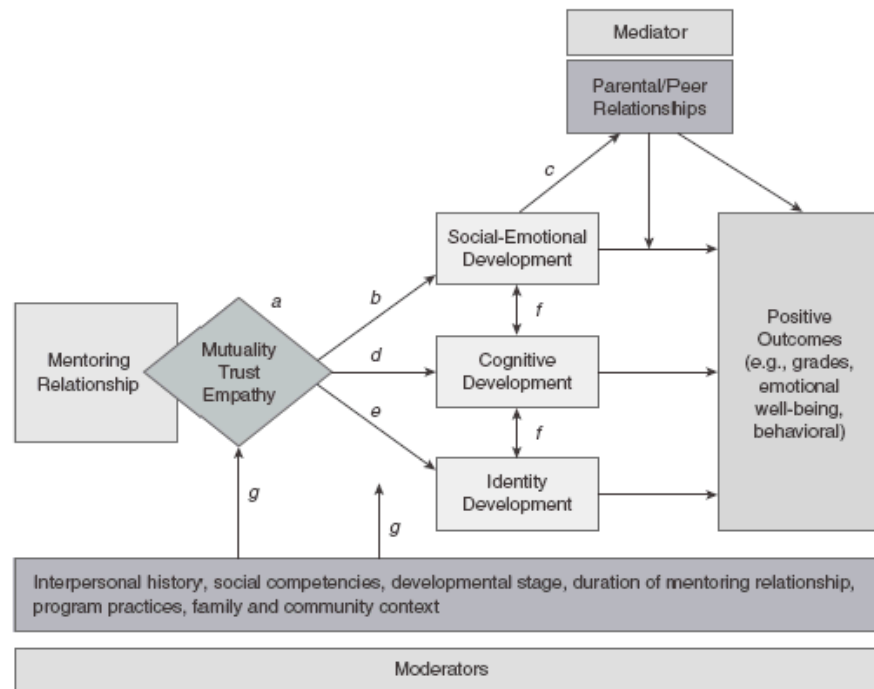
take place in a number of settings: (e.g., community, school, workplace, etc.). Regardless of the relationship origin, format, or location, mentors can provide mentees with tangible, emotional, or informational support that has the potential to engender positive outcomes for youth (Anderson, 2006, dissert; Barrera & Prelow, 2000).

### Guiding Theories in Youth Mentoring Research

Rhodes (2005) developed a theoretical model of youth mentoring in general (see Figure 1) that proposes that the mentoring relationship, founded on such basic relationship principles as mutuality, trust, and empathy (component *a* of Figure 1), fosters positive outcomes for youth (e.g., improved academic performance, increased school attendance, decreased depressive symptoms) via processes that engender youth's social-emotional, cognitive, and identity development (pathways *b*, *d*, and *e*; Rhodes, 2002, 2005). The theory suggests that the more avenues of development that the mentoring relationship addresses, the more effective the relationship should be at promoting positive outcomes for youth. Furthermore, the improvement of youth's intrapersonal development may enhance their interpersonal relationships with parents, peers, etc., which may influence youth's outcomes (mediation component; pathway *c*). Additionally, the mentoring relationship does not exist in a contextual vacuum, and, as such, moderators (pathway *g*; e.g., interpersonal history of the youth; social competencies of the youth; mentoring relationship duration; family, school, and community context of the youth) may impact

the strength and quality of the mentoring relationship and the processes by which the mentoring relationship has an effect on youth development.

Figure 1. Model of Youth Mentoring (Rhodes, 2005)



Although no studies to date have attempted to test Rhodes' model in its entirety, the model has, in part, been supported by empirical research. Findings from quantitative reviews (DuBois et al., 2002; DuBois et al., 2011; Farruggia, Bullen, Davidson, Dunphy, Solomon, & Collins, 2011; Jolliffe & Farrington, 2007; Tolan, Henry, Schoeny, & Bass, 2008; Wheeler, Keller, & DuBois, 2010) evince the presence of some of the model's components, particularly outcomes (e.g., delinquency) and moderators (e.g., parental involvement).

### Overall Effectiveness of Youth Mentoring Programs

Despite the varying characteristics among youth mentoring programs, several meta-analytic reviews have been conducted to test the overall effectiveness of these programs. In 2002, DuBois and colleagues conducted a meta-analysis of 55 evaluations of youth mentoring programs spanning 1970 to 1998 and concluded that youth mentoring programs, on average, have only a small positive effect on youths' emotional/psychological, problem/high-risk behavior, social competence, academic/educational, and career/employment outcomes (standardized mean difference = .18 collapsing across all outcomes and ranging from .10 to .22 across outcome domains). That is, mentoring works, but its effect is modest in size.

Subsequent to DuBois' and colleagues' (2002) comprehensive meta-analysis of youth mentoring programs, three targeted meta-analytic reviews have been published to date. Jolliffe and Farrington (2007) conducted a review of 18 studies to examine the effect of mentoring programs on reducing re-offending. Tolan and colleagues (2008) conducted a review of 39 studies evaluating the effectiveness of mentoring programs on delinquent acts and related outcomes (i.e., delinquency, academic achievement, drug use, and aggression) for youth who have a history of engaging in delinquent acts or were deemed at-risk for future delinquent behavior. More recently, Wheeler, Keller, and DuBois (2010) synthesized and compared the results of three large-scale ( $n > 500$ ), random assignment investigations of school-based mentoring programs –



U.S. Department of Education's Student Mentoring Program (Bernstein, Dun Rappaport, Olsho, Hunt, & Levin, 2009), a BBBSA affiliate program (Herrera, Grossman, Kauh, Feldman, & McMaken, 2007), and Communities In Schools of San Antonio, Texas (Karcher, 2008) – across a number of outcomes. Overall, findings across these meta-analyses were consistent with DuBois' and colleagues' (2002) results: Positive, small-to-moderate effect sizes.<sup>1</sup>

Lastly, Dubois and his team recently completed an update of their prior review (DuBois et al., 2002) with a meta-analysis of 73 evaluations (82 independent samples) of youth mentoring programs from the past decade (DuBois et al., 2011). The authors found similar results to their first and others' reviews – modest positive effects of mentoring program participation on youth outcomes (standardized mean difference = .21 collapsing across all outcomes, with a 95% confidence interval ranging from .16 to .26).

In summary, mentoring for youth has been shown to be largely effective, yet the size of its impact is small to moderate. These modest findings appear problematic for the future of youth mentoring; however, mentoring has traditionally been treated as a prevention program, and as such, results of mentoring reviews must be evaluated alongside reviews of other prevention interventions. A meta-analysis of 177 primary prevention

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<sup>1</sup> In addition, Farruggia and colleagues (2011) conducted a meta-analysis of 26 youth mentoring programs in New Zealand; however, the study did not report effect sizes (or data that could be converted to effect sizes) and, therefore, could not be compared with prior meta-analyses.

mental health programs for children and adolescents demonstrated a grand mean effect size of  $d = .34$  (Durlak & Wells, 1997). Further, more recent meta-analyses of depression (Stice, Shaw, Bohon, Marti, & Rohde, 2009) and obesity (Stice, Shaw, & Marti, 2006) prevention programs for youth found overall effect sizes of  $d = .30$  (converted from  $r = .15$ ) and  $d = .08$  (converted from  $r = .04$ ), respectively. In light of these reviews, mentoring's effectiveness is commensurate with that of other prevention programs.

Even when compared with existing mental health treatments, mentoring fairs well. A review of the most rigorously tested evidence-based treatments demonstrated that psychotherapeutic treatments (e.g., cognitive-behavioral therapy, interpersonal therapy, parent training, medication, and psychosocial-medication combination therapies) broadly revealed medium effect sizes across respective outcomes (e.g., depression, anxiety disorders, and disruptive behavior disorders), with larger effects found for cognitive behavioral therapy (CBT) and medication combination therapy for major depression, CBT for obsessive compulsive disorder (OCD), and parent training for disruptive behavior disorders (DBDs). Thus, even the most efficacious treatments available today do not benefit all youth, also keeping in mind that some youth who show benefits from such treatments do not attain full remission of symptoms. Furthermore, the *efficacy* studies included in these reviews were largely laboratory-based and used diagnostically “clean” samples with little-to-no comorbid diagnoses, which are often found in community-based *effectiveness*

studies and clinical practice in general. In fact, a meta-analysis of 14 psychotherapy effectiveness studies found a mean overall effect size that was not significantly greater than zero, indicating that psychotherapy treatment – as it is typically delivered in community-based settings – was no more effective than no intervention (Weisz & Jensen, 2001). Taken together, available interventions for youth with mental health concerns are in need of enhancement to increase effectiveness, and engaging youth in mentoring programs may be a good alternative or adjunct to existing prevention and treatment interventions.

The five meta-analyses of youth mentoring, discussed above, all regard mentoring as a prevention program and provide researchers and practitioners with an understanding of the overall effectiveness of mentoring (DuBois et al., 2002; DuBois et al., 2011), for specific outcomes (i.e., delinquent acts and re-offending risk, Jolliffe & Farrington, 2007; Tolan et al., 2008), and in specific contexts (i.e., school-based, Wheeler et al., 2010), across populations. Nevertheless, to date, there are no meta-analyses of youth mentoring interventions that target youth with existing mental health problems, and thus, questions remain about the ability of mentoring to aid in the treatment of youth with emotional and behavioral problems.

In addition, comprehensive meta-analyses (DuBois et al., 2002; DuBois et al., 2011) have helped researchers and theorists build and test an overarching model of youth mentoring (Rhodes, 2002, 2005), while targeted reviews (Jolliffe & Farrington, 2007; Tolan et al., 2008; Wheeler

et al., 2010) allow for the development of models of youth mentoring that are specific to such outcomes and contexts. In parallel, reviews that target youth with mental health problems would allow for the development of models of youth mentoring that are specific to this population. When one combines the needs for (1) understanding the effectiveness of mentoring as a treatment for youth, (2) testing and developing a model of youth mentoring for this specific population, and (3) augmenting services and service delivery for children and adolescents in the U.S., a review of evaluations of mentoring programs for youth with emotional and behavioral problems is a logical next step.

Pertaining to this particular population, in DuBois's and colleagues' (2011) recent meta-analysis, among a number of effective program characteristics and practices, the authors discovered that programs were more effective if they served (1) youth who engaged in pre-intervention problem behaviors and (2) youth who had high levels of individual *or* environmental risk (but not high or low levels of both). These findings suggest that mentoring programs that serve youth who are at risk for developing and have existing mental health problems are effective and may be more effective than those that serve youth with fewer difficulties. This difference in effectiveness may be related to the fact that high-risk youth have more capacity for positive change (i.e., more "room" to grow/improve) or due to variabilities in program practices (i.e., moderators, e.g., training of mentors, activities performed, etc.). A review of those programs that target youth with emotional and behavioral

problems will inform our understanding of (a) the specific symptoms and outcomes that those programs best address and (b) the characteristics and practices within those programs that best influence outcomes.

### Moderators of Program Effectiveness

As stated above, moderators may influence the effect of mentoring on youth outcomes (Rhodes, 2005). In general, these factors include program practices that are involved in establishing and supporting the mentoring relationship and its duration. Establishing a solid infrastructure is a key feature of the most effective youth mentoring programs (DuBois et al., 2002). Programs can vary greatly in their designs (e.g., program length, mentor-mentee ratio, location, mentor role function, tailoring to specific population), practices (e.g., mentor training and supervision, parent/caregiver involvement), and youth and mentor characteristics (e.g., youths' and mentors' ages, genders, and races; youths' individual and environmental risk levels) (DuBois et al, 2011). There is no one-size-fits-all approach to mentoring, and a number of formats and practices have demonstrated effectiveness (DuBois et al., 2002; DuBois et al., 2011); nevertheless, certain practices have been found to be most effective at improving youths' outcomes. Here are two examples:

#### Program length/Relationship duration

It has often been hypothesized that the duration of mentoring relationships can affect youths' outcomes. Specifically, longer relationships are thought to be better relationships, and mentoring relationships that end prematurely have been shown to have deleterious effects on mentees

(Grossman & Rhodes, 2002). Even MENTOR, in its list of mentoring “best practices”, recommends that mentoring relationships do not start unless mentors can make a minimum of a one-year commitment to the mentee (MENTOR, 2009). Nevertheless, meta-analytic reviews have shown no difference between mentoring programs with shorter versus longer durations and between mentoring relationships that terminate early and those that are sustained. This meta-analysis tested program duration as a moderator for this specific population.

#### Youth characteristics

Mentoring programs can vary greatly in terms of the characteristics of the youth involved. Programs may target a certain gender, age group, cultural group, etc. or they may include a diverse range of youth. Research has begun to address whether mentoring program effectiveness varies based on differing youth characteristics. For instance, DuBois’ and colleagues’ (2011) recent review demonstrated that mentoring was more effective for programs that served a larger proportion of male youth and was equally effective for youth independent of age group.

Lastly, it is important to note that individual studies do not often examine moderators of their programs’ effectiveness due to limited variance within mentoring programs. For instance, programs likely recruit mentees within a limited age range (e.g., adolescents, 6<sup>th</sup>-graders only, etc.). Additionally, program design and practices within a singular mentoring program are typically uniform, and alternative designs and practices are often not tested empirically (e.g., duration, mentor-mentee

ratio, location, mentor training content and procedure, etc.). Meta-analysis is a useful method for examining the effects of various moderators of mentoring, and consequently, support for the influence of such moderators is often found in meta-analytic reviews. A meta-analysis of mentoring programs for youth with emotional and behavioral problems has the capability to examine between-program differences, thus comparing the effects of moderators.

#### Mediators of Program Effectiveness

According to Rhodes's (2002, 2005) model, mentoring takes its positive effect on youth through the processes of social-emotional, cognitive, and identity development. Unfortunately, studies directly examining these specific pathways are extremely limited in number, and most evidence for the existence of these pathways are extrapolations of outcome data. For example, research demonstrating positive outcomes across emotional/psychological (DuBois et al., 2002; DuBois et al., 2011) and social/interpersonal (DuBois et al., 2011) domains may *imply* that social-emotional development among youths takes place and leads to positive changes. In the current meta-analysis, data on social-emotional, cognitive, and identity development were extracted and analyzed to the extent available.

Rhodes's model includes another mediation pathway, specifically that positive changes in youth development lead to positive youth outcomes via improvements in parent-child and peer relationships. Researchers have found that, in contrast to adolescents who do not have

mentors, adolescents with mentors tend to report more satisfying relationships with their parents and other close providers (Hamilton & Darling, 1996; Rhodes, Contreras, & Mangelsdorf, 1994). Furthermore, Rhodes, Grossman, and Resch (2000) studied improved perceptions of parental relationships, as a mediator of mentoring's effectiveness. They found that mentoring did not directly affect youth's global self-worth but was mediated instead through improved perceptions of parental relationships. Nevertheless, research of this kind is sparse. As with social-emotional, cognitive, and identity development, data on youth's parent and peer relationships were examined in this meta-analysis to the extent that data were available.

#### Empirical Support for Mentoring Programs for Youth with Emotional and Behavioral Problems

Customarily, mentoring programs have matched supportive adults with "at risk" youth. The "at risk" designation is typically given due to one or more environmental/contextual (e.g., single parent home, community violence, foster care) and/or individual (e.g., low academic achievement, low-to-moderate behavioral problems) risk factors. Such programs are focused on *prevention* of later problems. However, if we are to understand the effectiveness of mentoring as an adjunctive or alternative service to more traditional services with the potential to improve the current mental health service delivery system, mentoring must be evaluated on its merits as a *treatment* intervention. In fact, more recently, programs have been developed to target youth with existing (and DSM diagnosable) mental



health problems. Targeted problems typically fall within one of four categories: internalizing, externalizing, interpersonal, and school/academic (*cf.* DuBois et al., 2002, 2011). Findings from evaluations of such programs are presented below.

### Internalizing

For youth with mental health problems, mentoring programs have demonstrated positive outcomes for mentored youth in terms of reductions of internalizing symptoms: suicidal ideation (King, Klaus, Kramer, Venkataraman, Quinlan, & Gillespie, 2009; King, Kramer, Preuss, Kerr, Weisse, & Venkataraman, 2006, for girls only), depressive symptoms (King, Vidourek, Davis, & McClellan, 2002), withdrawn behavior (Wyman, Cross, Brown, Yu, Tu, & Eberly, 2010), social anxiety (Masia-Warner, Klein, Dent, Fisher, Alvir, Albano, & Guardino, 2005), mood-related functional impairment (King et al., 2006), and internalizing symptoms in general (Jent & Niec, 2006; Jent & Niec, 2009; Keating, Tomishima, Foster, & Alessandri, 2002; Owley & Sternweis, 1996), as well as increased self-esteem (Ahrens, DuBois, Lozano, & Richardson, 2010). These outcomes span youth with a variety of problems, including social phobia, autism, oppositional defiant disorder (ODD), and “emotional and behavioral disturbances”. Studies also found no differences between mentored and non-mentored youth on hopelessness (Keating et al., 2002; King et al., 2009), self-esteem (King et al., 2002), self-concept (Keating et al., 2002), depressive symptoms (King et al., 2006; King et al., 2009), internalizing symptoms (King et al., 2006), suicide attempts (King et al.,

2006), and suicidal ideation and mood-related functional impairment for boys (King et al., 2006, for boys; King et al., 2009).

### Externalizing

Positive outcomes for programs targeting this population of youth have been shown for externalizing symptoms as well: aggression (August, Realmuto, Hektner, & Bloomquist, 2001), ODD symptoms (Bernat, August, Hektner, & Bloomquist, 2007), bullying or fighting with peers (King et al., 2002), and externalizing symptoms in general (Jent & Niec, 2006, 2009; Keating et al., 2002; Owley & Sternweis, 1996). Other examples include reduced problems in behavior control and decreased disciplinary referrals and suspensions for children in kindergarten through third grades with “emerging mental health problems” (Rochester Resilience Project Intervention; Wyman et al., 2010) and improvements in self-regulation behaviors for aggressive, especially for the most severely aggressive, children (Early Risers Program; August et al., 2001). In other studies, mentored children did not differ from controls on a number of externalizing outcomes, including conduct disorder (CD) symptoms, categorical DSM-IV diagnoses of ODD and CD, and drug and alcohol use involvement (Bernat et al., 2007); and delinquency acts (Keating et al., 2002).

### Interpersonal

Youth with emotional and behavioral problems often exhibit difficulties with interpersonal and social interactions (Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). Mentoring for these youth has

demonstrated positive effects on social problem-solving, communication, and general social skills (Jent & Niec, 2009; Kalyva & Avramidis, 2005; Masia-Warner et al., 2005; Wyman et al., 2010); perceived social support (Jent & Niec, 2009); and connections with peers and family (Jent & Niec, 2009; King et al., 2002). One study also found no difference in social skills and attachment with parents between mentored and non-mentored youth (Jent & Niec, 2006).

### School/academic

There is a notorious inverse relationship between mental health problems and academic achievement (e.g., Baskin, Slaten, Sorenson, Glover-Russell, & Merson, 2010); therefore, it is valuable to assess if mentoring programs for youth with emotional and behavioral programs are benefiting these youth on school/academic outcomes. These mentoring programs have shown positive effects on enrollment status, attendance, assignment completion, credits attained, academic competence as reported by special education teacher (Sinclair, Christenson, Evelo, & Hurley, 1998); high school dropout rate, attendance, and school mobility (Sinclair, Christenson, & Thurlow, 2005); task orientation (Wyman et al., 2010); students' connections with their schools (King et al., 2002); and academic competence for (severely) aggressive children (August et al., 2001). Additionally, an examination of three high school students with attention-deficit hyperactivity disorder (ADHD) showed that mentoring (referred to as "coaching") led to academic improvements for these students (Merriman & Coddling, 2008). Lastly, for students with severe

emotional disturbance and/or learning disabilities in cosmetology vocational training, peer mentors helped these students learn work-related skills/tasks (Westerlund, Granucci, Gamache, & Clark, 2006). In comparison, one study found no difference between mentored and non-mentored youth on academic competence (as reported by general education teacher), relevance of school, and expectation to graduate (Sinclair et al., 1998).

Overall, the mentoring programs for youth with emotional and behavioral problems appear to be largely effective across internalizing, externalizing, interpersonal, and school/academic outcomes; however, there is variation across studies, and findings are in fact mixed. Furthermore, overall effect sizes across outcomes and within outcome categories are unknown. The current meta-analysis combines the research on these targeted mentoring programs to obtain such effect sizes to, in turn, inform our understanding of the appropriate utility of mentoring programs for this population.

### Moderators

As stated above, due to limited within-study variability of program characteristics and practices, many mentoring program evaluations are restricted in their abilities to examine moderators of effect. Naturally, the same axiom applies to evaluations of mentoring programs targeting youth with emotional and behavioral problems. Thus, meta-analysis is a good venue for examining which moderators influence the effectiveness of such mentoring programs.

In addition to the moderators discussed above, there are program characteristics and practices that are more relevant and perhaps distinct to mentoring programs for youth with emotional and behavioral problems. For example, such youth are more likely to be receiving mental health services outside of the mentoring program. Participation in multiple services could have compounding positive or unintended negative effects on these youth.

Furthermore, because youth with emotional and behavioral problems may be in psychiatric treatment, mentoring relationships can provide these youth with unique supports, compared to mentoring with a non-clinical population. For instance, mentors can have “direct” (e.g., talk with youth about interpersonal and social-emotional difficulties, model effective problem-solving, rehearse skills learned in therapy, and be a safety line during crisis; tutor youth to improve academic performance, which in turn may enhance youth’s mental health), and “indirect” (e.g., encourage youth to obtain or adhere to therapeutic services by talking with youth about these support services, de-stigmatizing therapy, and providing transportation; ensure youth take prescribed medications; Ginsburg-Block, Rohrbeck, & Fantuzzo, 2006) influences on youth and youth outcomes. *Direct support* involves mentors taking on a primary, “agent of change” role, whereas *indirect support* involves mentors taking on a secondary, supportive role.

Additionally, mentors may benefit from specialized training to work with various clinical populations. Although mentors are not therapists,

some programs have found it useful to teach mentors cognitive-behavioral therapy skills (e.g., contingency management), so that these mentors may be more effective in their interactions with their mentees (e.g., Jent & Niec, 2006, 2009). Moderators particularly pertaining to specialized mentoring programs for youth with emotional and behavioral problems, such as “additional mental health services”, “type of mentor support”, and mentor training, will be examined in this meta-analysis.

### Mediators

Kerr and King (in press) propose that a number of these support practices have the potential to increase youth’s treatment adherence, which in turn may improve outcomes. Thus, they suggest that a partial mediation pathway of treatment adherence’s effect on positive outcomes be added to Rhodes’s (2002, 2005) theoretical model of youth mentoring. A lack of data on treatment adherence in this context limits its ability to be examined as a mediator in this meta-analysis. Empirical research and its replication are necessary to test Kerr’s and King’s (in press) proposed mediation pathway.

### Rationale for the Present Review

At the time that the *Handbook of Youth Mentoring* (2005) – which is arguably the most comprehensive volume on youth mentoring theory, research, practice, and policy – was assembled, there was no chapter or sub-section that addressed working specifically with youth with mental illness. In the second edition of the *Handbook* that will be published by SAGE Publications in May 2013, there will be a chapter dedicated to

mentoring with this population (Kerr & King, in press). Introducing this chapter in the next edition of the *Handbook* speaks to (1) the increased attention and research that mentoring youth with mental health problems has received over the past five to seven years, and (2) the need to treat youth with emotional and behavioral problems as a special population within the mentoring context.

The new chapter in the second edition of the *Handbook* will provide a broad, qualitative introduction to mentoring youth with mental health needs, as well as discuss a few, specific programs. The current review complements Kerr's and King's (in press) work by performing a comprehensive, quantitative analysis of the studies to date that examined the effects of mentoring programs that targeted youth with emotional and behavioral problems.

Additionally, this meta-analytic review differs from DuBois and colleagues' (2002) meta-analysis in that the current review focuses on and only includes research that identified youth with a mental illness *prior* to program implementation and, thus, excludes "prevention" programs developed for and implemented with youth deemed "at-risk" for developing mental health and other related problems (e.g., academic problems). This targeted approach allows for the examination of (a) the overall effectiveness, across outcomes, of evaluations of mentoring programs for youth with emotional and behavioral problems, (b) the effectiveness of these programs for specific outcomes (e.g., internalizing

symptoms), and (c) the characteristics and practices within those programs that best influence outcomes.

The findings from this meta-analysis are intended to impact future research, practice, and policy in youth mentoring. First, researchers exploring the sub-field of mentoring youth with emotional and behavioral problems may benefit from having a comprehensive review as (a) a singular location where they can obtain a broad and detailed synthesis of the extant literature, and (b) a “jumping-off point” from which to build their research. Second, as MENTOR publishes and makes readily available the *Elements of Effective Practice for Mentoring* (MENTOR, 2009), which is informed by the evidence base and includes best practices for developing, implementing, and evaluating youth mentoring programs; it will be important for future best practice documents to move away from a “one-size-fits-all” approach and provide practitioners with specialized instructions for working with unique populations – specifically, youth with mental health problems. Third, depending on the extent to which mentoring is found to help decrease the prevalence of youth psychiatric problems and promote positive youth development, in conjunction with findings from future cost-benefit and cost-effectiveness analyses, funding sources should consider allocating resources to research teams and organizations for the development, implementation, and evaluation of mentoring programs for youth with emotional and behavioral problems.



## Research Questions and Hypotheses

The overarching goals of the current review are to meta-analyze evaluations of mentoring programs for youth with emotional and behavioral problems and, subsequently, address the following questions and hypotheses.

1. Overall effectiveness – How effective are mentoring programs targeting youth with emotional and behavioral problems? What is the overall effect size across outcomes? Based on results of prior meta-analyses of youth mentoring programs, it was hypothesized that mentoring would have a small-to-moderate, positive effect on youth outcomes.

2. Effectiveness for specific outcomes – How effective are these mentoring programs at addressing internalizing, externalizing, interpersonal, and school/academic outcomes? What is the effect size for each individual outcome category? It was hypothesized that mentoring would have small-to-moderate, positive effects for each outcome category. Based on results of Dubois and colleagues' two meta-analyses (2002, 2011), it was hypothesized that mentoring would be slightly more effective for externalizing problem outcomes than for the other outcome categories.

3. Moderators of effect – Which program characteristics and practices influence the effectiveness of these mentoring programs? Specifically, the following moderators were examined: formal versus natural mentoring, mentor-mentee ratio, program duration, location of mentoring, mentee age, mentee gender, mentee race/ethnicity,

environmental risk factors (e.g., income, community violence exposure), individual risk factors (e.g., internalizing symptoms), parental involvement, mentor training and supervision, type of support and skills provided by mentors (i.e., “direct”, “indirect”, CBT skills), and whether youth received outside mental health services in addition to mentoring.

4. Mediators of effect – Do social-emotional development, cognitive development, identity development, parent and peer relationships, and treatment adherence mediate the relation between mentoring quality and youth outcomes? It was expected that mediator data would be too sparse to conduct mediator analyses; however, such data was collected before making such determination.

## CHAPTER II

### METHOD

Conducting a meta-analysis includes the following steps: (a) determining inclusion and exclusion criteria, (b) carrying out a systematic and comprehensive search for eligible studies, (c) coding study characteristics and using available statistical information to compute effect sizes, (d) calculating an overall/average effect size comprised of findings from all studies as well as an estimate of the degree to which effect size varies across studies, and (e) assuming there is significant variation in effect sizes, conducting moderator analyses to examine study characteristics that may be associated with and thus account for this variation (Cooper, 2010; Lipsey & Wilson, 2001). This chapter discusses the first two steps. The following chapter addresses the remaining three. To the extent available, information in this meta-analysis was presented in accordance with APA's Meta-Analysis Reporting Standards (MARS; APA, 2008).

#### Inclusion/Exclusion Criteria

Studies were included if *all* of the following criteria were met:

A. They involve the evaluation of a youth mentoring program as defined by the following definition: "A program or intervention that is intended to promote positive youth outcomes via relationships between young persons and specific non-parental adults (or older youth) who are acting in a non-professional helping capacity" (DuBois et al., 2011).

1. “Young persons” were operationalized as individuals 18-years old and younger; therefore, only samples in which the mean age of mentees is less than 19 years were included in this review.

2. This definition is purposely broad to include programs that utilize a variety of structures and practices (e.g., paid and unpaid mentors; one-on-one, group, and team formats, etc.)

Evaluated programs that did not fit the above definition of youth mentoring were excluded. For instance, programs that solely involved tutoring and did not include a focus on relationship processes as the change agent were excluded from this review.

B. Participants have a diagnosed mental health disorder as defined by the DSM or have an identified emotional or behavioral problem or symptom that often requires clinical care and typically warrants a DSM diagnosis (e.g., suicidal ideation). A status of “at risk”, either due to environmental concerns (e.g., poverty) or individual concerns (e.g., mild levels of sadness), among youth participants is operationalized as “non-clinical”, and studies that solely address at-risk youth were excluded from this review. However, in the case of individual risk, studies that use the terminology “at risk” to describe a moderate-to-high level of risk were considered for inclusion on a case-by-case basis to determine if the level of risk was high enough to be considered “clinical” (e.g., Moore, 1987; Wyman et al., 2010).

C. Mentoring was the sole intervention evaluated and was not part of a multi-component program in which mentoring was one of several

elements of a youth-focused intervention. The various non-mentoring intervention pieces of multi-component programs likely confound the effect of the mentoring component. The exception to this criterion, however, is if mentoring was the central intervention of a multi-component program and perhaps utilized the mentoring relationship as a vehicle by which intervention sub-components could be carried out. The justification for including this type of intervention is based on the notion that many youth with mental health problems in mentoring-only programs are also likely receiving additional services outside the mentoring program (e.g., psychotherapy). Therefore, for the purposes of this study, within-program sub-components were thought to be no different than outside services, and lack of available data did not allow for statistical control of “extra” interventions.

D. They include a comparison group of non-mentored youth. A key concern of youth mentoring program effectiveness research (and all youth development research) is the potential for changes in outcomes over time to be a corollary of normative development, or maturation, that are not actual effects of mentoring. Such changes may be positive (e.g., increased academic competence) or negative (e.g., increased defiance of adults). Without comparing mentored youth to a control group of non-mentored youth, positive changes would lead to an apparent inflation in program effectiveness, and the reverse is true of negative changes.

E. They examined the effects of participation in a mentoring program, between mentoring and non-mentored youth, either by pre-program

versus post-program comparison or by post-program only data collection and analysis. Studies using post-program data were only included, however, if they controlled for confounding variables, either by matched comparison of groups or via statistical control of covariates.

F. There is sufficient, available data to compute an effect size to address at least one outcome listed in Research Question 2 (above). When information that is required to compute an effect size was missing from an article, attempts were made to obtain such data from the studies' authors. Data provided in response to these requests were included in the meta-analysis. See below for detailed information on computing effect sizes.

G. Data are from independent samples. Specifically, studies that used data from the same sample were included to the extent that they differ in outcomes and/or moderators analyzed. Multiple studies that report data from the same sample were not included more than once in the analysis of an overall effect size.

H. They are written in English.

#### Literature Search Procedures

Studies were deemed eligible for inclusion in this review using the inclusion/exclusion criteria listed above. Pertinent studies were identified through four major database searches: PsycINFO, Academic Search Premier, ERIC, and Social Science Citation Index, as well as Google Scholar and Proquest Dissertations and Theses Database and through manual searches of prominent journals in the field (i.e. *American Journal of Community Psychology*, *Child and Family Behavior Therapy*, *Clinical*

*Child Psychology and Psychiatry, Clinical Child and Adolescent Psychology, Journal of Consulting and Clinical Psychology, Journal of Child and Family Studies, and Mentoring and Tutoring: Partnership for Learning*), for all published articles and dissertations on the topic. Key words, in part suggested by Kerr and King (in press) in their qualitative review, were, “mentor”, “mentoring”, “counselor”, “teacher”, “advisor”, “coach”, “tutor”, “volunteer”, and “aid” in conjunction with (a) general terms such as “mental illness”, “mental health problems”, “emotional”, “behavior”, “behavioral”, “psychiatric”, “pathology”, “disease”, and “disorder”; (b) specific diagnoses and symptoms such as “depression”, “anxiety”, “phobia”, “ADHD”, “psychosis”, “OCD”, “conduct disorder”, “autism”, “bipolar”, and “externalizing”; and (c) age-specific terms such as “child”, “adolescent”, and “youth”.

Attempts were made to obtain unpublished material, as suggested by Lipsey and Wilson (2001), to reduce the probability of an upward bias in the findings, which can be characteristic of published literature. To avoid this bias, the authors attempted to include dissertations in the review and contact the leading authors in this field (those who published two or more articles in this review) asking for unpublished studies. Additionally, unpublished studies and data were solicited via the Youth Mentoring email listserv, whose members include researchers and practitioners from around the globe who work in the youth mentoring field.

### Coding Procedure

Relevant study level and outcome level information were extracted from each article or manuscript using a detailed coding guide. The coding guide included report information (e.g., publication year), evaluation methodology and design (e.g., presence of comparison group), mentoring program characteristics and practices (e.g., hours of mentor training, number of non-mentoring programmatic components), mentor characteristics (e.g., mean age, gender breakdown), youth/mentee characteristics (e.g., mean age, psychiatric diagnoses, environmental risk factors), information on the mentor-mentee relationship (e.g., expected and actual frequency of contact, relationship duration), outcome variable information (e.g., psychological, academic), and statistical information (i.e., effect size or relevant data for computing effect size). See Research Questions and Hypotheses above for specific moderator variables assessed. When insufficient information was available to compute an effect size and/or when important study information was missing, study authors were contacted to obtain such information. The coding guide was adapted from the guide created and utilized by DuBois and his colleagues for their recent meta-analysis (2011), which largely evolved from their first meta-analysis (DuBois et al., 2002) as well as other related meta-analyses (Durlak et al., 2010; Lipsey & Wilson, 1998; Tolan et al., 2008).

All eligible studies were coded by both a doctoral candidate (the author) and an undergraduate-level researcher. After studies were coded independently by each coder, coders held a consensus meeting to make



final determinations. All effect sizes were coded such that positive values reflect positive program effects on outcomes (e.g., higher self-esteem, less aggressive behavior).

### Computing Effect Size

Effect sizes were computed as standardized mean differences, also known as Cohen's  $d$  or estimated  $d$  (Cooper, Hedges, & Valentine, 2009), from pre-post data from independent groups (intervention and control). Studies with this design typically use analysis of covariance (ANCOVA) to compare outcome data from independent groups, while controlling for the correlation between pre-test and post-test data. The formula for the standardized mean difference of two independent groups using ANCOVA is,

$$d = \frac{M_1^{\text{Adjusted}} - M_2^{\text{Adjusted}}}{S_{\text{Pooled}}},$$

where  $M_1^{\text{Adjusted}}$  and  $M_2^{\text{Adjusted}}$  are the sample means of the two independent groups accounting for the correlation between pre- and post-test.  $S_{\text{Pooled}}$  is the within-groups standard deviation, pooled across groups (Cooper et al., 2009). (For a more detailed discussion of and formulas for independent-group pre-post designs and post-test-only designs, see Cooper et al., 2009, pp. 228-230).

Effect size formulas provide a value of the magnitude of an effect, *independent of sample size*. Because statistics derived from smaller samples are inherently less reliable than those derived from larger

samples, effect sizes computed from smaller samples are less reliable than those from larger samples. Therefore, when effect sizes are combined to calculate an average/overall effect, problems may arise because effect size statistics contribute equally to this average value – regardless of the reliability of the information that each effect size carries (Lipsey & Wilson, 2001). To address this potential problem, each effect size value was weighted by its sample size – specifically the inverse of the effect size variance – to convert Cohen's  $d$  into a statistic referred to as Hedge's  $g$  (Hedges, 1982; Hedges & Olkin, 1985).

Effect sizes (and the overall meta-analysis) were computed using the computer program Comprehensive Meta-Analysis (CMA) Version 2 (Borenstein, Hedges, Higgins, & Rothstein, 2005). Depending on available data from each study (e.g., means and standard deviations, test statistics, significance levels), the CMA program utilized the appropriate respective formula to compute Hedge's  $g$  for each outcome.

#### Analysis of Overall Program Effectiveness

When conducting a meta-analysis, it is necessary to (1) determine the unit of analysis and (2) determine the statistical model (i.e., either fixed or random effects) (Cooper et al., 2009). This meta-analysis used the independent sample as the primary unit of analysis. In the studies in which effect size information (or information used to obtain effect size) was reported for the overall sample – which is the more typical scenario – each study contributed one sample to the analysis. In the studies in which findings were reported separately for distinct subgroups only (e.g., male

and female), each subgroup was treated as an independent sample (Cooper et al., 2009). Because samples had multiple outcomes, each independent sample contributed one mean effect size to the calculation of an overall effect size measure across outcomes. Additionally, effect sizes were computed for each outcome category (e.g., internalizing symptoms, school). Similarly to the overall effect size, for samples with multiple outcomes within an outcome category, an average effect size was computed and then used to compute the effect size for that outcome category.

In terms of the statistical model, a random effects model was used for all analyses (Hedges & Vevea, 1998). A random effects model, as opposed to a fixed effects model, should be used in meta-analysis when there is significant study-level variability (measured as variance) in effect sizes, in addition to the assumed sampling, or random, error. This model is more conservative in its estimate because it accounts for the additional variance component and is more conceptually accurate for this and most meta-analyses due to the common practice of studies (that are combined in meta-analyses) to vary in sample characteristics, research design, outcomes of interest, and measurement tools used (Cooper et al., 2009; Lipsey & Wilson, 2001). Because the studies included in the current meta-analyses vary in the characteristics of mentors and mentees, study designs, specific outcomes measured, and the measurement tools used for those outcomes, a random effects model is conceptually appropriate for this analysis. Additionally, random effects analysis allows for better

generalization of findings to (mentoring) programs that were not included in the analysis.

Finally, an overall weighted standardized mean effect size ( $g$ ) across all studies and its 95% confidence band was computed. Additionally,  $g$ s and 95% confidence intervals were computed for each outcome category.

### Moderator Analyses

Following analysis of the overall effect of mentoring programs for youth with emotional and behavioral problems across outcomes and within outcome categories, moderators were analyzed to uncover factors that increase (and decrease) effect sizes, with implications for program effectiveness. Moderators (listed above), drawn from theory, empirical research, and prior meta-analyses of youth mentoring were coded and tested.

Moderators were analyzed if they were characteristic of a large enough number of samples and if there was significant unexplained variability in effect sizes (Lipsey & Wilson, 2001). In a random effects model, the study-level variance component of mean effect sizes is computed and is subject to a significance test. This test assumes the variance of effect sizes is zero, and therefore, rejecting this null hypothesis indicates that the variance of effect sizes is significantly greater than zero. This test statistic is called  $Q$ , and a statistically significant  $Q$  suggests that there is enough variability in effect sizes to conduct further (i.e., moderator) analyses to attempt to explain the sources of this variability.

Categorical moderators were given binary codes (0 or 1), and differences between groups of moderators were examined. Continuous moderators were tested using meta-regression, a process akin to regression that examines the influence of covariates (moderators) on outcome effects (i.e., effect sizes).

## CHAPTER III

### RESULTS

#### Search Outcome

Using the abovementioned search terms, approximately 150 studies were initially identified by examining article abstracts. Detailed examination of each study yielded thirteen studies that fit all eligibility criteria. Studies were excluded mainly due to the following: mentors were parents or same-age peers; no control group comparison was used; youth participants met “at-risk” status rather than possessing an existing emotional or behavioral problem; and the study was a qualitative analysis or introduced a new mentoring program that was not empirically tested. Among those thirteen studies, one study (King et al., 2006) presented data separately for male and female mentees. Therefore, fourteen independent samples were identified and included in the current meta-analysis.<sup>2</sup> For ease of presentation, independent samples are often referred to as studies, programs, or evaluations throughout this review. All studies and demographics included in this meta-analysis are listed in Table 2. For the fourteen included studies, sample sizes ranged from 60 to 448 (mean = 216, median = 131).

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<sup>2</sup> Note that two studies (Fo & O’Donnell, 1975, and O’Donnell, Lydgate, & Fo, 1979) presented data from overlapping samples; however, each study divided the larger sample into two samples based on severity. Although these studies were combined so as not to bias analyses, these two studies contributed a combined two independent samples to the meta-analysis.

### Overall Program Effectiveness

Before carrying out the meta-analysis, power analysis was conducted to estimate the likelihood of fourteen studies to yield a statistically significant result (Borenstein, Hedges, Higgins, & Rothstein, 2009). Assuming a random effects model, an effect size of .20 (a small effect based on prior mentoring meta-analyses), a moderate degree of between-study heterogeneity, and an alpha of .05, along with known data (14 studies with approximately 200 participants in each study), statistical power comes to .9831. This value indicates high power to find a statistically significant result.

Effect sizes for each individual outcome are displayed in Table 2. A summary of effect sizes for each study and the overall effect are presented in Figure 2. Using a random effects model, the overall effect size (in Hedge's  $g$ ) for mentoring programs averaged across all studies was .366, with a 95% confidence interval of .170 to .563. This finding indicates a significant positive effect of mentoring programs for youth with emotional and behavioural problems on outcomes of mentored youth, compared to non-mentored youth.

Effect sizes were computed for outcome categories as well. Outcome category formation was guided by outcome categories examined in DuBois and colleagues' meta-analyses (2002, 2011) and by available data from included studies. Four outcome categories were subsequently generated: internalizing symptoms (e.g., depressive symptoms, suicidal ideation, self-esteem), externalizing symptoms (e.g., ADHD, ODD, antisocial behavior,

drug use, suspensions), interpersonal (e.g., social skills, social support, family connectedness, peer connectedness), and school/academic (e.g., school connectedness, attendance, task orientation, academic competence). Outcomes were placed in the school category if they were related to being in school and were not better accounted for by another symptom category. For example, “suspensions” was placed in the “externalizing symptoms” category. Outcome category effect sizes and corresponding 95% confidence intervals are listed in Table 1.

Table 1. Effect sizes for outcome categories

Outcome category	N of studies	Effect size (Hedge's <i>g</i> )	95% Confidence Interval
Internalizing symptoms	8	.260	.062 to .458
Externalizing symptoms	9	.479	.210 to .747
Interpersonal	5	.566	.329 to .803
School/academic	5	.538	.149 to .927
<i>Overall</i>	<i>14</i>	<i>.366</i>	<i>.170 to .563</i>

Note: “N of studies” represents the number of independent study samples per category.

All outcome categories showed effect sizes significantly greater than zero. Because of the apparent, large difference in effect for internalizing symptoms and the three other groups, follow-up analysis was conducted to obtain a combined effect size for externalizing symptoms, interpersonal, and school/academic outcome categories. Among the 11 studies that measured at least one outcome in these outcome categories, they achieved an average effect size (*g*) and 95% confidence interval of .497 (.270 to .724).



Table 2. Studies included in meta-analysis

<b>Authors</b>	<b>Year</b>	<b>Targeted diagnosis/symptom/problem</b>	<b>Intervention conditions</b>	<b>Sample size</b>	<b>Study design</b>	<b>Outcomes and Effect Sizes (g)</b>
Fo, W. S., & O'Donnell, C. R.	1975	Behavior management problems...including truancy, poor academic achievement, classroom disruption, curfew violation, and fighting.	Buddy System program vs. no-treatment control; separated into two independent samples by offense severity (major & minor)	For major: 48 mentored, 25 control; For minor: 216 mentored, 153 control	Randomized, controlled, post-only	( <i>g</i> major, <i>g</i> minor) Major offenses (.59, -.48)
Hanlon, T. E., Bateman, R. W., Simon, B. D., O'Grady, K. E., & Carswell, S. B.	2002	Met one or more of the following criteria: 1) known or admitted early experimentation with alcohol or drugs; 2) a history of delinquency or other deviant behavior, including criminal activity, incorrigibility, and precocious sexual behavior; 3)	Counseling + Group Mentoring vs. Counseling-only	235 mentored, 193 control	Randomized (at site level), controlled, pre-post	Contact with legal authorities (.34), Delinquent activity (.80)

		school behavior				
Jent, J. F., & Niec, L. N.	2006	Emotional and behavioral disturbances (all have DSM diagnoses)	Group mentoring vs. waitlist control	42 mentored, 38 control	Randomized, controlled, pre-post	Externalizing symptoms (.73), Internalizing symptoms (.92), Parent-child relationship (.75), Parenting social support (.89), Social support (.33)
Jent, J. F., & Niec, L. N.	2009	Axis I DSM disorder	Behavioral mentoring program vs. waitlist control	30 mentored, 30 control	Randomized, controlled, post only	Attachment with parent (.25), Externalizing problems (.60), Internalizing problems (.51), Social problem-solving (.54), Social skills (.21)
Keating, L. M., Tomishima, M.A., Foster, S., & Alessandri, M.	2002	“Their behavior has to come to the attention of a concerned adult... reasons for referral include fighting and other behavior problems, emotional problems, poor grades or school attendance, theft, vandalism, or	Intensive mentoring program vs. waitlist control	34 mentored, 34 control	Nonrandom, controlled, pre-post	Delinquent acts (.28), Externalizing symptoms (parent report, .55; teacher report, .80), Hopelessness (.33), Internalizing

		other minor crime.”				symptoms (parent report, .57; teacher report, .66), Self-esteem (.36)
King, C. A., Klaus, N., Kramer, A., Quinlan, P., Venkataraman, S., & Gillespie, B.	2009	Significant suicidal ideation or suicide attempt within the past 4 weeks	Youth-nominated Support Team (Version II) + TAU vs. TAU-only	223 mentored, 225 control	Randomized, controlled, pre-post	Depressive symptoms (.02), Hopelessness (.06), Functioning Impairment of moods/emotions (-.00), Suicidal ideation (-.12)
King, C. A., Kramer, A., Preuss, L., Kerr, D. C. R., Weisse, L., & Venkataraman, S.	2006	Psychiatrically hospitalized for suicide (suicide attempt or significant suicidal ideation/intent during the past month and a score of 20 or 30 on the Self-Harm subscale of the Child and Adolescent Functional Assessment Scale)	Youth-nominated Support Team (Version I) + TAU vs. TAU-only; separated into two independent samples by gender	For boys: 35 mentored, 40 control; For girls: 78 mentored, 83 control	Randomized, controlled, pre-post	( <i>g</i> boys, <i>g</i> girls): Depressive symptoms (-.10, .07), Functional impairment of moods/self-harm (.05, .31), Internalizing symptoms (.03, .09), Suicidal ideation (-.39, .15)

King, K. A., Vidourek, R. A., Davis, B., & McClellan, W.	2002	Low self-esteem scores; engaged in two or more risky health behaviors; sad or depressed for two consecutive weeks; abused alcohol, tobacco, or other drugs in the past thirty days; or failed 2 or more classes	Healthy Kids Mentoring Program vs. non-matched control	28 mentored, 255 control	Nonrandom, controlled, pre-post	Family connectedness (1.66), Peer connectedness (.24), School connectedness (1.53), Self-esteem (.18)
Moore, R. H.	1987	Young male offenders placed on probation..."when the presentence investigation report identified either the presence of severe adjustment difficulties or high risk for additional offenses."	Citizen counseling (mentoring) with regular probation vs. regular probation only	50 mentored, 50 control	Randomized, controlled, pre-post and post-only	Achievement via conformance (.69), Intellectual efficiency (.11), Offenses (Aggression, 1.01; Alcohol/Drug use, .23; Theft, 2.13; Traffic, .63), Responsibility taking (.47), Self-control (.49), Socialization (.79)
O'Donnell, C. R., Lydgate, T., & Fo, W.S.	1979	Behavior management problems...including truancy, poor academic achievement, classroom disruption, curfew violation, and fighting.	Buddy System program vs. no-treatment control; separated into	For major: 50 mentored, 23 control;	Randomized, controlled, post-only	( <i>g</i> major, <i>g</i> minor) Arrests (.57, -.21)

			two independent samples by offense severity (major & minor)	For minor: 285 mentored, 195 control		
Sinclair, M. F., Christenson, S. L., Evelo, D. L., & Hurley, C. M.	1998	Learning or emotional/behavioral disabilities (mild to severe) according to state special education guidelines and definitions	Check & Connect Program vs. TAU control	47 mentored, 47 control	Stratified, controlled, post-only (All youth received intervention in 7th and 8th grades and then were randomly assigned to intervention or control in 9th grade.)	Academic competence (general ed. Teacher report, -.34; special ed. teacher report, .57), Assignment completion (.73), Attendance pattern (.50), Credits (.83), Enrollment status (.56), Expectation to graduate (.24), Problem behavior (general ed., .53; special ed., .71), Relevance of school (.33)

Sinclair, M. F., Christenson, S. L., & Thurlow, M. L.	2005	Receiving special ed services for emotional or behavioral disability (Active IEP for a primary or secondary emotional or behavioral disability or other health impairment when the IEP included behavioral goals and objectives)	Check & Connect Program vs. TAU control	71 mentored, 73 control	Randomized, controlled, pre-post	Dropout rate (.37), Pattern of attendance (.69), School mobility (.77)
Wyman, P. A., Cross, W., Brown, C., Yu, Q., Tu, X., & Eberly, S.	2010	Elevated behavioral, social-emotional, and/or on-task learning behavior problems (lowest 1/3 of adjustment on Teacher-Child Rating Scale)	Rochester Resilience Project Intervention vs. waitlist control	111 mentored, 115 control	Randomized, controlled, pre-post	Assertive-withdrawn behaviors (.28), Behavioral control (.22), Disciplinary referrals (.40), Social skills with peers (.35), Suspensions (.72), Task orientation (.24)

Note. TAU = Treatment-as-Usual

### Moderators of Program Effectiveness

Moderator analyses were conducted to explore effect size differences between groups of samples. First, to determine whether moderator analysis is permissible, heterogeneity among samples was examined by obtaining a Q-statistic and corresponding p-value. The Q-statistic is a test of the null hypothesis that all dispersion among samples is due to random error and is not due to real differences in sample effects (Borenstein et al., 2009). The measure of heterogeneity among all fourteen samples was:  $Q(9) = 49.011$ ,  $p < .001$ ; thus, the null hypothesis is rejected, and it is concluded that at least some of the dispersion across samples is due to real differences in sample effects. Therefore, moderator analyses may be conducted. Furthermore, the  $I^2$  statistic indicates the percent of dispersion that is due to real sample effects (Borenstein et al., 2009). The  $I^2$  among the fourteen samples included in this meta-analysis is 73.475, indicating that approximately 73.5% of the dispersion is due to real sample effects (not random error), and therefore, moderator analysis could explain up to 73.5% of sample dispersion. Power analysis of heterogeneity yielded low power (.416). Power to detect the relationship between subgroup membership and effect size or between covariate values and effect size is often low (Borenstein et al., 2009). Conclusions drawn from the following moderator analyses should, therefore, be made with caution.

#### Moderation with categorical moderator variables

Next, moderator analyses with categorical moderator variables were conducted to compare effect sizes between groups of studies. More

specifically, a mixed effects analysis was used. In a mixed effects analysis, a random effects model is used to combine samples within each group, and a fixed effect model is used to combine groups and yield the overall effect. The sample-to-sample variance (tau-squared) is assumed to be the same for both/all groups; this value is computed within groups and then pooled across groups (i.e., obtaining a pooled variance) (Borenstein et al., 2009). In mixed effects analysis, differences between groups of samples (i.e., moderation) were examined by computing a Q-statistic and corresponding p-value. In this case, the Q-statistic is a test of the null hypothesis that there is no difference between groups.

The first moderator analysis compared studies in which participants obtained additional mental health services (e.g., psychotherapy, psychopharmacology) outside the scope of the mentoring program with studies that did not report that their participants obtained additional mental health services. Using a mixed effects estimate, the seven samples with youth who obtained additional services resulted in a Hedge's *g* and a corresponding 95% confidence interval of .310 (.029 to .590) , and the seven samples that did not report obtaining additional services resulted in a Hedge's *g* of .438 (.135 to .740). Moderator analysis yielded,  $Q(1) = .369$ ,  $p = .543$ , indicating that there was no significant difference between sample groups.

The following is a table (Table 3) of all moderator analyses with categorical moderator variables, conducted in the same manner described above. These results are later discussed in the Discussion section.



Table 3. Results of moderator analyses with categorical moderators

Moderator	Level	N of Studies	Effect Size (g)	95% CI	Q, p
<i>Study Design:</i>					
Pre-post vs Post-only^	Pre-post	9	.390	.149 to .632	1.265, p=.531
	Post-only	4	.229	-.155 to .613	
<i>Program Characteristics:</i>					
Formal vs Natural mentors	Formal	11	.473	.279 to .668	5.365, p=.021*
	Natural	3	.022	-.306 to .350	
Mentor-mentee ratio	1-to-1	9	.474	.210 to .739	1.513, p=.219
	CoTeam	5	.215	-.102 to .533	
<i>Location:</i>					
School	Yes	4	.581	.208 to .954	1.757, p=.185
	No	10	.287	.064 to .510	
Site (org. like Boys & Girls Club)	Yes	0	X	X	X
	No	10			
Hospital/Clinic	Yes	3	.564	.177 to .952	1.348, p=.246
	No	11	.303	.091 to .514	
Community (e.g., out at discretion of mentor)	Yes	10	.255	.050 to .460	3.450, p=.063
	No	4	.620	.294 to .947	
School or Hospital/Clinic	Yes	7	.570	.367 to .774	9.315, p=.002*
	No	7	.128	-.070 to .326	
<i>Support by Mentors:</i>					
Direct vs. Indirect-only	Direct	13	X	X	X
	Indirect	1			
Mentors utilized CBT skills	Yes	6	.409	.149 to .669	.241, p=.624
	No	8	.310	.010 to .609	
<i>Mentor Training and Supervision/Support:</i>					
Initial training	Yes	12	X	X	X
	No	2			
Ongoing training	Yes	5	.329	-.017 to .675	0.079, p=.778
	No	9	.391	.135 to .646	
Targeted training	Yes	12	X	X	X
	No	2			
Supervision/support	Yes	8	.187	-.016 to .390	6.480, p=.011*
	No	6	.610	.356 to .864	

<i>Parental Involvement:</i>					
Support opportunity offered by program	Yes	7	.570	.367 to .774	9.315, p=.002**
	No	7	.128	-.070 to .326	
Direct involvement by parent(s)	Yes	4	.620	.321 to .919	4.330, p=.037*
	No	10	.240	.044 to .436	
<i>Risk Factors:</i>					
Externalizing symptoms	Yes(>33)	11	.473	.279 to .668	5.365, p<.021*
	No	3	.022	-.306 to .350	
Internalizing symptoms	Yes(>33)	10	.379	.130 to .627	.016, p=.898
	No	4	.348	-.041 to .738	
School/academic	Yes(>33)	8	.446	.164 to .728	.612, p=.434
	No	6	.282	-.017 to .581	
Additional mental health services	Yes	7	.310	.029 to .590	.369, p=.543
	No	7	.438	.135 to .740	

\*p < .05, \*\*p < .01. “N of studies” represents the number of independent study samples per category. “95% CI” refers to the 95% confidence interval. “Q, p” is the Q-statistic and corresponding p-value. “CoTeam” refers to Co-mentoring (more than one mentor and a single youth assigned to all those mentors) *and* Team mentoring (more than one mentor and a group of youth assigned to those mentors; does not include situations in which distinct mentor-youth pairs met at the same time and location). ^ One study not included in analysis because it fit in both categories. “X” used as placeholder when there were insufficient data to compute moderator analysis (i.e., when *n* of at least one group was less than 3).

### Moderation with continuous moderator variables

A regression-based analysis, called *meta-regression*, was used to estimate the impact of continuous study moderators on overall heterogeneity. Meta-regression examines the influence of covariates (moderators) on outcome effects (i.e., effect sizes). Essentially, meta-regression helps answer the question: “Does the program effect vary with dosage?” Specifically, a mixed effects regression (unrestricted maximum likelihood model) is used. Compared with fixed effects, mixed effects

regression allows for within *and* between study variation and is therefore the most appropriate model to choose.

Similar to standard regression, meta-regression produces and examines a regression line:  $y = a + bx$ , where  $x$  is the covariate (moderator) under consideration,  $y$  is the regressed outcome (effect size),  $a$  is the intercept (the effect size when the value of the moderator equals zero), and  $b$  is the slope of the line. If the slope  $b$  is significantly greater than zero, the moderator is said to have a significant effect on the outcome.

In the current meta-analysis, the effects of four continuous moderator variables were examined. See Table 4 for a summary of these results. First, program duration (the length of the program from beginning of program/pre-intervention assessment to end of program/post-intervention assessment) was tested. Program duration ranged from 2-months to 48-months, with a mean of 10 months (median = 6). Meta-regression results showed no significant moderation of program duration on overall program effect size ( $b = 0.006$ ,  $SE = 0.008$ ,  $Z = .727$ ,  $p = .467$ ).

Average age of mentees (measured at program start) ranged from 7-years-old to 18.8-years-old, with a mean of 13.4 years (median = 14, mode = 15). Results showed no significant moderation of average youth age on overall program effect size ( $b = -.033$ ,  $SE = .033$ ,  $Z = -1.000$ ,  $p = .318$ ).

Mentees' gender was measured by computing the percentage of males in each sample. Percent of male youth ranged from 0% to 100%, with an average of 64% (median = 63.5%). Results showed no significant

moderation of mentees' gender on overall program effect ( $b = .004$ ,  $SE = .003$ ,  $Z = 1.061$ ,  $p = .289$ ).

Racial/ethnic diversity was measured by comparing the percentage of Caucasian mentees with the percentage of non-Caucasian (predominantly African American and Latino) mentees. Three studies did not report race/ethnicity data and were therefore removed from this analysis. Percent of Caucasian youth ranged from 3% to 100%, with an average of 58% (median = 82%). Results showed no significant moderation of mentees' race/ethnicity on overall program effect ( $b = -.003$ ,  $SE = .002$ ,  $Z = -1.756$ ,  $p = .079$ ).

Table 4. Results of moderator analyses with continuous moderators

Moderator	Slope	95% CI	Proportion of variance explained	Interpretation
Duration	$b = .006$	-.010 to .021	7.4%	No relation between program effectiveness and duration
Average age	$b = -.033$	-.099 to .032	7.1%	No relation between program effectiveness and average age of youth at program start
Gender	$b = .004$	-.003 to .010	7.0%	No relation between program effectiveness and mentees' gender
Racial/ethnic diversity	$b = -.003$	-.007 to .000	1.8%	No relation between program effectiveness and mentees' race/ethnicity

Note: 95% CI refers to 95% confidence interval.

### Supplemental Moderator Analysis

In addition to programs that treated mentoring as the sole intervention or the main intervention in a multi-component program (“Sole/Main”), eligibility criterion “C” was temporarily suspended to code and collect data from studies that evaluated multi-component programs that included mentoring components but did not treat mentoring as the core intervention (“General Multi”). Three additional independent samples (from two studies) met eligibility criteria (Bernat et al., 2007; CPPRG, 2007). These three General Multi samples were compared with the fourteen Sole/Main samples via moderator analysis. Using a mixed effects estimate, the fourteen Sole/Main samples resulted in a Hedge’s  $g$  and corresponding 95% confidence interval of 0.362 (.178 to .546), and the three General Multi samples resulted in a Hedge’s  $g$  of 0.183 (-.169 to .534). Moderator analysis yielded:  $Q(1) = .786, p = .375$ , indicating that there was no statistically significant difference between Sole/Main and General Multi programs.

### Mediators of Program Effectiveness

In the fourth research question, it was asked of this meta-analysis whether social-emotional development, cognitive development, identity development, parent and peer relationships, and treatment adherence mediated the relation between mentoring quality and youth outcomes. Unfortunately, none of the fourteen studies reported data on the independent variable mentoring quality; none reported data on youth development or treatment adherence; and only two studies reported data

on parent and peer relationships. Therefore, there was insufficient information available to conduct mediation analyses.

### Publication Bias

When the research that appears in the published literature is systematically unrepresentative of the population of completed studies, this is referred to as “publication bias” (Borenstein et al., 2009). Furthermore, when publication bias is present, conclusions drawn from the published literature may be inaccurate. One hypothesized reason for publication bias is the “File Draw Effect” (Rosenthal, 1979) - the theory that statistically significant results are more likely to be published than null findings, thus biasing the literature base and, consequently, meta-analyses. Another potential reason for publication bias is the tendency for smaller studies to be conducted more rigorously and/or with better, “tighter” programs (Borenstein et al., 2009). In the current meta-analysis, the fourteen included samples were tested for whether they represent a biased sample of all studies. The following statistical procedures were conducted to analyze the potential for publication bias: forest plot, funnel plot, rank correlation, regression, fail-safe  $N$ , and the trim and fill method.

### Forest plot

The forest plot presents a visual representation of the data (Borenstein, 2006). See Figure 2. It is organized such that samples with the greatest weight contribution (i.e., largest sample sizes and smallest standard errors) are on the bottom. As seen in Figure 2, the tendency for

samples with smaller weight contributions (due to smaller  $n$ s) to have greater effect sizes may be indicative of a publication bias.

#### Funnel plot

The funnel plot is a plot of the measure of sample standard error on the vertical axis as a function of Hedge's  $g$  on the horizontal axis. See Figure 3. When samples are distributed symmetrically about the combined effect size, publication bias is absent. When the bottom of the plot shows a higher concentration of samples on one side of the mean than on the other, publication bias is present (Borenstein, 2006). In the current meta-analysis, samples at the bottom are clustered toward the right-hand side of the graph, suggesting the possibility of publication bias.

#### Begg and Mazumdar rank correlation test

To quantify the bias captured by the funnel plot, Begg and Mazumdar (1994) suggested that this inverse correlation between standard error (sample size) and effect size can be computed and serve as a test of publication bias. Specifically, a rank order correlation (Kendall's tau  $b$ ) between the treatment effect and the standard error is computed. A significant correlation suggests the existence of bias. In the current analysis, Kendall's tau  $b = .275$ ,  $Z = 1.369$ ,  $p(1\text{-tailed}) = .086$ ,  $p(2\text{-tailed}) = .171$ ; therefore, the rank correlation test does not indicate significant publication bias.

#### Egger's regression test

Similarly, Egger's linear regression method (Egger, Davey Smith, Schneider, & Minder, 1997) is also intended to quantify the bias captured

by the funnel plot. Egger, however, suggests using the actual values of the effect sizes and their precision, rather than ranks, by regressing the standardized effect on the inverse of the standard error. In the resulting regression equation, the slope represents the treatment effect, and the intercept is a measure of bias. A significant intercept suggests the existence of bias. In the current analysis, Intercept = 1.336,  $SE = 1.418$ ,  $CI_{95} = -1.754$  to  $4.426$ ,  $t(12) = .942$ ,  $p(1\text{-tailed}) = .182$ ,  $p(2\text{-tailed}) = .365$ . These p-values suggest no significant publication bias.

#### Fail-safe $N$

If publication bias is present, it is hypothesized that some non-significant studies are missing from our analysis, and including these missing studies would nullify the observed effect. Therefore, the number of studies that would be required to nullify the effect – the Fail-safe  $N$  (FSN) – is computed. As reported in the above results, this meta-analysis incorporates data from fourteen studies, which yield a z-value of 6.778 and corresponding p-value less than 0.001. The FSN is 154, which means that 154 null studies (mean Hedge's  $g = 0$ ) would need to be located and included in order for the combined p-value to exceed 0.05. More conservatively estimated, when the alpha level was set to 0.01 (instead of 0.05), analysis yielded a FSN of 83.

Rosenthal (1979) suggested that the FSN be equal to or larger than five times the number of retrieved studies (or, in this case, independent samples) plus 10. Both FSN estimates in this meta-analysis exceed



Rosenthal's recommended resistance number,  $14 \times 5 + 10 = 80$ , thus indicating no significant bias.

Duval and Tweedie's trim and fill

Based on the four methods above, there is some possibility of publication bias. Next, it is important to ask how the intervention effect (overall effect size) would *shift* if bias were to be removed. In reference to the funnel plot, because a relatively high number of small samples (with large effect sizes) fall toward the right of the mean and relatively few fall toward the left, there is concern that these "left-hand" studies may actually exist and are missing from the analysis. Duval and Tweedie (2000) developed a method that allows for the imputation of these studies, called Trim and Fill. That is, the theoretical locations of these missing studies are determined, the studies are added to the analysis, and then the combined effect is recomputed. In the current analysis, the trim and fill method suggests that two studies are missing. See Figure 3 for a funnel plot with these two imputed samples (filled circles). Under a random effects model, Hedge's  $g$  and 95% confidence interval for the combined studies is 0.366 (.170 to .563). Using Trim and Fill, the imputed Hedge's  $g$  estimate is 0.308 (.118 to .497).

In summary, upon visual inspection of the forest and funnel plots, there appears to be a potential for publication bias. The rank correlation and intercept tests, however, indicate the absence of significant bias. The fail-safe  $N$  suggests that 154 studies with null findings would need to be found in order to bring the overall effect size to a non-significant level.

That is, for every one of the fourteen observed samples in this meta-analysis there would need to be 11 missing null samples for the overall effect to be nullified. The trim and fill method indicates that, to remove even small bias in this meta-analysis, two samples would need to be added. The overall effect, although a little smaller than the original (.308 v .366), remains positive and significantly greater than zero. Taken together, findings in this meta-analysis appear to be robust.

Figure 2.

## Meta-analysis results and forest plot

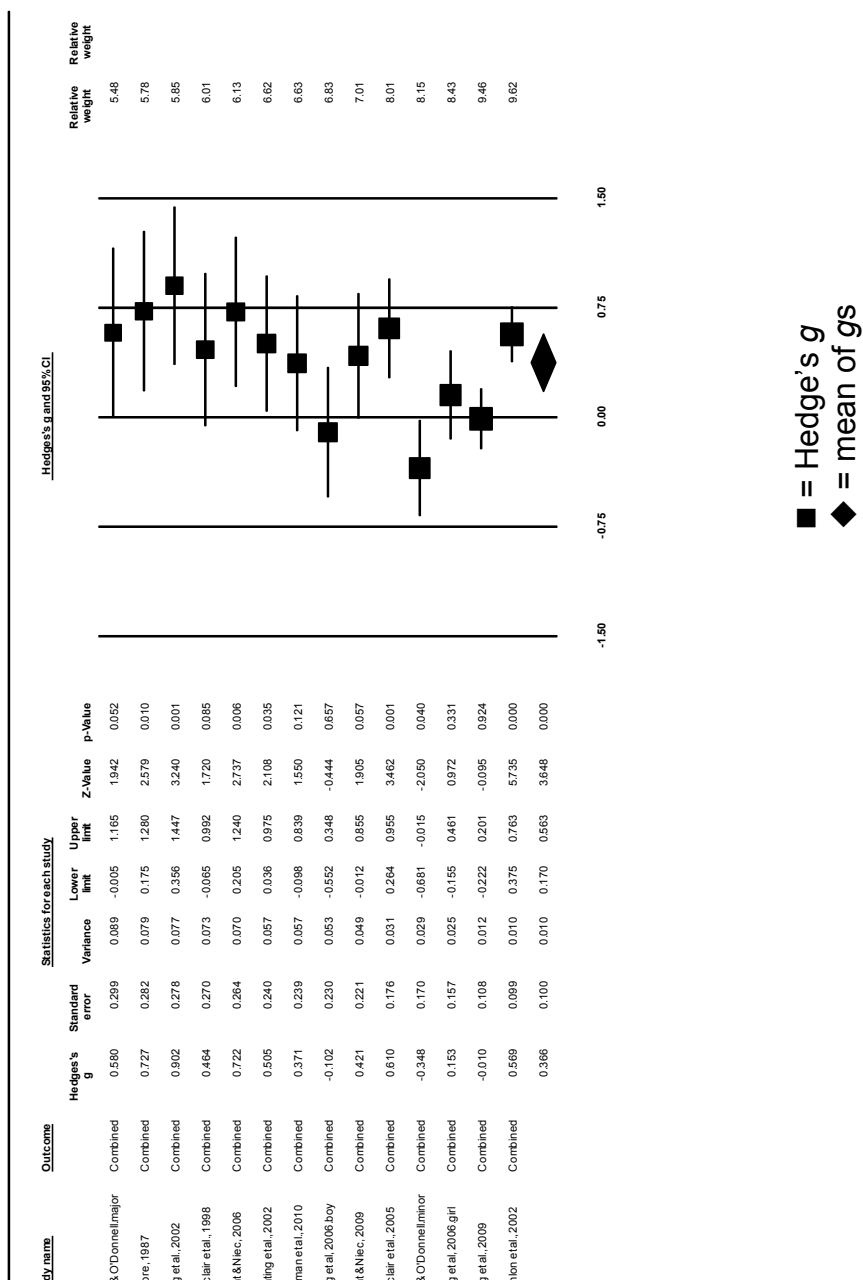
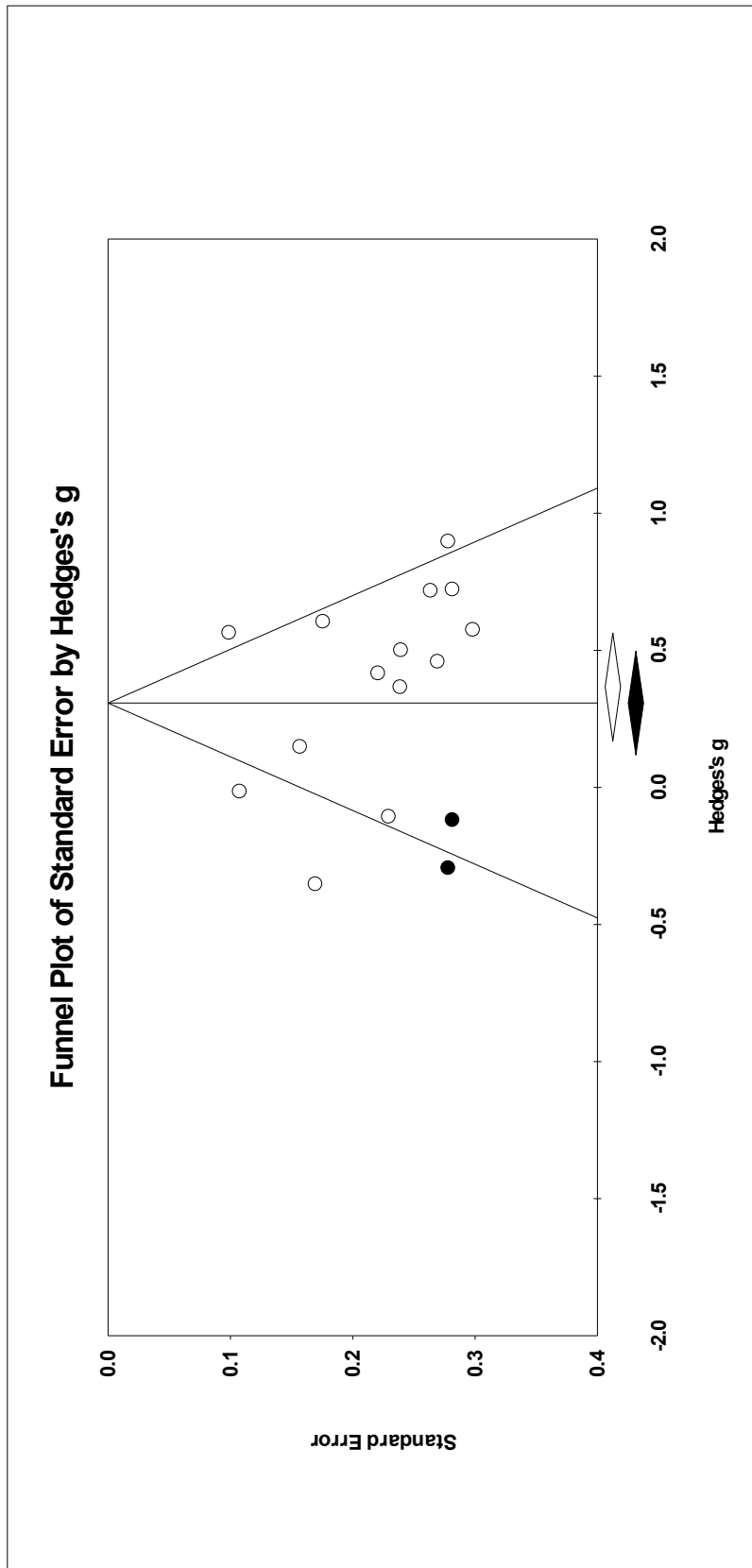


Figure 3.



## CHAPTER IV

### DISCUSSION

The current investigation sought to understand whether mentoring is a viable option as an adjunctive psychosocial treatment approach, as opposed to its typical usage as a prevention intervention. Specifically, a meta-analysis was conducted that examined the effectiveness of mentoring programs that target youth with emotional and behavioral problems, as well as examined the factors that enhance (and dilute) effectiveness. Findings of this meta-analysis provide support for the success of such mentoring programs. In comparison to prior meta-analyses of youth mentoring programs, prevention interventions more broadly, and treatment effectiveness studies, mentoring interventions that expressly targeted mentally ill youth fared well, with a small-to-moderate effect size. Youth in these programs were helped the most with (i.e., the magnitude of the effect was even greater for) externalizing symptoms, academic/school problems, and interpersonal factors/skills, as compared with internalizing symptoms. This finding is largely consistent with reviews of the broader mentoring literature (DuBois et al., 2002, 2011) and aligns well with the current psychosocial treatment evidence base. That is, children and adolescents who present with internalizing symptoms (e.g., depression) are typically successfully treated with individual and/or group psychotherapy, sometimes with collateral family sessions, and/or psychopharmacology by a trained clinician (Oswald & Mazefsky, 2006); whereas, youth who present with behavioral, academic, and interpersonal

problems often require interventions that involve support outside of the therapy hour, the addition of positive role models, and connections with larger systems, such as family, peers, schools, and the juvenile justice system (Lipsey, Wilson, & Cothorn, 2000; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998; O'Conner, Rodriguez, Cappella, Morris, & McClowry, 2012; Terzian, Hamilton, & Ling, 2011). Mentors can provide direct supports to such youth and serve as conduits to these larger systems.

### Moderators

Working from the understanding that, on average, mentoring programs can be beneficial for youth with emotional and behavioral problems, the next step was to examine a number of factors that could potentially augment an intervention's effect size (i.e., moderators). The goal being: If moderators can be identified, perhaps mentoring programs can be improved by incorporating program practices that evinced positive effects for youth. This meta-analysis examined the following moderators: (a) formal versus natural mentoring, (b) mentor-mentee ratio, (c) location of service provision, (d) program duration, (e) level/type of service provided by mentors, (f) mentors training and supervision, (g) level of parental involvement, (h) youth demographics – age, gender, race/ethnicity, (i) youth risk factors, (j) whether youth obtained additional mental health services outside of the mentoring program, and (k) the presence of mentoring as an independent intervention versus part of a multi-component program.

### Formal versus natural mentors

Programs that employed “formal” mentors were more effective than those that employed “natural” mentors (i.e., non-parental adults who are established figures in the young person’s life such as a teacher, coach, or uncle). Although extant research supports the positive effect of natural mentors in the lives of youth, particularly in their ability to prevent mental health and academic problems (Erickson, McDonald, & Elder, 2009; Sánchez, Esparza, Colón, 2008), children and adolescents with emotional and behavioral problems often require more intensive, targeted support from additional adults *outside their existing network*. One study on natural mentoring (Whitney, Hendricker & Offutt, 2011) concluded that, “certain types of youth difficulties (e.g., depressive symptoms, delinquency) might present substantial challenges, and might be indicative of a need for other services (e.g., therapy). Interestingly, it seems that for these types of difficulties, having a low quality relationship may have more negative effects than not having a mentor.” One might hypothesize that formal, well-trained mentors may be more likely to provide youth with emotional and behavioral problems with the high-quality relationships they need. Furthermore, natural mentors in the lives of youths with environmental stressors may be affected by the same risk factors affecting these youth, and, therefore, they may be overly taxed themselves and less physically and emotionally available to provide the needed support. Nevertheless, the two studies (three independent samples) included in the natural mentoring group were performed with

very high-risk groups (i.e., suicidal teens; King et al., 2006, 2009). The decreased effectiveness of the mentors in these studies may be more due to the severity of the youths' mental health problems, rather than whether mentors had pre-existing relationships with the youth involved.

#### Mentor-Mentee ratio

Mentoring interventions that paired every mentee with his or her own mentor were, on average, not significantly differentially effective than programs that utilized a mentor-to-mentee ratio greater than 1:1. Given the heightened needs of youth with emotional and behavioral problems, it would be expected that reducing the individual attention paid to youth would in turn reduce an intervention's effect. However, analogously to individual psychotherapy, other models such as group therapy have demonstrated efficacy (Hoag & Burlingame, 1997), and further investigations of alternative models of mentoring for this specialized population are necessary before drawing definitive conclusions about their efficacy.

#### Setting of mentoring activities

The setting and context in which mentoring takes place has been an important subject of inquiry in the mentoring literature (e.g., Herrera, Sipe, McClanahan, Arbreton, & Pepper, 2000), with implications for reach, accessibility, and effectiveness. In the current study, programs that, at least in part, took place in a school or hospital/clinic – i.e., at a site location – were more effective than purely community-based mentoring programs. School- and clinic-based programs may have certain advantages



over community-based programs for youth with emotional and behavioral problems. For instance, school- and clinic-based mentoring programs can provide structure and a sense of place, and they can capitalize on the knowledge, referrals, supervision, and support of other adults (aside from their mentors) who are already in those settings (Rhodes, 2002a).

### Program Duration

Standard logic would predict that more mentoring is good mentoring; nevertheless, the current study, consistent with prior meta-analyses (DuBois et al., 2002, 2011; Jolliffe & Farrington, 2007), showed no difference in program effectiveness based on program duration. Further, DuBois and colleagues (2011) hypothesized that whether relationships are continued for the full duration of whatever time frame is established as an expectation in programs may be more important than the duration itself; however, evidence in this meta-analysis did not support this hypothesis. In the larger context of interventions targeting youth with emotional and behavioral problems, short-term as well as long-term interventions have shown efficacy (see SAMHSA's NREPP <http://www.nrepp.samhsa.gov/>). Mentoring may be no different in this respect. What may be more vital to an effective intervention is the ability to build a meaningful relationship, accomplish goals, and terminate the relationship in a respectful manner (Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008).

### Level/Type of service provided by mentors

Because almost every included study evaluated programs in which mentors provided “direct support” versus only providing “indirect support” to youth, this variable was not analyzed due to insufficient variability. Programs in which mentors directly utilized cognitive-behavioral skills (e.g., contingency management, problem-solving) to help their mentees were not significantly more effective than other programs. Similarly, DuBois and colleagues (2002, 2011) found that effectiveness was not significantly greater when programs adopted a primary emphasis on instrumental aims or when there was a focus on providing explicit skills training within a structured framework. The potential for mentors to use CBT skills in an effective manner in the mentoring relationship context may be dependent on additional factors such as mentors’ training and supervision quality and the youths’ individual and environmental risk factors. Nevertheless, less directive forms of mentoring, such as modeling, emotional support, and play, may be equally or more important for mentor-mentee relationships.

### Mentor training and supervision/support

Most mentoring programs in this meta-analysis provided initial, population-specific training to their selected mentors, suggesting that pre-service training, particularly when working with clinical populations, is a critical component of effective mentoring programs. Ongoing training and supervision/support, however, are not as status quo. Inconsistent with extant research (DuBois et al., 2002), programs that provided ongoing

training to their mentors fared no better or worse than programs that did not, and unexpectedly, programs that provided supervision/support to their mentors fared *worse* than programs that did not. The reason for this counterintuitive result is unclear at this time. Among the studies in the “no supervision” group, two studies (three samples) utilized natural mentors and targeted very high risk, suicidal youth (King et al., 2006, 2009). When these studies were removed from analysis, the difference between programs that provided supervision to mentors and those that did not became non-significant. Perhaps the significant difference initially detected was confounded by the type of mentors and severity of youth. Additionally, further investigation into the *quality* of training and supervision may shed light on this finding. For instance, mentor training and supervision could prove more effective when provided individually or in a group format, with some level of consistency and frequency, when concrete skills are provided, etc. Future research is necessary to test such hypotheses and understand the factors that influence mentor training and supervision within programs that target youth with emotional and behavioral problems.

### Parental Involvement

Consistent with prior research (DuBois et al., 2002), when opportunities for parental involvement were provided by programs, the programs were more effective. Even more so, when parents became directly involved in the intervention (as opposed to more peripherally involved), youth had better outcomes. Parents generally have more

influence than mentors over their children, in terms of relationship quality (attachment) and quantity of time spent together. Thus, mentoring programs that include parents may capitalize on this influence.

Furthermore, as parents become more involved in the mentoring program, their relationship with their child may improve as well, which in turn can improve youth outcomes (Rhodes, 2005).

### Youth Characteristics

No relationship was found between program effectiveness and mentees' average age, gender, and race/ethnicity, which is largely consistent with prior meta-analyses (DuBois et al., 2002; Jolliffe & Farrington, 2007; *cf.* DuBois et al., 2011). Moreover, three studies independently examined gender as a moderator (Keating et al., 2002; King et al., 2009; Wyman et al., 2010), and one split its sample and analysis by gender (King et al., 2006). Among these four studies, two found mentoring to be more effective for girls on at least one outcome (King et al., 2006; Wyman et al., 2010), and two found no gender difference (Keating et al., 2002; King et al., 2009). Overall, the effectiveness of mentoring for youth with emotional and behavioral problems (and more generally) does not differ for boy and girl mentees; however, gender may be a moderator for specific outcomes or sub-groups. For example, Karcher (2008) found a three-way interaction effect, that school-based mentoring was particularly helpful for elementary school boys and high school girls. As discussed below, the current meta-analysis was underpowered to examine the effect of individual moderators (i.e., two-way interactions), let alone multiple

moderators (three-way interactions). Future meta-analyses of sufficient size can perform such analyses to address these more nuanced questions.

In addition to demographic information, youth enter mentoring programs with other key characteristics that may influence program practices and outcomes. Mentoring programs for youth with emotional and behavioral problems, by definition, include youth with one or more individual risk factors. In the current meta-analysis, those risk factors broke down into three groups: externalizing symptoms, internalizing symptoms, and school/academic problems. (Although the categories are similar, risk factors differ from outcomes. Risk factors are characteristics identified prior to program implementation, typically used as inclusion criteria. Outcomes are dependent variables that measure change.) Of the three risk factors identified, only externalizing symptoms were found to be a significant factor in terms of relation to youth outcomes. Specifically, programs that enrolled youth who demonstrated externalizing symptoms (e.g., behavior problems, delinquency) were more effective than those that did not. Taken together with the current study's sub-meta-analyses of outcome categories (externalizing, internalizing, interpersonal, school/academic), mentoring of this nature appears to be more effective in helping youth with externalizing, school/ academic, and interpersonal problems. Environmental risk factors such as socioeconomic status were not analyzed due to insufficient data among eligible studies. Future program evaluations would be wise to collect and include this information, which would allow those studies, as well as subsequent meta-analyses, to

examine the effects of environmental risk factors for this special population of mentored youth.

#### Additional mental health services

Given the clinical concerns of the population of study and the likelihood that these youth may receive mental health services (e.g., psychotherapy, medication), knowing if mentoring can work well in conjunction with other interventions is of utmost importance. Results of the current meta-analysis suggest that mentoring programs that enroll youth who obtain additional mental health services outside of the program are equally as effective as programs that enroll youth who do not obtain these services. This result runs counter to what might be expected (i.e., that more services would improve youth outcomes); nevertheless, the disjointed nature of services (i.e., not part of one, unified program or system) may be responsible for the lack of improvement, if not a decline, in youth outcomes. Additionally, interpretations of this analysis should be made with caution given that studies that did not *report* that their participants obtained additional mental health services may have actually enrolled youth who obtained these services, but simply did not collect and report this variable.

#### Mentoring as a vehicle for change: Sole/Main versus General Multi-component programs

Similarly, programs that treated mentoring as the sole intervention or the main intervention in a multi-component program were not significantly more effective than multi-component programs that included

mentoring components but did not treat mentoring as the core intervention. Given the notion that youth with emotional and behavioral problems in mentoring programs are also likely seeking mental health services elsewhere and/or may be involved in other non-mentoring programs, further analysis is needed to better parse out the effect of these additional components/ services.

### Limitations

The current meta-analysis does not come without limitations. First and foremost, this study was conducted with a small sample of fourteen studies. Although power analysis indicated that fourteen studies of their size are adequate to detect even small effects, there were an inadequate number of studies to conduct moderator analyses with substantial power. Therefore, caution should be taken when interpreting the results of moderator analyses. Secondly, four of the fourteen included studies used a cross-sectional, post-test-only intervention design and, by definition and design, did not control for baseline scores on outcome measures. If youth are not well matched on outcome measures at baseline, resulting differences between groups after intervention implementation may be erroneous. To minimize this error, the current meta-analysis only included post-test-only studies that matched youth on or statistically controlled for demographic and risk factors. Furthermore, moderator analysis looking at study design found no significant difference in effect for pre-post versus post-only study designs. Third, due to the paucity of mentoring evaluations that examined theoretical mediators of mentors' effect on

youth (e.g., social-emotional development, parental relationships, treatment adherence), particularly among the subset of studies that investigated youth with emotional and behavioral problems, mediator analyses were not conducted in this meta-analysis. Fourth, as with all meta-analyses, this meta-analysis was limited by the perspective of and data collected and reported by the individual studies included. As a key example, only very few of the studies included in this meta-analysis reported environmental risk data (e.g., socioeconomic status, neighborhood context, parental education, etc.), and therefore, the potential moderating effect of environmental risk could not be examined.

#### Implications for Research, Practice, and Policy

Especially when compared with evaluations of more traditional interventions (e.g., individual psychotherapy), mentoring research is still in its infancy, particularly for mentoring programs targeting youth with mental health problems. High-quality, rigorous empirical research via randomized-control trials (RCTs) – that can be included in future meta-analyses – is needed in this sub-field. Increasing the number of such evaluations would allow for more robust and nuanced meta-analytic investigation, particularly when examining program practices and characteristics that influence program effectiveness as moderators and via mediation. Further, the mentoring field will benefit from future studies that test the applicability of Rhodes' (2005) entire model, examining direct and indirect pathways of effect as well as moderators, and youth with emotional and behavioral problems will benefit from such studies being



conducted with their specialized population, so that mentoring theory and practice can be relevant and specifically tailored to their needs.

Results of the current meta-analysis suggest that mentoring programs for youth with emotional and behavioral problems may improve their impact on youth by including certain practices. Specifically, developing a formal mentoring program for youth housed in schools or clinics that train mentors well, directly involve parents and caregivers, and target behavioral, interpersonal, and academic problems, may help to maximize a program's impact. Nevertheless, further experimentation and replication of these results is needed before shifting standard practice and policy.

This meta-analysis reveals that mentoring programs for youth with mental health problems produce meaningful results in terms of improving youths' psychological, behavioral, and academic outcomes, and knowledge of the factors that enhance program effectiveness will only lead to better outcomes. Taken within the context of an economic sequestration, plummeting insurance reimbursement rates, the Affordable Care Act, and the need to provide quality healthcare services to as many people and at as low of a cost as possible, mentoring may be a solid option as an alternative or adjunctive intervention in the treatment of youth with emotional and behavioral problems. Although mentoring is known for its economy, future cost-benefit and cost-effectiveness analyses for these specialized programs can provide an accurate assessment of their value. As it is now, the results of this study are promising for the future of mentoring as a

means to expand and improve upon the current mental healthcare service delivery system.

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## Appendix A

## Coding Guide

Coding practices: code “999” for all missing/unknown information, unless otherwise specified

## PROGRAM CHARACTERISTICS

[intent] \_\_\_\_\_ **Intention of the program developers and implementers**

1 = if the program was built with the intention of helping youth mental health problems

2 = if the program is a general mentoring program and is now being tested on a sub-population of youth with mental health problems.

[compser] \_\_\_\_\_ **Other non-mentoring program components and other programs/ services obtained by youth**

1 = Mentoring is the sole intervention (not a multi-component program)

2 = Mentoring is the central component of a multi-component program

3 = Mentoring is one of several components of a multi-component program and is *not* considered the central component

**List up to seven non-mentoring program components and/or other programs/services obtained by youth outside of the target program AND indicate what percentage of youth are involved in those components/services**

[compser\_1] \_\_\_\_\_ \_\_\_\_\_

[compser\_2] \_\_\_\_\_ \_\_\_\_\_

[compser\_3] \_\_\_\_\_ \_\_\_\_\_

[compser\_4] \_\_\_\_\_ \_\_\_\_\_

[compser\_5] \_\_\_\_\_ \_\_\_\_\_

[compser\_6] \_\_\_\_\_ \_\_\_\_\_

[compser\_7] \_\_\_\_\_ \_\_\_\_\_

- [natfor] \_\_\_\_\_ **Were mentors (recruited) through a “formal” mentoring program or from “natural” support persons?**
- 1 = Formal  
2 = Natural
- Where did mentoring practices/sessions take place?**
- [loc\_sch] \_\_\_\_\_ School
- [loc\_sit] \_\_\_\_\_ Site (e.g., community-based organization like Boys & Girls Club)
- [loc\_hos] \_\_\_\_\_ Hospital or clinic
- [loc\_com] \_\_\_\_\_ Community (i.e., out in the community at the discretion of the mentor and mentee)
- [ratio] \_\_\_\_\_ **What were the primary interpersonal context(s) within which mentoring interactions took place in the program (i.e., who participated in any given mentoring contact or session)?**
- 1 = One mentor and one youth  
2 = One mentor and a group of youth all assigned to that mentor (i.e., “group mentoring”; does not include situations in which the mentor got together at separate times with different youth)  
3 = More than one mentor and a group of youth all assigned to those mentors (i.e., “team mentoring”; does not include situations in which distinct mentor-youth pairs met at the same time and location)  
4 = More than one mentor and a single youth assigned to all those mentors (i.e., co-mentoring)  
For “other”, write in: \_\_\_\_\_

#### DURATION and FREQUENCY

- [prgdur] \_\_\_\_\_ **Program duration (# of months)**
- [prgfrq] \_\_\_\_\_ **Mentoring frequency of contact (# of hours/month)**

## MENTOR-MENTEE RELATIONSHIP

**Type of support provided by mentors** [see training or roles/ responsibilities of mentors for this information]

[supbymen\_d] \_\_\_\_\_ “Direct” – e.g., talk with youth about interpersonal and social-emotional difficulties, model effective problem-solving, rehearse skills learned in therapy, and be a safety line during crisis [0 = No/unknown, 1 = Yes]

[supbymen\_i] \_\_\_\_\_ “Indirect” e.g., encourage youth to obtain therapeutic services by talking with youth about obtaining support services, de-stigmatizing therapy, and providing transportation; ensure youth take prescribed medications [0 = No/unknown, 1 = Yes]

[supbymen\_o] \_\_\_\_\_ Mentors provide support but does not seem to fit any of the above three categories. [0 = No, 1 = Yes]

[supbymen\_s] \_\_\_\_\_ **Write in all specific supports provided by mentors.**

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[activs] \_\_\_\_\_ **What other activities did mentors and mentees do together?** [Write in]

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## MENTOR TRAINING and SUPERVISION

[mantra\_p] \_\_\_\_\_ **Did mentors receive initial/preservice training?** [0 = No/unknown, 1 = Yes]

[mantra\_o] \_\_\_\_\_ **Did mentors receive ongoing training?** [0 = No/unknown, 1 = Yes]

[mantra\_t] \_\_\_\_\_ **Did mentor training target the needs of youth with this specific mental health concern?** [0 = No/unknown, 1 = Yes]

[mensup] \_\_\_\_\_ **Did mentors receive supervision/support?** [0 = No/unknown, 1 = Yes]



## PARENTAL INVOLVEMENT

- [parsup] \_\_\_\_\_ **Did the program offer opportunities for parents and caregivers to either receive support or support their children and the mentoring relationship?** [0 = No/unknown, 1 = Yes]
- [parsup\_d] \_\_\_\_\_ **Parents/caregivers directly involved** (e.g., parents invited to attend mentoring sessions, parents assist in goal setting, program includes parent training component) [0 = No/unknown, 1 = Yes]
- [parsup\_i] \_\_\_\_\_ **Parents/caregivers indirectly involved** (e.g., parents contacted by program staff or mentors to inform them of what their children are doing) [0 = No/unknown, 1 = Yes]
- [parsup\_s] \_\_\_\_\_ **Write in all ways in which parents and caregivers received support or supported their children and the mentoring relationship.**
- 
- 

YOUTH CHARACTERISTICS	
S4_001	What was the number of female treatment youth?
S4_002	What was the number of male treatment youth? [If unknown, enter 999]
S4_003	What was the total number of treatment youth?
S4_004	What was the average age of treatment youth? [in years, at start of program, rounded to nearest whole #; use median if average is not available or use average grade level where age = grade + 6. Apply same rule to average age of control youth, min and max age of youth, and modal developmental level of youth. If unknown, enter 999]
S4_005	What was the minimum age of treatment youth? [If unknown, enter 999]
S4_006	What was the maximum age of treatment youth? [If unknown, enter 999]
S4_007	What was the ethnicity of treatment youth? [Approx. %] Non-Hispanic or Latino(a)
S4_008	Hispanic or Latino(a)
S4_009	Unspecified

	<b>What was the race of treatment youth? [Approx. %]</b>
S4_010	White [Include Hispanic or Latino(a) mentors in this category if ethnicity and race separated in study]
S4_011	Black or African-American
S4_012	American Indian or Alaska Native
S4_013	Asian or Pacific Islander
S4_014	Native Hawaiian or other Pacific Islander
S4_015	Unspecified
S4_016	Other (S4_016.1: _____)
	<b>What was the SES of treatment youth? [Approx. %]</b>
S4_027	Low
S4_028	Middle
S4_029	High
S4_030	Unspecified
	<b>Risk factors</b> [Risk factors are those characteristics, variables, or hazards that, if present for a given youth, make it more likely that one or more areas of the youth's development or adaptation will be negatively affected <sup>E</sup> . When coding any risk factor, endorse only if there is evidence suggesting that it was present in at least 50% of youth]
S4_04	Did treatment youth exhibit or have in their backgrounds any <u>contextual risk events</u> that occur outside the individual as well as external conditions that are likely to be present in the youth's environment. Exclude individual factors that are the direct product of a behavior and that occurred up to 1 year before the study to avoid counting the same factor more than once] 0 = No (Skip to S4_058)      2 = Unspecified (Skip to S4_058) 1 = Yes
	<b>If YES to CONTEXTUAL for treatment youth, specify which factors</b> [Select all that apply]
S4_041	Availability/use of alcohol, tobacco, and other drugs at home or community
S4_042	Availability of firearms at home or community
S4_043	Community deterioration/disorganization
S4_044	Problematic school climate/poorly functioning schools
S4_045	Lack of communal spaces for recreation
S4_046	Exposure to community violence, crime and/or gangs
S4_047	Household poverty/deprivation
S4_048	Single parent household
S4_049	Domestic violence [Continue on next page]
S4_050	Normative school transition

	<p><b>S4_051</b> ___ Non-normative school change</p> <p><b>S4_052</b> ___ Lack of non-parental adult role model</p> <p><b>S4_053</b> ___ Parental incarceration</p> <p><b>S4_054</b> ___ Parental unemployment</p> <p><b>S4_055</b> ___ Involvement in juvenile system</p> <p><b>S4_056</b> ___ Involvement in child welfare (foster care)</p> <p><b>S4_057</b> ___ Other(s) (<i>S4_057.1</i>: _____)</p>
<b>S4_058</b>	<p><b>Did treatment youth exhibit or have in their backgrounds any <u>individual risk factor(s)</u>? [Individual risk factors are biological, behavioral, cognitive, or psychosocial characteristic of the youth]</b>  0 = No (<i>Skip to S4_096</i>)      2 = Unspecified (<i>Skip to S4_096</i>)  1 = Yes</p>
	<p><b>If YES to INDIVIDUAL for treatment youth, specify which factors [Select all that apply. If limited to a variable that can be coded somewhere else, do not code here]</b></p> <p><b>S4_059</b> ___ Bullying others</p> <p><b>S4_060</b> ___ Fighting and other aggressive behavior</p> <p><b>S4_061</b> ___ Behavior problems at school (other than bullying or fighting)</p> <p><b>S4_062</b> ___ Behavior problems (unspecified)</p> <p><b>S4_063</b> ___ Low academic achievement</p> <p><b>S4_064</b> ___ Truancy/school absenteeism</p> <p><b>S4_065</b> ___ School drop out</p> <p><b>S4_066</b> ___ Learning disorder/disability</p> <p><b>S4_067</b> ___ Intellectual and/or development disabilities</p> <p><b>S4_068</b> ___ Physical disability</p> <p><b>S4_069</b> ___ Poor physical health</p> <p><b>S4_070</b> ___ Mental disorder/mental health problem (internalizing)</p> <p><b>S4_071</b> ___ Depressive symptoms/disorder</p> <p><b>S4_072</b> ___ Anxiety symptoms/disorder</p> <p><b>S4_073</b> ___ Somatic complaints/Somatization disorder  Suicidal ideation/attempt(s) (may be related to a variety of disorders)</p> <p><b>S4_074</b> ___</p> <p><b>S4_075</b> ___ Mental disorder/mental health problem (externalizing)</p> <p><b>S4_076</b> ___ Oppositional defiant disorder</p> <p><b>S4_077</b> ___ Conduct disorder</p> <p><b>S4_078</b> ___ Attention Deficit Hyperactivity Disorder (ADHD)</p>

	<p>S4_079 ___ Bipolar Disorder</p> <p>S4_080 ___ Schizophrenia</p> <p>S4_081 ___ Psychosis (may be related to a variety of disorders)</p> <p>S4_081 ___ Mental disorder/mental health problem (unspecified)</p> <p>S4_083 ___ Early onset of delinquency</p> <p>S4_084 ___ Favorable attitudes toward delinquent behavior</p> <p>S4_085 ___ Delinquent behavior (crimes against people)</p> <p>S4_086 ___ Delinquent behavior (crimes against property)</p> <p>S4_087 ___ Delinquent behavior (unspecified)</p> <p>S4_088 ___ Substance use/abuse</p> <p>S4_089 ___ Poor attachment</p> <p>S4_090 ___ Poor social skills</p> <p>S4_091 ___ Experiencing sexual assault</p> <p>S4_092 ___ Early sexual involvement</p> <p>S4_093 ___ Teen pregnancy</p> <p>S4_094 ___ Teen parenthood</p> <p>S4_095 ___ Other(s) (S4_094.I: _____)</p>
S4_09 6	<p><b>Did treatment youth exhibit or have in their backgrounds any processual risk factor(s)?</b> [<i>Processual risk factors are interpersonal interactions and transactional exchanges between the youth and others</i>]</p> <p>0 = No (Skip to S4_103)                      2 = Unspecified (Skip to S4_103)</p> <p>1 = Yes</p>
	<p><b>If YES to PROCESSUAL factors for treatment youth, specify which factors.</b> [<i>Select all that apply</i>]</p> <p>S4_097 ___ Parent-child relationship problems</p> <p>S4_098 ___ High family conflict (distinct from parent-child relationship problems)</p> <p>S4_099 ___ Low parental monitoring</p> <p>S4_100 ___ Lack of parental interaction/involvement</p> <p>S4_101 ___ Associations with delinquent/deviant peers</p> <p>S4_102 ___ Other(s) (S4_101.I: _____)</p>
S4_10 3	<p><b>Did treatment youth exhibit or have in their backgrounds any historical risk factor(s)?</b> [<i>Historical risk factors are distal events or experiences that occurred more than a year ago in the youth's past</i>]</p> <p>0 = No (Skip to S4_111)                      2 = Unspecified (Skip to S4_111)</p> <p>1 = Yes</p>

		<b>If YES to HISTORICAL factors for treatment youth, specify which factors [Select all that apply]</b>
	<b>S4_104</b>	<input type="checkbox"/> Family mobility
	<b>S4_105</b>	<input type="checkbox"/> Non-normative school changes
	<b>S4_106</b>	<input type="checkbox"/> International immigration
	<b>S4_107</b>	<input type="checkbox"/> Foster care
	<b>S4_108</b>	<input type="checkbox"/> Incarceration
	<b>S4_109</b>	<input type="checkbox"/> Child maltreatment/abuse/neglect
	<b>S4_110</b>	<input type="checkbox"/> Other(s) (S4_110.1: _____)
<b>S4_11</b>	<b>1</b>	<b>What was the number of female control youth? [If unknown, enter 999.]</b>
<b>S4_11</b>	<b>2</b>	<b>What was the number of male control youth? [If unknown, enter 999]</b>
<b>S4_11</b>	<b>3</b>	<b>What was the total number of control youth?</b>
<b>S4_11</b>	<b>4</b>	<b>What was the average age of control youth? [in years, at start of program, rounded to nearest whole #; use median if average is not available or use average grade level where age = grade + 6. Apply same rule to average age of control youth, min and max age of youth, and modal developmental level of youth. If unknown, enter 99]</b>
<b>S4_11</b>	<b>5</b>	<b>What was the minimum age of control youth? [If unknown, enter 999]</b>
<b>S4_11</b>	<b>6</b>	<b>What was the maximum age of control youth? [If unknown, enter 999]</b>
<b>S4_11</b>	<b>7</b>	<b>What was the ethnicity of control youth? [Approx. %]</b> Non-Hispanic or Latino(a)
<b>S4_11</b>	<b>8</b>	Hispanic or Latino(a)
<b>S4_11</b>	<b>9</b>	Unspecified
<b>S4_12</b>	<b>0</b>	<b>What was the race of control youth? [Approx. %]</b> White [Include Hispanic or Latino(a) mentors in this category if ethnicity and race separated in study]
<b>S4_12</b>	<b>1</b>	Black or African-American
<b>S4_12</b>	<b>2</b>	American Indian or Alaska Native

<b>S4_12</b>		
<b>3</b>		Asian
<b>S4_12</b>		
<b>4</b>		Native Hawaiian or other Pacific Islander
<b>S4_125</b>		Unspecified
<b>S4_12</b>		
<b>6</b>		Other ( <i>S4_126.1</i> : _____)
		<b>What was the SES of control youth? [Approx. %]</b>
<b>S4_13</b>		
<b>7</b>		Low
<b>S4_13</b>		
<b>8</b>		Middle
<b>S4_13</b>		
<b>9</b>		High
<b>S4_14</b>		
<b>0</b>		Unspecified
		<b>Risk factors</b> [ <i>Risk factors are those characteristics, variables, or hazards that, if present for a given youth, make it more likely that one or more areas of the youth's development or adaptation will be negatively affected<sup>E</sup>. When coding any risk factor, endorse only if there is evidence suggesting that it was present in at least 50% of youth</i> ]
<b>S4_15</b>		<b>Did control youth exhibit or have in their backgrounds any contextual</b> <i>are events that occur outside the individual as well as external conditions that are likely to be present in the youth's environment. Exclude individual factors that are the direct product of a behavior and that occurred up to 1 year before the study to avoid counting the same factor more than once</i> 0 = No ( <i>Skip to S4_168</i> )      2 = Unspecified ( <i>Skip to S4_168</i> ) 1 = Yes
		<b>If YES to CONTEXTUAL for control youth, specify which factors</b> [ <i>Select all that apply</i> ]
<b>S4_151</b>	<input type="checkbox"/>	Availability/use of alcohol, tobacco, and other drugs at home or community
<b>S4_152</b>	<input type="checkbox"/>	Availability of firearms at home or community
<b>S4_153</b>	<input type="checkbox"/>	Community deterioration/disorganization
<b>S4_154</b>	<input type="checkbox"/>	Problematic school climate/poorly functioning schools
<b>S4_155</b>	<input type="checkbox"/>	Lack of communal spaces for recreation
<b>S4_156</b>	<input type="checkbox"/>	Exposure to community violence, crime and/or gangs
<b>S4_157</b>	<input type="checkbox"/>	Household poverty/deprivation
<b>S4_158</b>	<input type="checkbox"/>	Single parent household
<b>S4_159</b>	<input type="checkbox"/>	Domestic violence
<b>S4_160</b>	<input type="checkbox"/>	Normative school transition
<b>S4_161</b>	<input type="checkbox"/>	Non-normative school change
<b>S4_162</b>	<input type="checkbox"/>	Lack of non-parental adult role model

	<p>S4_163 ___ Parental incarceration</p> <p>S4_164 ___ Parental unemployment</p> <p>S4_165 ___ Involvement in juvenile system</p> <p>S4_166 ___ Involvement in child welfare (foster care)</p> <p>S4_167 ___ Other(s) (S4_167.1: _____)</p>
S4_168	<p><b>Did control youth exhibit or have in their backgrounds any <u>individual risk factor(s)</u>? [Individual risk factors are biological, behavioral, cognitive, or psychosocial characteristic of the youth]</b>  0 = No (Skip to S4_206)    2 = Unspecified (Skip to S4_206)  1 = Yes</p>
	<p><b>If YES to INDIVIDUAL for treatment youth, specify which factors [Select all that apply. If limited to a variable that can be coded somewhere else, do not code here]</b></p> <p>S4_169 ___ Bullying others</p> <p>S4_170 ___ Fighting and other aggressive behavior</p> <p>S4_171 ___ Behavior problems at school (other than bullying or fighting)</p> <p>S4_172 ___ Behavior problems (unspecified)</p> <p>S4_173 ___ Low academic achievement</p> <p>S4_174 ___ Truancy/school absenteeism</p> <p>S4_175 ___ School drop out</p> <p>S4_176 ___ Learning disorder/disability</p> <p>S4_177 ___ Intellectual and/or development disabilities</p> <p>S4_178 ___ Physical disability</p> <p>S4_179 ___ Poor physical health</p> <p>S4_180 ___ Mental disorder/mental health problem (internalizing)</p> <p>S4_181 ___ Depressive symptoms/disorder</p> <p>S4_182 ___ Anxiety symptoms/disorder</p> <p>S4_183 ___ Somatic complaints/disorder</p> <p>S4_184 ___ Suicidal ideation/attempt(s) (may be related to a variety of disorders)</p> <p>S4_185 ___ Mental disorder/mental health problem (externalizing)</p> <p>S4_186 ___ Oppositional Defiant Disorder</p> <p>S4_187 ___ Conduct Disorder</p> <p>S4_188 ___ Attention Deficit Hyperactivity Disorder (ADHD)</p> <p>S4_189 ___ Bipolar Disorder</p> <p>S4_190 ___ Schizophrenia</p> <p>S4_191 ___ Psychosis (may be related to a variety of disorders)</p> <p>S4_192 ___ Mental disorder/mental health problem (unspecified)</p> <p>S4_193 ___ Early onset of delinquency</p> <p>S4_194 ___ Favorable attitudes toward delinquent behavior</p>

	<p>S4_195 ___ Delinquent behavior (crimes against people)</p> <p>S4_196 ___ Delinquent behavior (crimes against property)</p> <p>S4_197 ___ Delinquent behavior (unspecified)</p> <p>S4_198 ___ Substance use/abuse</p> <p>S4_199 ___ Poor attachment</p> <p>S4_200 ___ Poor social skills</p> <p>S4_201 ___ Experiencing sexual assault</p> <p>S4_202 ___ Early sexual involvement</p> <p>S4_203 ___ Teen pregnancy</p> <p>S4_204 ___ Teen parenthood</p> <p>S4_205 ___ Other(s) (S4_205.1: _____)</p>
S4_20 6	<p><b>Did control youth exhibit or have in their backgrounds any processual risk factor(s)?</b> [<i>Processual risk factors are interpersonal interactions and transactional exchanges between the youth and others</i>]</p> <p>0 = No (Skip to S4_213)    2 = Unspecified (Skip to S4_213)</p> <p>1 = Yes</p>
	<p><b>If YES to PROCESSUAL factors for control youth, specify which factors</b> [<i>Select all that apply</i>]</p> <p>S4_207 ___ Parent-child relationship problems</p> <p>S4_208 ___ High family conflict (distinct from parent-child relationship problems)</p> <p>S4_209 ___ Low parental monitoring</p> <p>S4_210 ___ Lack of parental interaction/involvement</p> <p>S4_211 ___ Associations with delinquent/deviant peers</p> <p>S4_212 ___ Other(s) (S4_212.1: _____)</p>
S4_21 3	<p><b>Did control youth exhibit or have in their backgrounds any historical risk factor(s)?</b> [<i>Historical risk factors are distal events or experiences that occurred more than a year ago in the youth's past</i>]</p> <p>0 = No (Skip to _____)    2 = Unspecified (Skip to SECTION 5)</p> <p>1 = Yes</p>
	<p><b>If YES to HISTORICAL factors for control youth, specify which factors</b> [<i>Select all that apply</i>]</p> <p>S4_214 ___ Family mobility</p> <p>S4_215 ___ Non-normative school changes</p> <p>S4_216 ___ International immigration</p> <p>S4_217 ___ Foster care</p> <p>S4_218 ___ Incarceration</p> <p>S4_219 ___ Child maltreatment/abuse/neglect</p> <p>S4_220 ___ Other(s) (S4_220.1: _____)</p>



## RESEARCH DESIGN

[conrec] \_\_\_\_\_

**What did the control group receive?**

[The difference between ‘received nothing’ and ‘treatment as usual’ hinges on whether or not the two groups have an institutional framework or experience in common, e.g., probation supervision, institutionalization, school, etc.]

1 = Received nothing (no evidence of any treatment or attention)

2 = Wait listed, delayed treatment

3 = Minimal contact, instructions, intake interview, but not wait listed

4 = “Treatment as usual” (TAU)

5 = Attention placebo (control receives discussion, attention, or dilute version of treatment)

6 = Treatment element placebo (Received target treatment except for defined element presumed to be the crucial ingredient)

7 = Weak alternate treatment (control is not really a “control,” but another treatment different than “usual” treatment being compared with the focal treatment; must be a very dilute dose or a “straw man” not expected to perform well)

8 = Substantial alternate treatment other than mentoring (same as above except the treatment has sufficient intensity or integrity to be expected to perform well)

9 = Mentoring program

For “TAU” or “other”, write in:

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