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How Effective Are Mentoring Programs for Youth? A Systematic Assessment of the Evidence

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Summary

During the past decade, mentoring has proliferated as an intervention strategy for addressing the needs that young people have for adult support and guidance throughout their development. Currently, more than 5,000 mentoring programs serve an estimated three million youths in the United States. Funding and growth imperatives continue to fuel the expansion of programs as well as the diversification of mentoring approaches and applications. Important questions remain, however, about the effectiveness of these types of interventions and the conditions required to optimize benefits for young people who participate in them. In this article, we use meta-analysis to take stock of the current evidence on the effectiveness of mentoring programs for youth. As a guiding conceptual framework for our analysis, we draw on a developmental model of youth mentoring relationships (Rhodes, 2002, 2005). This model posits an interconnected set of processes (social-emotional, cognitive, identity) through which caring and meaningful relationships with nonparental adults (or older peers) can promote positive developmental trajectories. These processes are presumed to be conditioned by a range of individual, dyadic, programmatic, and contextual variables. Based on this model and related prior research, we anticipated that we would find evidence for the effectiveness of mentoring as an approach for fostering healthy development among youth. We also expected that effectiveness would vary as a function of differences in both program practices and the characteristics of participating young people and their mentors.

The meta-analysis encompassed 73 independent evaluations of mentoring programs directed toward children and adolescents published over the past decade (1999–2010). Overall, findings support the effectiveness of mentoring for improving outcomes across behavioral, social, emotional, and academic domains of young people's development. The most common pattern of benefits is for mentored youth to exhibit positive gains on outcome measures while nonmentored youth exhibit declines. It appears then that mentoring as an intervention strategy has the capacity to serve both promotion and prevention aims. Programs also show evidence of being able to affect multiple domains of youth functioning simultaneously and to improve selected outcomes of policy interest (e.g., academic achievement test scores). From a developmental standpoint, benefits of participation in mentoring programs are apparent from early childhood to adolescence and thus not confined to a particular stage of development. Similarly, although programs typically have utilized adult volunteers and focused on cultivating one-to-one relationships, those that have engaged older peers as mentors or used group formats show comparable levels of effectiveness. Collectively, these findings point toward the flexibility and broad applicability of mentoring as an approach for supporting positive youth development.

Several other aspects of our findings, however, underscore a need for caution. These include a failure of evaluations to assess several key outcomes of policy interest (e.g., juvenile offending, obesity prevention) or to determine whether benefits for youth are sustained at later points in their development. More generally, we find that gains on outcome measures for the typical young person in a mentoring program have been modest (equivalent to a difference of 9 percentile points from scores of nonmentored youth on the same measures). This level of impact is within the range of effects observed for other types of interventions for children and adolescents but fails to reflect discernible improvement over the previous generation of mentoring programs (DuBois, Holloway, Valentine, & Cooper, 2002). Variability in program effectiveness, although less pronounced, also continues to be evident even after accounting for methodological differences in studies. In analyzing this variability, we find that programs have been more

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effective when (a) participating youth have either had pre-existing difficulties (including problem behavior specifically) or been exposed to significant levels of environmental risk, (b) evaluation samples have included greater proportions of male youth, (c) there has been a good fit between the educational or occupational backgrounds of mentors and the goals of the program, (d) mentors and youth have been paired based on similarity of interests, and (e) programs have been structured to support mentors in assuming teaching or advocacy roles with youth. These findings suggest that effects may hinge to a noteworthy extent on decisions that are made regarding which youth and mentors to involve in a program and on the care with which mentoring relationships are established and then guided toward specific types of activities.

Taking stock of the available evidence leads us to see value in continued support for youth mentoring programs. The argument for using mentoring as an intervention strategy is particularly strong when there is interest in promoting outcomes across multiple areas of a young person's development. For investments to yield optimal returns, however, there is a need for policy to be directed toward several critical areas of concern: (a) ensuring adherence to core practices (e.g., screening and training of mentors) that both research and common sense dictate to be essential elements of program quality, (b) facilitating ongoing refinement and strengthening of programs using the available evidence as a guide, and (c) fostering stronger collaborations between practitioners and researchers as a framework for evidence-driven dissemination and growth within the field. From a research standpoint, to support and inform these efforts there is a pressing need to (a) gauge the impact of mentoring interventions on key outcomes of policy interest and on the outcomes of participating youth at later points in their development; (b) utilize study designs and analyses that are capable of addressing the relative effectiveness of competing models and practices, the unique contributions of mentoring within more complex, multi-component interventions, and differences in youth responsiveness (including potential harmful effects for some youth); (c) investigate increasingly well-specified models of how different types of program practices and processes may be instrumental in shaping consequential features of mentoring relationships and ultimately, the realization of particular desired outcomes for youth; and (d) establish a research registry to improve the quality and synthesis of available evidence regarding the effectiveness of youth mentoring as an intervention strategy.

Introduction

Mentoring programs for youth are commonplace in today's society, with more than 5,000 such programs in the United States serving an estimated three million young people (MENTOR/National Mentoring Partnership, 2006). In the typical program, each youth is paired with a volunteer from the community, with the aim of cultivating a relationship that will foster the young person's positive development and well-being. Programs frequently focus on children and adolescents who are perceived to be at risk for poor outcomes in areas such as academics, risk behavior, or health. Accordingly, mentoring has enjoyed relatively wide use as an intervention strategy in diverse spheres of policy and practice, including education, juvenile justice, and public health. The current popularity of mentoring programs notwithstanding, questions remain about their typical effectiveness as well as the conditions required for them to achieve optimal positive outcomes for participating youth. In this report, we use the technique of meta-analysis (i.e., aggregating findings across multiple studies) to address these questions. As backdrop for our analysis, we begin with an overview of recent trends in youth mentoring practice, findings from prior research, and a developmental model of mentoring relationships and their potential effects on young people.

Growth and Evolution in Mentoring as an Intervention Strategy for Youth

The large number of mentoring programs currently in the United States stems, in part, from longstanding public and governmental concern over the negative outcomes experienced by significant proportions of youth in this country, especially those growing up under conditions of disadvantage. During the past decade, such concern has served as an impetus for noteworthy mentoring initiatives funded through the Office of Juvenile Justice and Delinquency Prevention (OJJDP); the Departments of Health and Human Services (HHS), Education (ED), and Labor; and the Corporation for National and Community Service. In response to the growing number of different federal agencies supporting youth mentoring, in 2003 the White House Task Force on Disadvantaged Youth called for the creation of a Federal Interagency Workgroup on Mentoring to coordinate all federally sponsored mentoring programs and activities. By 2004, HHS and ED were allocating a collective $100 million per year for mentoring programs to support children with parents in prison and to promote middle-school students' academic outcomes, respectively. During the 2011 fiscal year, OJJDP similarly awarded $60 million of funding to support youth mentoring provided through national organizations such as Big Brothers Big Sisters of America (BBBSA) as well as approximately $40 million for more locally based mentoring programs.

Momentum has come as well from shifts in the philosophical orientation of researchers and practitioners in the youth-service sector, who have placed increasing emphasis on the promotion of positive youth development as opposed to the prevention of specific disorders (Eccles & Gootman, 2002; Lewin-Bizan, Bowers, & Lerner, 2010; Scales, Benson, & Mannes, 2006). Within the context of these developments, mentoring holds a particularly strong appeal. Mentoring is easier to visualize than other approaches to youth service and, because it locates the problem (a lack of role models) and solution (deployment of predominately middle-class volunteers) at the personal level, it fits neatly into American notions of upward mobility and the "pull yourself up by the bootstraps"

ideology (Walker, 2005). It is thus not surprising that BBBSA, the largest mentoring organization in the country, as well as other organizations in which mentoring programs are often situated, such as the Boys and Girls Clubs of America, have been held as exemplars of a positive youth-development model.

An important further catalyst for the widespread expansion of youth mentoring programs was the release of a report on a large, random-assignment evaluation of BBBSA's community-based mentoring program (Tierney, Grossman, & Resch, 1995). Findings from this research (which we discuss in greater detail later) provided evidence of positive associations between mentoring and a range of youth outcomes and were widely embraced by policymakers and practitioners. The report helped to spawn unprecedented growth not only in the number of mentoring programs for youth but also in their diversity. These newer programs frequently serve specialized groups (e.g., youth in foster care, youth with incarcerated parents, students at risk for academic failure), target specific outcomes (e.g., academic achievement, delinquency prevention, childhood obesity), are anchored to specific settings (e.g., schools, after-school programs, the workplace, religious institutions), and/or make use of alternative formats and models (e.g., e-mentoring, group mentoring, cross-age peer mentoring).

Large-Scale Evaluations of Youth Mentoring Programs

Despite the widespread enthusiasm and support for youth mentoring programs, findings obtained when evaluating these types of programs have suggested a need for caution. Along with a demonstrated potential for some youth to experience negative impacts (e.g., Grossman & Rhodes, 2002), results have rarely, if ever, provided persuasive evidence of the kinds of transformative effects on young people that are widely cited as a rationale for investment in mentoring as an intervention strategy (Rhodes & DuBois, 2006). One mentoring program, Across Ages, achieved the status of "model program" on the Substance Abuse and Mental Health Services Administration (SAMHSA) Registry of Evidence-Based Programs and Practices (NREPP), an online registry of independently reviewed and rated interventions. However, an effort to replicate findings of the initial evaluation of this program that resulted in its model-program designation yielded mixed results, with none of the program's beneficial effects at the end of one school year found to be sustained at an assessment the following fall (Aseltine, Dupre, & Lamlein, 2000). BBBSA is listed on NREPP as an "effective program," a designation that stems from the landmark evaluation of its programming that we made reference to previously (Grossman & Tierney, 1998). Yet, in this evaluation, findings tended to favor youth in the mentored group by only a relatively small margin (average standardized mean difference effect size of .06, Herrera, Grossman, Kauh, Feldman, & McMaken, 2007; we provide a more detailed explanation of effect sizes in the next section). It is not surprising, in view of this, that a cost–benefit ratio derived from study data found monetized benefits of program participation to exceed total costs by only a narrow margin (Aos, Lieb, Mayfield, Miller, & Pennucci, 2004; for a more favorable analysis, see Belfield, 2003).

Similar caveats apply to recent randomized evaluations of school-based mentoring programs (for a review, see Wheeler, Keller, & DuBois, 2010). In these types of programs, interactions between youth and mentors typically are confined to the school setting (Randolph & Johnson, 2008). Because programs are linked to the academic calendar, the mentoring relationships that are established also tend to be less enduring than those forged through community-based programs. One of the evaluations, which focused on BBBSA's school-based program, found that, at the end of the school year, youth assigned to receive mentoring showed significant improvements in teacher-rated academic performance, perceived scholastic efficacy, school misconduct, and attendance relative to a control group of nonmentored youth (Herrera et al., 2007). Program effects generally were of small magnitude (average standardized mean difference effect size of .09 for school-related outcomes and smaller for non-school-related outcomes), however, and were not statistically significant when youth were reassessed a few months into the next school year.

Meta-Analyses of Youth Mentoring Program Evaluations

Although individual evaluations of mentoring programs clearly have value, a comprehensive and systematic assessment of findings from all relevant evaluations is likely to yield a more reliable and precise estimate of their impact (Lipsey & Wilson, 2001). Meta-analysis is the most widely accepted tool for synthesizing and summarizing findings across independent samples or studies. In a meta-analysis, the findings of each available study on a given topic are translated into a common metric referred to as an effect size, so that results then can be synthesized (averaged) across studies in a meaningful manner. In program-evaluation research, the effect size most commonly used is the standardized mean difference. This type of effect size can be computed by taking the difference between the average scores of the treatment and control groups on an outcome measure and then dividing this difference by the measure's standard deviation (an index of the degree to which scores on a measure vary around its average value). Illustratively, an effect size of .25 would represent a difference between groups of one fourth of a standard deviation on the outcome measure. Effect sizes can be translated into differences between groups in terms of percentile scores (Lipsey & Wilson, 2001), and guidelines have been suggested for what can be considered a small (.20), medium (.50), or large (.80) effect size (Cohen, 1988). Ultimately, though, the significance of a given effect size may be most appropriately judged in the context of other considerations (Bloom & Lipsey, 2004). These include the level of societal importance that is likely to be attached to the outcome (consider, for example, self-esteem

versus high-school graduation), the relative effectiveness of other interventions with similar goals, and program costs. Typically, meta-analyses also test for variation in effect sizes across studies. When present, analyses can then examine whether effect size variation is associated with differences in study methodology as well as differences along more substantive dimensions such as intervention characteristics (Cooper, 2010). In evaluation research, these types of analyses can be useful for identifying program practices that are promising candidates for inclusion in "best practice" guidelines.

In 2002, DuBois and colleagues (DuBois, Holloway, et al., 2002) published a meta-analytic synthesis of findings from 55 evaluations of youth mentoring programs that had been published through 1998. Findings indicated that, on average, youth participating in mentoring programs had benefited significantly in each of five outcome domains: emotional/psychological, problem/high-risk behavior, social competence, academic/educational, and career/employment. Positive effects, furthermore, were largely found to generalize across groups of youth with varying backgrounds and demographic characteristics, such as males and females, ethnic minority and White youth, and youth in either late childhood/early adolescence or middle/late adolescence. The estimated magnitude of program effects, however, suggested that the typical young person made only modest gains as a result of participation in a program (effect size of .18 when collapsing across all outcome domains and effect sizes ranging from .10 to .22 for specific outcome domains).

Importantly, results also pointed to several program practices as having greater effectiveness. These practices included recruiting mentors with backgrounds in helping roles or professions, clearly communicating expectations for how often mentors should be in contact with youth, hosting activities for mentors and youth, supporting and involving parents, allowing community settings to be utilized for mentoring, providing ongoing training for mentors, and systematically monitoring the implementation of the program (DuBois, Holloway, et al., 2002). Effect sizes increased systematically with the use of greater numbers of these practices (.22 for those programs that utilized a majority of the practices compared to .09 for those that did not). A similar pattern was apparent for a broader collection of practices that aligned with recommendations from various sources in the field, including the initial edition of a set of practice guidelines (referred to as the *Elements of Effective Practice*) put forth by MENTOR/National Mentoring Partnership (1990). Programs also were found to be more effective when they targeted youth with backgrounds of environmental risk or disadvantage, either alone or combination with individual manifestations of risk (e.g., academic failure, behavior problems). Among the small number of studies that included follow-up assessments, the benefits of mentoring appeared to extend a year or more beyond the end of a youth's participation in the program.

Subsequent to this review, at least three other reviews of mentoring program effectiveness have used meta-analysis (Jolliffe & Farrington, 2007; Tolan, Henry, Schoeny, & Bass, 2008; Wheeler et al., 2010). Two of the reviews were limited to outcomes relating to delinquency prevention (Tolan et al., 2008) or juvenile reoffending (Jolliffe & Farrington, 2007) and, for the most part, examined studies published within the time frame of the earlier review (DuBois, Holloway, et al., 2002). The third review (Wheeler et al., 2010) used meta-analysis to synthesize findings from three recent evaluations of school-based mentoring programs. None of the reviews thus is geared toward taking stock of the full range of developments that have taken place with youth mentoring as an intervention strategy during the past decade. Key considerations in this regard include not only the benefits that may have accrued from advances in research to inform program practice but also possible costs associated with pressures for program growth and expansion. Likewise, with the further evolution of the field and increasing diversification in program models and approaches, the potential exists for different types of practices to emerge as important influences on effectiveness.

With these issues in mind, in this report we undertake a comprehensive meta-analysis of youth mentoring program evaluations published since the earlier review of DuBois and colleagues (2002). In doing so, we expand on the earlier analysis to help clarify a variety of salient issues. One concern involves the patterns of change on outcome measures that underlie observed effects of mentoring programs. Whereas a positive youth-development model calls attention to the potential for mentoring to facilitate growth and improvement in outcomes (Lewin-Bizan et al., 2010), a resilience framework (Fergus & Zimmerman, 2005) suggests that mentoring's effectiveness also may stem from reducing risk for declines in functioning and the emergence of problems. A better understanding of the extent to which such patterns are evident, either separately or in combination, would allow policy and funding initiatives to be directed more strategically. A second important consideration is the extent to which mentoring programs are beneficial for youth across multiple domains of outcomes. Our present review builds on the earlier review's finding that mentoring programs collectively show evidence of being able to improve outcomes within each of several areas of youth development. In doing so, we address the further important question of whether benefits across multiple domains are also apparent within findings for *individual* programs. Finally, and most notably from our perspective, is the need to further advance understanding of the role of different potential influences on mentoring-program effectiveness. In addressing this issue, our current review is informed by a developmental model of mentoring relationships proposed by Rhodes (2002, 2005). Before turning to an overview of this model, it bears emphasizing that it represents a foundational effort to delineate conditions that may be influential in shaping the outcomes that youth experience as a result of mentoring. Accordingly, the model does not currently reflect the level of refinement or specificity that ultimately may prove to be ideal as a framework for investigating influences on the effectiveness of interventions in this area.

Furthermore, because the model is focused on mentoring relationships rather than programs, potential implications for effective practice must, to some extent, be inferred.

When and How Are Mentoring Relationships for Youth Beneficial?

In accordance with the wealth of research that underscores the essential nature of supportive relationships and guidance during development (Magnusson & Stattin, 2006; Scales et al., 2006), the Rhodes (2002, 2005) model assumes that mentoring relationships can be of significant and enduring value for young people. It further posits prerequisite conditions for such benefits being realized as well as the processes through which they are most likely to accrue (see Fig. 1). The model's specificity to youth is important, as both theory and available research point to important differences in mentoring processes and outcomes for children and adolescents relative to adults (Eby, Rhodes, & Allen, 2007). Many adult mentoring relationships occur in the workplace, for example, between less experienced protégés and more experienced or senior individuals within the organization, with a focus on facilitating the professional and career growth of the protégé (Kram, 1985). Similarly, in higher education, mentoring relationships between faculty and students often operate largely within an apprenticeship model in which interactions provide a venue for extending academic learning and skill development beyond the classroom (Jacobi, 1991). Interestingly, in a recent meta-analysis (Eby, Allen, Evans, Ng, & DuBois, 2008), mentoring relationships for adults that were linked to the workplace or higher education exhibited generally stronger associations with desired outcomes relative to mentoring relationships for youth. The authors noted that adult mentoring relationships in these contexts may tend to be characterized by a relatively

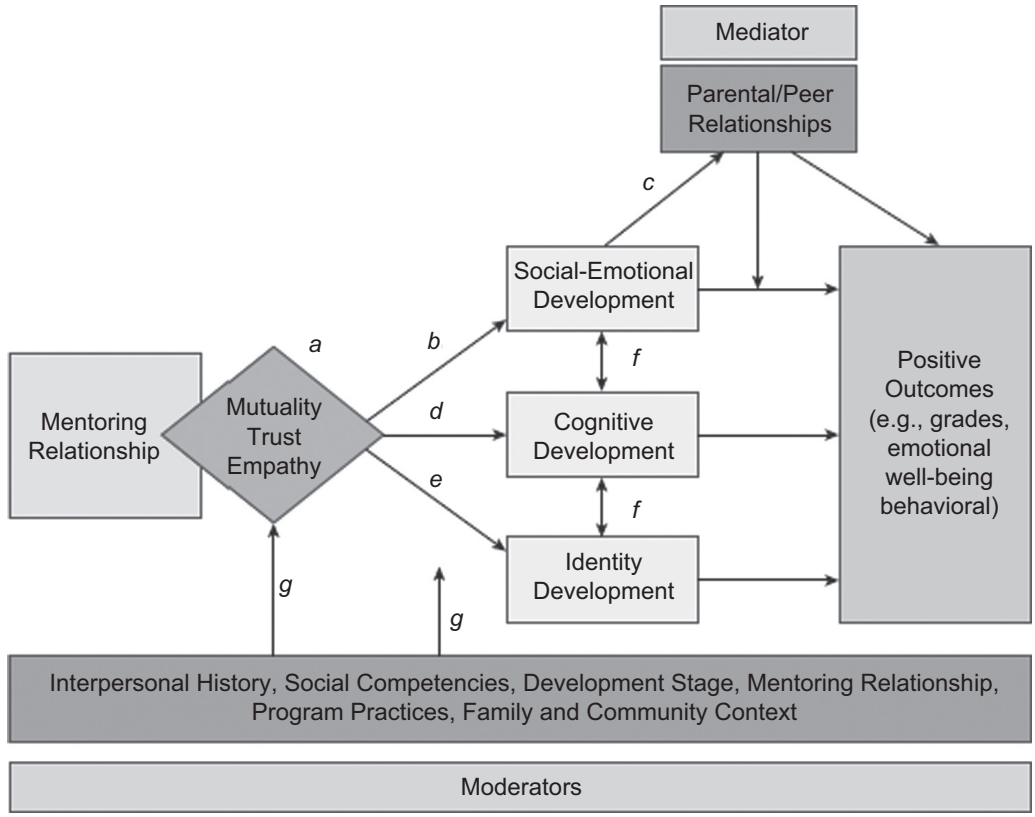

Fig. 1. Model of youth mentoring. A strong and meaningful personal connection is forged between the young person and mentor (component *a*), for instance in the context of working together on goal-oriented tasks. A positive interpersonal foundation is then posited to catalyze developmental processes in three areas—social-emotional (path *b*), cognitive (path *d*), and identity related (path e)—and these three areas are assumed to work in concert over time (*f* arrows). Positive social-emotional experiences with mentors can generalize, enabling youth to interact more effectively with parents and peers (path *c*), and these relationships can in turn mediate the effect of gains in social-emotional development on positive outcomes. The quality of the mentoring relationships and the pathways linking it ultimately to positive youth outcomes can be conditioned by factors pertaining to a youth's interpersonal history, social competence, and developmental stage; duration of the mentoring relationship; program practices involved in establishing and supporting the mentoring relationship and its duration; and the youth's family and surrounding community context (*g* arrows). Figure reprinted with slight modification from *Stand by Me: The Risks and Rewards of Mentoring Today's Youth*, by Jean E. Rhodes, 2002, p. 36, Cambridge, MA: Harvard University Press. Copyright 2002, the President and Fellows of Harvard College. Reprinted with permission of the publisher.

high level of fit between the background and skills of the mentor and specific needs of the protégé in that setting. In comparison, mentoring ties experienced by youth may tend to involve greater role complexity and be oriented more toward the development of significant emotional bonds (Eby et al., 2007).

In the conceptual model of youth mentoring referred to above, it is essential first and foremost for a strong and meaningful personal connection to be forged between the young person and mentor (component *a* in Fig. 1). This assumption is in line with research that underscores the benefits of emotional attunement and support in youth relationships with parents, teachers, and other adults (J. P. Allen et al., 2003; Pianta, 1999; Poulsen, 2001), including mentors who are assigned to work with youth through programs (Deutsch & Spencer, 2009; Keller & Pryce, 2010; Spencer & Rhodes, 2005; Thomson & Zand, 2010). A close connection, however, frequently may be the by-product, not the focus, of effective mentoring relationships for young persons (Hamilton & Hamilton, 2010). Youth, for example, often may come to trust and appreciate their mentors in the context of working with them on goal-oriented tasks. Some evidence, in fact, suggests that it may be of limited value or even counterproductive for mentors to regard cultivating an emotional connection with a youth as the primary goal (Hamilton & Hamilton, 1992) or, similarly, to foster relationships that are unconditionally supportive and lacking in structure (Langhout, Rhodes, & Osborne, 2004).

Developmental processes in mentoring relationships

A positive interpersonal foundation is then posited to catalyze interacting developmental processes in three areas: social-emotional, cognitive, and identity (Rhodes, 2002, 2005).

Social-emotional. Mentoring may further the social-emotional development of children and adolescents in a variety of ways (path *b* in Fig. 1). By modeling caring and providing support, for example, mentors can challenge negative views that youth may hold of themselves and demonstrate that positive relationships with adults are possible. In this way, a mentoring relationship may become a "corrective experience" for youth who have experienced unsatisfactory relationships with parents or other caregivers (Hayes, Castonguay, & Goldfried, 1996). Likewise, by serving as a sounding board and providing a model of effective adult communication, mentors may help youth to better understand, express, and regulate their emotions (McDowell, Kim, O'Neil, & Parke, 2002). In doing so, mentors may facilitate youth coping, helping them to approach even negative experiences as opportunities for growth and learning. The model further assumes that positive social-emotional experiences with mentors can generalize, enabling youth to interact with others more effectively (path *c*). In support of this prediction, mentoring relationships have been linked to significant improvements in youths' perceptions of their relationships with parents, as well as with peers and other adults (DuBois, Neville, Parra, & Pugh-Lilly, 2002; Karcher, 2005; Rhodes, Grossman, & Resch, 2000; Rhodes, Reddy, Roffman, & Grossman, 2005).

Cognitive. Mentoring relationships similarly may affect a range of cognitive developmental processes (path *d*). Research on collaborative learning, for example, points to interactions with mentors as vehicles through which children and adolescents can acquire and refine new thinking skills, becoming more receptive to adult values, advice, and perspectives (Radziszewska & Rogoff, 1991; Vygotsky, 1978). Research on the role of social support in fostering cognitive development similarly underscores the social nature of learning. Feelings of closeness with teachers, for example, have been associated with more positive academic adjustment for children and adolescents (Cadima, Leal, & Burchinal, 2010; Pianta, 1999; Reddy, Rhodes, & Mulhall, 2003). Similarly, close, enduring ties with naturally occurring mentors in the lives of youth have been found to predict improvements in academic and vocational outcomes (DuBois & Silverthorn, 2005a, 2005b; Erickson, McDonald, & Elder, 2009; Klaw, Rhodes, & Fitzgerald, 2003). It appears, too, that meaningful guidance and instruction can occur in mentoring ties that youth have with older peers (Karcher, 2005) and within mentoring interactions that take place in groups rather than in one-on-one contexts (Hirsch, 2005).

Identity. As noted, mentoring relationships also may facilitate identity development (path *e*). Illustratively, mentors may help shift youths' conceptions of both their current and future identities. Markus and Nurius (1986) have referred in this regard to "possible selves" or individuals' ideas of what they might become, what they would like to become, and what they fear becoming. Such possibilities, which often emerge as youth observe and compare the adults they know, can inform current decisions and behavior. More generally, relationships with mentors may open doors to activities, resources, and educational or occupational opportunities on which youth can draw to construct their sense of identity (Darling, Hamilton, Toyokawa, & Matsuda, 2002). Findings that point to a protective influence of mentoring relationships on risk behavior (Beier, Rosenfeld, Spitalny, Zanksy, & Bontempo, 2000; Hurd & Zimmerman, 2010) and academic outcomes (Sánchez, Esparza, & Colón, 2008) are suggestive of these processes, as are results that link mentoring to a more positive orientation to the future (Karcher, 2008) and higher educational aspirations (Herrera et al., 2007).

Bidirectional pathways. The social-emotional, cognitive, and identity processes we have described are assumed to work in concert over time (see Fig. 1, *f* arrows). For example, the use of a mentor as a role model and the ability to entertain multiple possible selves as part of identity exploration may be fostered by the ability of young people to make more nuanced comparisons across relationships and an improved capacity to understand the world from the perspective of others (D. P. Keating, 1990). Growth in cognitive abilities similarly can enhance the capacity of youths to regulate complicated emotions (Diamond

& Aspinwall, 2003) and to select institutions and relationships that best match their goals, values, and abilities (Clausen, 1991).

Interpersonal risk. The preceding discussion emphasizes the ways mentoring relationships can positively influence youth well-being and development. The trust and emotional investment that a young person places in a mentor figure, however, also creates a potential for relationship processes that are harmful (Rhodes, 2002). The most egregious instances of this may entail sexual abuse and other forms of exploitation. More typically, though, youth are likely to be affected adversely for reasons that are largely inadvertent and unintentional. These may include, for example, a mentor's inconsistent follow-through, overly prescriptive style, or modeling of unhealthy behaviors (Rhodes & DuBois, 2006). The developmental processes described earlier (e.g., identification) serve as a framework too for understanding the ramifications of these types of experiences.

Influences on mentoring relationships and their contributions to youth outcomes

As shown in Figure 1, the conceptual model posits that the quality of mentoring relationships experienced by youth and the pathways linking them ultimately to developmental outcomes can be conditioned by factors pertaining to (a) a youth's interpersonal history, social competence, and developmental stage; (b) duration of the mentoring relationship; (c) program practices that are involved in establishing and supporting the mentoring relationship (for those that are developed through programs) and its duration; and (d) the youth's family and surrounding community context (see Fig. 1, *g* arrows). In the following sections, we highlight specific factors within each of these domains that theory and/or research suggest could be influential (see Table 1). These factors, in turn, serve as focal points for the examination of potential influences on mentoring-program effectiveness in our meta-analysis.

Youths' interpersonal histories. Because mentoring programs are essentially relationship-based interventions, it stands to reason that the prior experiences of children and adolescents in other significant relationships may influence (either positively or negatively) how they respond to participation in this type of program. When earlier relationships with adults have been harmful or unsatisfying, for example, a youth may be less inclined to trust the overtures of an assigned mentor (Kobak & Sceery, 1988; Larose, Bernier, & Soucy, 2005; Romero-Canyas, Downey, Berenson, Ayduk, & Kang, 2010). At the same time, under these circumstances, mentoring may be especially well-positioned to serve as a "corrective" experience that helps the young person to establish a more adaptive and realistic perspective toward relationships with adults in caretaking roles (Rhodes, 2002). Similar considerations apply to the youth's relationship patterns and histories with peers. Youth who have experienced rejection from peers, for example, may enter mentoring relationships with heightened interpersonal sensitivity (Downey, Lebolt, Rincón, & Freitas, 1998). Yet, in the context of a lack of social acceptance, the support of a mentor also may offer distinct benefits, such as reduced susceptibility to seeking approval through affiliation with antisocial peers (Kaplan, 1996). Likewise, although it may be notably more difficult for mentors to make constructive inroads with youth who have already become engaged in delinquent activity (e.g., gang involvement), the bonds that are established may be especially beneficial (Blechman & Bopp, 2005). In line with these considerations, prior research indicates positive contributions of mentoring relationships for youth with interpersonal vulnerabilities, including young people in foster care (Ahrens, DuBois, Richardson, Fan, & Lozano, 2008; Greeson, Grinstein-Weiss, & Usher, 2010; Munson & McMillen, 2008; Rhodes, Haight, & Briggs, 1999), children of prisoners (Shlafer, Poehlmann, Coffino, & Hanneman, 2009), and adolescents with a history of engaging in delinquent behavior (Davidson & Redner, 1988), but also formidable challenges and risks when attempting to effectively mentor youth with these backgrounds (Blechman & Bopp, 2005; Britner & Kraimer-Rickaby, 2005).

Social competencies. Youth who are better able to regulate their emotions and who have positive temperaments and/or other engaging attributes may be primed for higher levels of involvement with adults than are peers who lack these attributes. Werner and Smith (1982), for example, observed that youth who had thrived despite adversity tend to have hobbies or other interests and a capacity to connect with adults through those activities. More generally, youth with higher levels of social competence tend to be held in higher regard by their peers, teachers, and volunteer mentors (Morison & Masten, 1991; Spencer, 2007). Socially skilled youth in some ways thus may be particularly well-positioned to derive benefits from participation in a mentoring program. This does not preclude, however, the possibility for less competent youth to experience gains as well through the type of compensatory dynamics previously discussed.

Developmental stage. The capacity and willingness of youth to forge close connections with nonparent adults may also vary as a function of their developmental status. Younger adolescents, for example, report better friendships and more disclosure with adults (Thomson & Zand, 2010) and tend to have more enduring ties with program-assigned mentors (Grossman & Rhodes, 2002) than do older adolescents, for whom normative desires for autonomy and independence may result in less compliance and emotional accessibility (J. P. Allen & Land, 1999). On the other hand, with age may come increased motivation and practical need for youth to acquire specific skills and competencies as well as an increased capacity to engage in deeper forms of reflection and personal growth. A question can be raised, in fact, as to whether younger children possess the requisite cognitive and social abilities and understandings to benefit from relationships with mentors in the same ways as older youth (Cavell & Smith, 2005). Our prior meta-analysis (DuBois, Holloway, et al., 2002) was limited in its ability to address this possibility due to a lack of studies

Table 1. Categories of Moderators in the Rhodes (2002, 2005) Developmental Model of Youth Mentoring, Potential Influences on Mentoring-Program Effectiveness, and Variables Examined in the Meta-Analysis

Moderator category	Potential influences on mentoring-program effectiveness	Variable(s) examined in meta-analysis[a]
Youth's interpersonal history	Parental separation or abandonment	Foster care[b]
	Experiences of abuse or neglect	Parental maltreatment/abuse/neglect[b]
	Peer rejection	Parent incarceration[b]
	Gang involvement/delinquency	Peer rejection[b]
		Youth attachment style[b]
		Youth problem behavior involvement
Social competencies	Emotional regulation	Social-skills deficits
	Interpersonal sensitivity	Mental health problems
	Capacity for engaging others	Referral to psychological treatment
Developmental stage	Youth's age	Age group (<8 years old, 8–10 years old, 11–14 years old, 15–18 years old)
Relationship duration	Overall length	Average length of mentoring relationships[c]
	Duration relative to program expectation/mentor commitment	Rate of fulfillment of minimum commitment or expectation[b]
Program characteristics and practices	Program infrastructure and design	Program infrastructure and design
	Youth and mentor characteristics	Size of implementing agency (small, medium, large)
	Program practices	Organizational focus on mentoring
		Organizational experience (<5, 5–10, 11–20, >20 years in existence)
		Membership in umbrella organization or network
		Evidence-based foundation (theory and/or research basis)
		Stakeholder involvement (youth, parents, mentors, and/or community members)
		Location (majority of mentoring takes place in community at large, at the youth's school, or at other specific sites)
		Duration (<6 months, 6–12 months, >12 months)
		Orientation: instrumental, psychosocial, combined; SAFE[d]
		Tailoring to specific population of youth
		Format: One-on-one vs. group/team mentoring; in-person vs. e-mentoring
		Mentor-youth contact: established expectations and (if yes) amount of contacts/hours expected[c]
		Relationship duration: established expectations and (if yes) minimum commitment (<6 months, 6–11 months, 12 or more months)
		Mentor role functions: emotional support, teaching/information provision, advocacy, modeling, serving as identification figure
		Youth and mentor characteristics
		Youth: gender (proportion male/female),[c] race/ethnicity (predominately White, Black, or Hispanic), individual risk level,[c] environmental risk level[c]
		Mentors: age (older peer, college student, adult; younger vs. older adult), education level,[b] helping backgrounds, degree of similarity to demographic backgrounds of youth,[c] shared experiences with youth,[c] and fit of educational and occupational background with program goals[c]
		Program practices
		Mentor screening
		Mentor training: initial and ongoing
		Mentor youth matching criteria: personality, interests, gender, race/ethnicity
		Support for mentor youth activities: organized activities/curriculum; goal-setting
		Supervision: mentors and youth
		Parental outreach and support
		Mentor compensation, accountability provisions, and recognition
		Systematic tracking of program activities and mentoring relationships

(continued)

Table 1. (continued)

Moderator category	Potential influences on mentoring-program effectiveness	Variable(s) examined in meta-analysis[a]
Family and community context	Family structure and resources	Family socioeconomic status
	Family relationships	Single parent household
	Access to informal mentoring	Family size[b]
	Schools	Family mobility/immigration status[b]
	Neighborhood	Family conflict/dysfunction[b]
		Parent–child relationship quality[b]
		Availability of positive role models[b]
		School problems (problematic climate, underperforming)
		Low neighborhood resources
		Neighborhood risk factors (crime, drug use, and/or violence)

[a]Unless noted otherwise, variables were dichotomous (yes/no).
[b]This variable could not be tested as a potential moderator of mentoring-program effectiveness in the meta-analysis either because the required information was reported by only a small number of studies (<10) or because there was insufficient variation on the moderator across studies.
[c]Measured as a continuous variable.
[d]SAFE is an acronym used to describe programs that are Sequential, Active, Focused, and Explicit in their approach to skill building (Durlak, Weissberg, & Pachan, 2010).

exploring the benefits of mentoring programs directed toward relatively young children.

Relationship duration. Available evidence points to added benefits when youth experience longer-term relationships with mentors (DuBois & Rhodes, 2006; Grossman, Chan, Schwartz, & Rhodes, 2011; Grossman & Rhodes, 2002; Herrera et al., 2007; Karcher, 2005; Slicker & Palmer, 1993). A reanalysis of data from a random-assignment study of the BBBSA community-based mentoring program (Grossman & Rhodes, 2002), for example, found evidence that effects on youth outcomes were progressively greater as relationships persisted for longer periods of time. By contrast, youth in relationships that terminated in less than 3 months showed declines in some areas of functioning (e.g., self-esteem) relative to youth in the control group. Such findings suggest added value for programs in which youth experience more enduring ties with mentors. Interestingly, though, our prior meta-analysis failed to find evidence of this type of association (DuBois, Holloway, et al., 2002). An equally (and perhaps even more) important consideration may be whether relationships are continued for the full duration of whatever time frame is established as an expectation in programs (Larose, Tarabulsy, & Cyrenne, 2005; Perry & De Ayala, 2005). Within mentoring programs that are structured to be relatively short term and have predetermined end dates, for example, youth may be able to prepare for and successfully depersonalize relationship terminations. Thus, in the present analysis we sought to also examine whether the rate with which mentors fulfilled their minimum length of commitment was a factor in youth outcomes.

Program characteristics and practices. Youth-mentoring programs necessarily involve a relatively extensive array of interconnected activities and practices (Weinberger, 2005). These include, but are not limited to, outreach to targeted populations of youth, recruitment, screening, and training of mentors, matching individual youth with mentors, and ongoing oversight and supervision of mentoring relationships. Such activities, in turn, must be supported by adequate organizational infrastructure and resources. Program design, furthermore, entails making decisions regarding a host of parameters such as targeted outcomes, selection criteria for mentors and youth, expectations for the duration of the mentoring relationship and the amount or frequency of mentor–youth contact, the setting(s) to be utilized, and the role(s) that mentors should be encouraged to take on in their relationships with youth (MENTOR/National Mentoring Partnership, 2009). In Table 1, we have organized the preceding types of considerations into the broad categories of program infrastructure and design, characteristics of youth and mentors, and program practices. As can be seen in the table, within each category several more specific factors are listed as potentially important influences on the effectiveness of a youth mentoring program. These factors are derived from prior research, theoretical considerations, and areas of prevailing consensus among practitioners (DuBois, Holloway, et al., 2002; DuBois & Karcher, 2005b; MENTOR/National Mentoring Partnership, 2009; Rhodes & DuBois, 2006; Sipe, 2002; Weinberger, 2005).

Family and community context. The response of a given young person to participating in a mentoring program also may be shaped by the ecology of his or her family and surrounding community (Rhodes, 2002, 2005). For example, mentoring programs have often been directed toward youth from single-parent households, based on the assumption that such youth have greater potential to benefit from an additional adult role model, although research has found little evidence of this being the case (Bernstein, Rappaport, Olsho, Hunt, & Levin, 2009; DuBois, Holloway, et al., 2002; Grossman & Tierney, 1998; Herrera et al., 2007). Our prior meta-analysis did reveal evidence of heightened benefits of mentoring for

youth from lower socioeconomic backgrounds. A distinction was not made, however, as to whether such disadvantage came from the youth's home or from the surrounding neighborhood. Frequently, mentoring programs are directed toward youth who live in areas that are characterized by limited organizational and institutional supports for positive development and/or by the presence of potent risk factors. Under these circumstances, programs may help to offset a relative absence of opportunities for youth to receive mentoring through less formal routes, such as participation in extracurricular activities, religious institutions, and volunteerism (Lerner et al., 2005; Scales et al., 2006). They may also offer protection against risks such as exposure to violence and pressures for gang involvement (Hirsch, 2005; Hurd & Zimmerman, 2010). Our previously noted finding of greater effectiveness for mentoring programs when directed toward youth experiencing environmental risk is consistent with these possibilities (DuBois, Holloway, et al., 2002) but does not specifically address the role of neighborhood resources and risk.

Summary

Overall, the model presented here suggests that when relationships with nonparental adults are experienced by youth as meaningful and supportive, they can serve as a catalyst for several intertwined developmental and interpersonal processes that, in turn, help young people to both avoid problems and reach their full potential. We expected that mentoring programs, as interventions that are designed to be in broad alignment with these precepts, would demonstrate effectiveness for strengthening a range of youth outcomes, as they did in our prior review (DuBois, Holloway, et al., 2002). As we have discussed, the model also points to the potential for differences in program design and in the characteristics of participating youth and mentors to have significant consequences for observed levels of effectiveness. Although we lacked the basis to formulate specific hypotheses, we did expect to find that factors in each of these general areas would be associated with detectable differences in the impact of programs. We anticipated, furthermore, that such factors, when taken into account collectively, would account for the bulk of the observed variation in effectiveness across studies.

Meta-Analysis of Youth Mentoring Program Effectiveness: 1999–2010

Essential steps in carrying out any meta-analysis include (a) determining study inclusion and exclusion criteria; (b) executing a comprehensive search for eligible studies; (c) coding study characteristics and effect-size information; (d) computing an overall (average) effect size that takes into account 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 investigate study characteristics that may be associated with and thus account for this variation (Cooper, 2010; Lipsey & Wilson, 2001). We included studies published between 1999 and 2010. This time frame ensured that our analysis was limited to studies published subsequent to the last comprehensive meta-analysis of the effectiveness of youth mentoring programs (DuBois, Holloway, et al., 2002), which included studies published through 1998.

As we have discussed, youth mentoring is a flexible intervention strategy that can be applied in diverse contexts for a wide range of purposes. We thus used the following relatively broad definition in guiding our determination of whether the intervention evaluated in any given study constituted a youth mentoring program: *A program or intervention that is intended to promote positive youth outcomes via relationships between young persons (18-years-old and younger) and specific nonparental adults (or older youth) who are acting in a nonprofessional helping capacity.* Operationally, this definition meant that our review encompassed programs employing a range of different formats and strategies, some of which fall at the conceptual boundaries of traditional conceptualizations of youth mentoring (DuBois & Karcher, 2005a). These include, for example, programs in which mentors are paid paraprofessionals rather than volunteers, those making use of older peers as mentors, those utilizing group formats, and those taking place over a relatively brief time frame (e.g., a few months). Programs in which the adult or older peer's role was focused on tutoring or the delivery of a structured curriculum were for the most part excluded. We did, however, include evaluations of such programs if it appeared that relationship processes were an important part of the program's theory of change. For example, in some programs adult volunteers provided tutoring but were also encouraged to engage in mentoring through more broadly supportive relationships with youth.

Methodologically, one key concern in evaluations of youth mentoring programs is the potential for outcomes of interest to exhibit significant change over time simply as a by-product of normative development. These may include changes that are positive, such as improvements in self-esteem, or negative, such as increased involvement in problem behavior. In the absence of a comparison group for reference, the former will tend to artificially inflate estimates of the favorable effects of a program, whereas the latter may lead to erroneous conclusions that a program is ineffective (DuBois, in press). In view of these possibilities, we limited our review to those evaluations that included a comparison group of nonmentored youth. In some of these studies, youth were assigned randomly to participate in the mentoring program or to a control group (experimental design). The comparison group in other studies consisted of youth who did not participate in the mentoring program for some other reason, such as attending a school where the program was not offered (quasi-experimental design).

Several studies have evaluated multicomponent programs in which mentoring is combined with other interventions such as case management or participation in an after-school program.

These evaluations were generally not included in our review because their findings may reflect the influence of the nonmentoring components of programs (Kuperminc et al., 2005). Exceptions were evaluations that used a design in which youth who received all components of an intervention were compared to a group receiving all of its nonmentoring components, thereby isolating the effects of the mentoring component. For example, one evaluation (Everhart, 2000) compared outcomes for youth receiving a character-development curriculum in combination with a mentoring relationship to those receiving only the character-development curriculum.

To be eligible for inclusion, a study also had to report sufficient data to compute an effect size for an outcome in one or more of the following broad categories: attitudinal/motivational, social/relational, psychological/emotional, conduct problems, academic/school, physical health, and career/employment. Where effect-size information was not included in a study report, we made an effort to obtain it directly from the authors. Our primary analyses were limited to effect sizes for youth outcomes assessed at the end of participation in the program or, if the program had an open-ended time frame, at some point after minimum expectations for the duration of the mentoring relationship had been met. Supplementary analyses examined effect sizes for a small number of studies that included follow-up assessments conducted at some point in time after the end of participation in the program. All effect sizes were coded such that positive values reflected a favorable effect of the program on the outcome (e.g., higher grades, less delinquent behavior).

With these considerations in mind, we now turn to a discussion of our findings. The interested reader can find further technical details regarding the methodology that we employed in our meta-analysis in the Appendix.

Overall program effectiveness

Our literature search identified 73 evaluations of youth mentoring programs that met eligibility criteria. Because some studies presented findings separately for more than one sample of youth, our meta-analysis was conducted with a total of 83 independent research samples (Cooper, 2010). For ease of presentation, however, we refer in places to studies (or programs) in describing our findings. Eighty-two of the samples yielded effect sizes corresponding to the end of program participation and seven provided information on effect sizes at a follow-up assessment (which are considered in a later section).

All effect sizes were analyzed in the metric of standardized mean differences, specifically Hedges' *g* (see Appendix for details). The effect size for end-of-program assessments averaged across all studies was .21, with a 95% confidence interval of ±.05 (this interval reflects the degree of uncertainty that exists around the average effect size). Our findings indicate, therefore, a positive effect of the typical mentoring program on the outcomes of participating youth. The magnitude of this impact would be "small" according to the guidelines described earlier. In practical terms, it corresponds to the average youth in a mentoring program scoring approximately nine percentile points higher than the average youth in the nonmentored comparison group (Cooper, 2010). When taking into account possible publication bias (i.e., the tendency for unpublished studies to both have smaller effect sizes and be more difficult to find; Sutton, 2009), we obtained a very similar estimated effect size of .19 (±.06).

As discussed previously, a program effect may reflect several different patterns of change on outcome measures for the treatment and comparison groups. Our examination of this issue was based on pre–post effect sizes for mentored and comparison groups that could be estimated for 53 of the 82 samples (see Appendix for methodological details). The most common effect-size pattern within these samples was relative stability for both the mentored group and the comparison group (17 samples; 32%). Patterns reflecting a combination of improvement for youth in the mentored group and either decline (16 samples, 30%) or relative stability (13 samples, 25%) for those in the comparison group, however, were characteristic of substantial portions of study samples. Similarly, pre–post effect sizes within each group averaged across all studies indicated significant improvement for mentored youth (.25 ± .14) and significant decline for comparison youth (–.17 ± .11).

As in our prior review (DuBois, Holloway, et al., 2002), we also estimated effect sizes for youth outcomes in the different categories referred to previously (see Fig. 2), with the exception of career/employment, for which there was insufficient data due to outcomes in this area having been assessed in only two studies. Examples of outcomes in the different categories include achievement motivation and prosocial attitudes (attitudinal/motivational category), social skills and peer relationships (social/interpersonal), depressive symptoms and self-esteem (psychological/emotional), drug use and bullying (conduct problems), standardized test scores and absences (academic/school), and repeat pregnancy and fat-free body mass (physical health). The average effect size was positive for outcomes in each category and did not vary significantly across the different categories. The effect size for physical-health outcomes did not reach statistical significance (i.e., was not reliably different from 0). These outcomes were examined in only a small number of studies (see Fig. 2), thus reducing statistical power for detecting effects in this area.

We supplemented the preceding analyses by investigating program effect sizes for selected outcomes that have been of particular interest from a policy perspective. Within the academic/school domain, we focused on school attendance, grades, academic achievement test scores, and educational attainment (e.g., high-school dropout). Remaining outcomes in this domain consisted of classroom behavior, academic performance as rated by teachers or parents or self-reported by youth, and indices of performance on homework and school assignments. We also focused on juvenile offending and substance use within the conduct-problems domain and on obesity within the physical

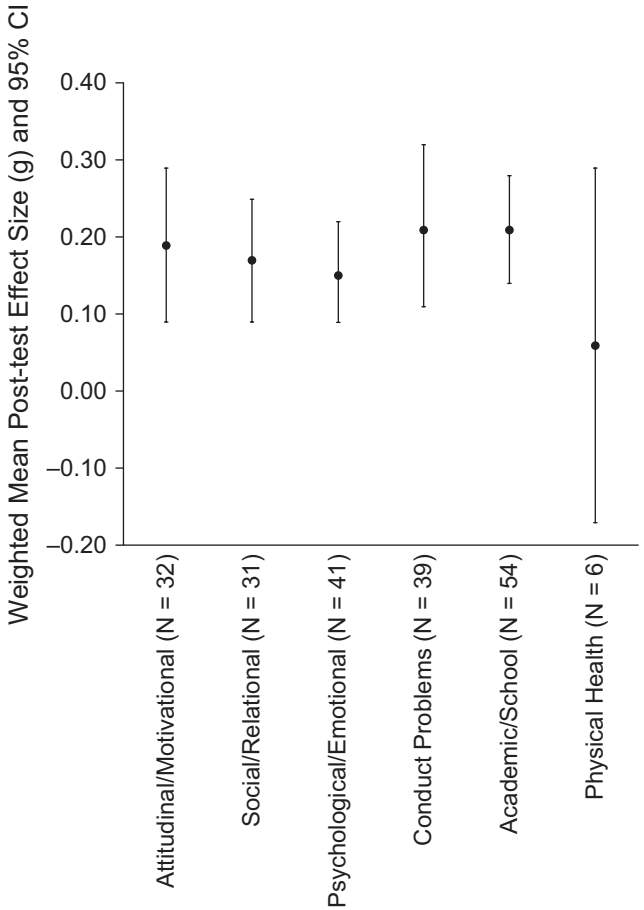

Fig. 2. Average post-test effect size (*g*) by youth outcome category. CI = confidence interval. *N*s represent number of independent study samples per category, and lines represent 95% CI around the average effect size.

Stem	Leaf
+1.0	47
+0.9	4
+0.8	004
+0.7	0688
+0.6	7789
+0.5	7
+0.4	00034668
+0.3	24456
+0.2	000012334579
+0.1	0112222257999
+0.0	12333344466688899
–0.0	02334556
–0.1	135
–0.2	
–0.3	
–0.4	
–0.5	3

Fig. 3. Stem-and-leaf plot of post-test average effect sizes for evaluations of youth mentoring programs (*N* = 82 study samples). In this type of plot, the "stem" is used to group related scores and each "leaf" indicates the individual scores within a group. Here, the stems are used to group effect sizes for study samples based on their first two digits, and the leaf values represent the last digit in each effect size for a given group. For example, the "+0.3" part of the stem is the group of effect sizes that could range from .30 to .40, and the associated leaf values 2, 4, 4, 5, and 6 represent study samples with effect sizes of 0.32, 0.34, 0.34, 0.35, and 0.36, respectively.

health domain. Unfortunately, three of the outcomes of interest, educational attainment, juvenile offending, and obesity, were examined only rarely (i.e., in fewer than five independent samples). For these outcomes, data were judged insufficient for deriving a reliable estimate of program impact. For the remaining outcomes, findings indicated a positive impact of mentoring programs on school attendance (.19 ± .13, 18 samples), grades (.24 ± .14, 19 samples), and academic achievement test scores (18 ± .11, 15 samples) but not on substance use (.05 ± .10, 6 samples).

To examine whether there was evidence of benefits across multiple outcome domains for youth within in a given program, we focused on a subset of 31 samples for which effect sizes were available for three or more of the six categories of outcomes. For nearly half of the samples (52%, 16 samples), effect sizes indicate noteworthy program benefits (i.e., effect size of .15 or greater) within multiple (i.e., two or more) outcome categories. Similarly, considering the data from another perspective, we find that effect sizes reach the same positive threshold, on average, for roughly half (47%) of the outcome categories that are assessed within a given sample of youth.

As shown in Figure 3, effect sizes varied considerably across studies. In any meta-analysis, effect sizes will differ to some extent across studies simply because of chance factors (sampling error). Effect sizes also may vary because of factors associated with the studies themselves (study differences). In the present context, these latter differences had the potential to be associated with differences in evaluation methodology (for example, use of an experimental versus a quasi-experimental design) as well as differences in mentoring-program and participant characteristics. We find that slightly over half (52.7%) of the observed variability in effect sizes across the studies in our meta-analysis is attributable to study differences rather than sampling error (Higgins & Thompson, 2002). A substantial proportion of this variability (approximately 60%) was found to be attributable to differences in evaluation methodology, such as whether or not an experimental (i.e., random-assignment) design was used (see Appendix). Even after accounting for such differences, however, there remained noteworthy unexplained variation in effect size across studies. We thus next undertook analyses of more substantive, program-related factors that might help to account for this variability.

Moderators of program effectiveness

We attempted to test each of the factors listed in Table 1 as a potential moderator of program effectiveness. But several of these factors could not be investigated, either because too few studies reported the relevant information or because there was insufficient variation in values of the moderator across those studies that did contain the needed information (see Table 1). For example, we discussed earlier the possible significance of

Table 2. Study-Level Variables (Moderators) Associated With Differences in Effect Size

Moderator	Effect sizes (95% confidence intervals)	Number of study samples
Youth problem-behavior involvement	Yes: .28 (±.07)	27
	No: .19 (±.03)	55
Youth gender (proportion male)	≥50%: .24 (±.05)	32
	<50%: .18 (±.04)	36
Individual/environmental risk levels[a]	Low/low: .25 (±.08)	14
	Low/medium: .16 (±.05)	18
	Low/high: .32 (±.15)	6
	High/low: .32 (±.11)	17
	High/medium: .22 (±.06)	14
	High/high: .22 (±.12)	13
Fit of mentor educational and occupational backgrounds with program goals[b]	Below median: .19 (±.06)	24
	Above median: .24 (±.04)	30
Mentor-role function: Advocacy[b]	Yes: .26 (±.06)	13
	No: .19 (±.03)	69
Mentor–youth matching based on interests	Yes: .41 (±.16)	8
	No: .20 (±.03)	74
Youth from single-parent households[b]	Yes: .11 (±.10)	9
	No: .22 (±.03)	73

Note: All moderators were associated significantly ($p < .05$) with differences in effect size unless otherwise noted. In some instances, the total number of samples sums to less than 82 because of missing data on the moderator.
[a]These two moderators were found to interact in their association with effect size; findings are reported across three levels of environmental risk because there was an additional curvilinear association with effect size for this moderator.
[b]Moderator exhibited a marginally significant association with effect size ($p < .10$).

whether the neighborhood served by a mentoring program is one where youth have limited access to naturally occurring adult role models and support figures. But we did not find any evaluations that reported sufficient information to code this potential moderator. Similarly, despite the growing popularity of e-mentoring (mentoring that takes place via email or other internet-based forms of communication), we found only one evaluation of this type of program that met our inclusion criteria.

As shown in Table 2, several potential moderators that could be examined did, in fact, demonstrate noteworthy associations with study effect size (i.e., the association either reached or approached statistical significance). Specifically, stronger program effects were found to be associated with the following factors: (a) the program serving youth who have been involved in problem behaviors, (b) the program serving a larger proportion of male youth, (c) the program serving youth with greater levels of individual and environmental risk, (d) a relatively strong fit between the educational/occupational backgrounds of mentors and the program's goals, (e) the matching of youth and mentors based on similarity of interests, and (f) the youth not residing in single-parent households. Our analyses revealed that levels of individual and environmental risk interacted (i.e., were interdependent) in their associations with effect size. Environmental risk, furthermore, exhibited a curvilinear association with effect size (i.e., a unit change in this risk variable was not associated with the same amount of change in program effect size at all points along the variable's continuum). When findings are broken down so as to take account of these trends (see Table 2), it can be seen that program effects were strongest when participating youth were either relatively high in environmental risk but relatively low in individual risk or, conversely, high in individual risk but low in environmental risk. For remaining analyses, we thus focused on whether or not youth participating in the program fell into one of these two risk profiles.

In these additional analyses, we found that the above moderators for the most part made relatively independent contributions to the prediction of effect size. That is, each moderator continued to exhibit an association with program effectiveness that reached or approached statistical significance when controlling for its overlap with the other moderators. The primary exception was whether or not participating youth were predominately from single-parent households, which did not demonstrate an association with effect size independent of the other moderators.

As in our earlier meta-analysis (DuBois, Holloway, et al., 2002), we also used multiple regression analysis to try to identify a set of moderators that could most parsimoniously account for variation in effect size across studies (multiple regression is a statistical technique for simultaneously examining the contributions of multiple variables to prediction of an

outcome, such as program effect size in this instance; see Appendix for methodological details of our specific application of this technique). Because moderators that were not significant when tested individually could possibly nonetheless emerge as significant predictors in the context of considering other moderators, all variables that had been tested as moderators were eligible to be included. One moderator for which we had found evidence of an association with effect size—the fit between the educational/occupational background of mentors and the goals of the program—could not be included in these analyses because the information needed to code it was missing for a substantial number of studies. The resulting "best fitting" regression equation consisted of the following six moderator variables: gender and risk status of participating youth, whether or not the program included teaching/information-provision and advocacy roles for mentors, and whether or not youth and mentors were matched together based on similarities in interests and race/ethnicity. The equation revealed, more specifically, that program effectiveness was greatest under the following circumstances: (a) there was a relatively high proportion of male youth participants, (b) participating youth had a background of relatively high individual or environmental risk (i.e., one of the two risk profiles described previously), (c) the program included an advocacy role for mentors, (d) the program included a teaching/information-provision role for mentors, (e) mentors and youth were matched together in the program based on similarity of interests, and (f) the program did *not* match mentors and youth based on similarity in race/ethnicity. All but two of the factors (mentor teaching/information-provision role and not matching mentors and youth based on race/ethnicity) had demonstrated associations with effect size when tested individually (see Table 2). The six moderators together accounted for essentially all of the estimated variation in true study effect sizes (Raudenbush, 2009).

Before leaving our moderator analyses, it also is relevant to consider the evidence that the findings offer for the generalizability of mentoring-program effectiveness across different conditions and populations. In Table 2, for example, it can be seen that, despite the variation in effect size that was found for the moderators listed there, positive effects of mentoring programs remained evident across the different levels of each of these moderators (i.e., effect sizes were reliably different from zero as indicated by confidence intervals that did not include this value). Similar patterns are apparent for other moderators that did not show evidence of associations with effect size and thus do not appear in Table 2. Our findings indicate, for example, that participation in a mentoring program had a favorable effect on youth within each of the four age groups that we considered (see Table 1). Effectiveness was similarly consistent regardless of the setting in which mentoring took place (i.e., a school, other specific site, or the community at large) and whether programs reflected a psychosocial (relationship-building), instrumental (goal- or outcome-focused), or combined psychosocial-instrumental orientation. Of further note, positive effects extended to programs with a relatively brief duration (i.e., less than 6 months); those utilizing older peers rather than adults as mentors; and those utilizing a group- or team-mentoring format rather than the more traditional one-to-one model.

Follow-up effect sizes

As a final step in our analysis, we examined effect sizes for the seven studies that included follow-up assessments of youth outcomes at some point in time after completion of the program. The length of the follow-up period ranged from 6 months to 4 years (average = 23 months). The youth outcomes assessed at follow-up in these studies fell within four categories (psychological/emotional, conduct problems, academic/school, and physical health). Examples of specific outcomes assessed in these categories included, respectively, suicidal ideation, school discipline referrals, recidivism for juvenile offenders, and obesity status. Across the seven available studies, the average follow-up effect size (based, in the case of multiple follow-ups, on findings for the time point farthest from program completion) was .17 (±.14) and thus was consistent with an enduring positive effect of having participated in a mentoring program.

We also conducted an analysis of follow-up effect sizes in which we subtracted out posttest effects for the same outcomes. This allowed us to examine whether any gains evident for mentored youth at posttest on the same outcomes were maintained (or even potentially enhanced) at follow-up. Because one of the studies with follow-up data did not have a posttest assessment, this analysis included only six studies. On average, the difference between follow-up and posttest effect sizes was very close to zero (–.03 ± .14), indicating little or no deterioration in effects.

Mentoring Programs for Youth: Taking Stock of the Current Evidence

In this concluding section, we critically examine current evidence for the effectiveness of youth mentoring programs as revealed through our meta-analysis. As points of reference for our discussion, in Table 3 we provide a summary of relevant information from several studies included in the meta-analysis. These studies were selected to be illustrative of the range of programs evaluated as well as the different moderators that emerged as predictors of effect size in our analyses.

How effective are mentoring programs for youth?

Our meta-analysis is the first comprehensive assessment of the effectiveness of youth mentoring programs since the late 1990s, a point in time when this type of programming was just beginning to expand and diversify into new settings. As in our prior review (DuBois, Holloway, et al., 2002), the overall

Table 3. Illustrative Studies From Meta-Analysis: Mentoring Program Characteristics, Evaluation Methodology, Profile on Moderators Associated with Differences in Effect Size, and Study Effect Sizes

Study	Mentoring program characteristics	Evaluation methodology	Program profile on moderators from meta-analysis associated with differences in effect size	Effect sizes (g)[a]
Black, Hager, et al. (2010)	Challenge! Health Promotion/ Obesity Prevention Mentorship Model *Goal*: Prevent obesity and promote healthy behaviors among adolescents *Mentors*: 19- to 25-year-old Black college students (or recent graduates) trained in motivational interviewing techniques *Mentoring format and content*: 1 on 1, 12 in-person meetings over 11 months; meetings in youth's home (with adult family member present). In each session, mentors worked with youth on a challenge to address relating to diet or physical activity, discussed setting and working on a personal goal in one of these areas, discussed goal progress, and practiced making healthy snacks. Mentors accompanied youth on community outings to help youth practice and generalize new skills and behaviors	Sample 235 youth aged 11 to 16 (97% Black) from low-income urban communities Design Random assignment Outcomes *Physical health:* body mass index based on objective measurements of height and weight, body composition measured via dual-energy radiograph absorptiometry, physical activity measured with accelerometer, and youth report of dietary patterns Follow-up 1 year after end of intervention	Youth characteristics *% male:* 51 *Single-parent family*: yes *Problem behavior involvement*: no *Individual/environmental risk*: low/medium Mentor characteristics *Mentor education/ occupation fit with program*: no Mentor–youth matching *Same race:* yes *Similarity of interests:* no Mentor-role functions *Teaching/information provision:* yes *Advocacy*: no	Physical health *Post-test*: 0.17 *Follow-up*: 0.02
Wyman et al. (2010)	Rochester Resilience Project Intervention *Goal*: Strengthen self-regulation of emotions and improve school adaptation among young children with emerging behavioral and social-emotional problems *Mentors*: Female para-professionals ("Resilience Mentors") trained in skills required for intervention *Mentoring format and content*: 1 on 1, 14 in-person weekly meetings over 4 months in the school setting. Mentors used role modeling, adult-led interactive learning, and in-vivo practice to teach children a set of cognitive and behavioral skills to strengthen emotional self-regulation and assisted children in applying these new skills to meet goals established with teachers	Sample 226 children in grades K-3 (61.5% African-American, 21.7% Hispanic) manifesting behavioral, social-emotional, and/or on-task learning problems at school Design Random assignment Outcomes *Social/relational*: teacher-rated peer social skills *Psychological/emotional*: teacher-rated assertiveness vs. withdrawn, anxious behavior *Conduct problems*: office disciplinary referrals and out-of-school suspensions *Academic/school*: teacher-rated behavior control and task orientation	Youth characteristics *% male:* 54 *Single-parent family*: no *Problem behavior involvement*: yes *Individual/environmental risk*: high/low Mentor characteristics *Mentor education/occupation fit with program*: no Mentor–youth matching *Same-race*: no *Similarity of interests*: no Mentor-role function *Teaching/information provision*: yes *Advocacy*: no	Social/ relational *Post-test*: 0.35 Psychological/ emotional *Post-test*: 0.28 Conduct problems *Post-test*: 0.70 Academic/school *Post-test*: 0.37

(continued)

Table 3. (continued)

Study	Mentoring program characteristics	Evaluation methodology	Program profile on moderators from meta-analysis associated with differences in effect size	Effect sizes (g)[a]
Clarke (2009)	Achievement Mentoring Program *Goal*: Meet needs of students at risk for academic failure *Mentors*: Teachers and school counselors, each matched with 2 students *Mentoring format and content*: 1 on 1, weekly 15–20 minute meetings throughout school year in the school setting. Weekly activities: (a) talked with teachers to learn about a positive accomplishment & upcoming assignments; (b) met with youth to acknowledge accomplishment & discuss how to maintain positive behavior and complete upcoming assignments; (c) had youth practice relevant behavior (e.g., rehearse speaking to teacher); (d) discussed attendance record, tardiness, discipline referrals, and report cards. Discussed longer term academic/career goals, monthly contact with parents. Monthly booster sessions during following academic year	Sample 39 ninth graders (79% Black) identified by school staff as being at risk for academic failure Design Random assignment Outcomes *Social/relational*: youth report of classmate acceptance *Psychological/emotional*: youth report of decision-making and goal-setting self-efficacy *Conduct problems*: youth report of negative school behavior, disciplinary referrals obtained from school *Academic/school*: grades obtained from school	Youth characteristics *% male:* 44 *Single-parent family*: no *Problem behavior involvement*: no *Individual/environmental risk*: high/medium Mentor characteristics *Mentor education/occupation fit with program*: yes Mentor–youth matching *Same-race*: no *Similarity of interests*: no Mentor-role functions *Teaching/information provision*: yes *Advocacy*: yes	Social/relational *Post-test*: 1.00 Psychological/emotional *Post-test*: 0.42 Conduct problems *Post-test*: 1.22 Academic/school *Post-test*: 0.82
Rollin, Kaiser-Ulrey, Potts, and Creason (2003)	Violence Prevention Program *Goal*: Reduce risk factors for engaging in violent behavior *Mentors*: Recruited from community business partners, matched with youth based on shared career interests *Mentoring format and content*: Youth placed in year-long internships in the community with mentors. Students attended internship site for 2 hours daily, 4 days per week throughout academic year. Students performed a range of duties at work sites under supervision of mentors	Sample 156 eighth-grade students (82% Black) from three middle schools rated as having significant academic and disciplinary problems. Youth identified as at-risk for violent behavior based on juvenile justice system involvement, fighting or other school disciplinary problems, high absenteeism, or being over-age in grade Design Quasi-experimental (matched control selected from waiting list) Outcomes *Conduct problems*: school records of in- and out-of-school suspensions, infractions on school property (e.g., battery, fighting) *Academic/school*: school records of unexcused absences	Youth characteristics *% male:* 50 *Single-parent family*: no *Problem behavior involvement*: yes *Individual/environmental risk*: high/high Mentor characteristics *Mentor education/occupation fit with program*: yes Mentor–youth matching *Same-race:* no *Similarity of interests:* yes Mentor-role functions *Teaching/information provision:* yes *Advocacy*: no	Conduct problems *Post-test School 1*: 0.98 *Post-test School 2*: 1.11 *Post-test School 3*: 1.14 Academic/school *Post-test School 1*: –0.11 *Post-test School 2*: 0.68 *Post-test School 3*: –0.05

(continued)

Table 3. (continued)

Study	Mentoring program characteristics	Evaluation methodology	Program profile on moderators from meta-analysis associated with differences in effect size	Effect sizes (g)[a]
Houston (1999)	Talented Tenth Mentoring Program *Goal*: Provide positive role models for first-generation or low-income Black students, enhance student self-concept, and assist students in identifying skills needed to complete high school and enroll in postsecondary education *Mentors*: Black college student volunteers (freshman or sophomore) who were willing to commit to 2–3 years of involvement with the program *Mentoring format and content*: 1 to 1 mentoring throughout academic year (October to April), minimum of 2 hours per week of mentor–mentee contact. Activities at schools and in the community (e.g., college visits)	Sample 59 gifted urban middle-school students (Grades 6–8; 100% Black) participating in a college preparatory program Design Quasi-experimental (matched comparison group) Outcomes *Attitudinal/motivational:* Youth report of career interests, educational aspirations, and occupational expectations	Youth characteristics *% male:* 41 *Single-parent family*: no *Problem behavior involvement*: no *Individual/environmental risk*: low/high Mentor characteristics *Mentor education/ occupation fit with program*: no Mentor–youth matching *Same race*: yes *Similarity of interests*: no Mentor-role functions *Teaching/information provision*: yes *Advocacy*: no	Attitudinal/ motivational *Post-test*: .21
Lee and Cramond (1999)	Clarke County Mentor Program *Goal*: Develop positive self-concept, self-efficacy, and future orientation among economically disadvantaged students *Mentors*: Adult volunteers recruited from local community *Mentoring format and content*: 1 on 1; 2 hours per month at school and flexible meetings outside of school; commitment for 1 year. Youth set individual goals with mentor and signed contract (e.g., improving school attendance)	Sample 130 students from both elementary (n = 72) and secondary schools (n = 58) identified as economically disadvantaged (78% African-American) Design Quasi-experimental (wait-list control) Outcomes *Psychological/emotional*: youth report of self-efficacy and possible selves	Youth characteristics *% male*: 44 *Single-parent family*: yes *Problem behavior involvement*: no *Individual/environmental risk*: low/medium Mentor characteristics *Mentor education/ occupation fit with program*: no Mentor-youth matching *Same-race*: no *Similarity of interests*: no Mentor-role functions *Teaching/information provision*: no *Advocacy*: no	Psychological/ emotional *Post-test*: .25
Jones, Rhine, and Bratton (2002)	Peer Assistance and Leadership Course (PALs) *Goal*: Use child-centered therapy techniques (filial therapy) to effect change in young children with school adjustment problems *Mentors*: High-school students trained in child-centered therapy skills *Mentoring format and content*: 1 on 1; 20 weekly 20-minute play sessions. Sessions included reflective listening and identification of feelings, observation of behavior, and limit setting	Sample 26 pre-kindergarten and kindergarten children (96% Caucasian) experiencing school adjustment problems Design Random assignment Outcomes *Psychological/emotional*: parent report of internalizing problems *Conduct problems*: parent report of externalizing behavior problems	Youth characteristics *% male*: 58 *Single-parent family*: no *Problem behavior involvement*: yes *Individual/environmental risk*: high/low Mentor characteristics *Mentor education/ occupation fit with program*: no Mentor–youth matching *Same-race*: no *Similarity of interests*: no Mentor-role functions *Teaching/information provision*: no *Advocacy*: no	Psychological/ emotional *Post-test*: .82 Conduct problems *Post-test*: .64

(continued)

Table 3. (continued)

Study	Mentoring program characteristics	Evaluation methodology	Program profile on moderators from meta-analysis associated with differences in effect size	Effect sizes (g)[a]
de Blank (2009)	Young Women Leaders Program *Goal*: Empower middle-school girls to be leaders through mentoring relationships and activities that address self-concept, academic achievement, body image, social aggression, and healthy decision making *Mentors*: Female college students provided with one semester of training prior to being matched with girls *Mentoring format and content*: 1 on 1 mentoring combined with weekly group activities for mentors and girls over one school year. Group sessions involved structured activities (e.g., role playing) addressing relevant topic areas for middle school girls (e.g., academic achievement and social aggression). Individual mentor-youth pairs interacted by phone, e-mail, and in-person on a weekly basis to engage in activities of their choosing	Sample 168 girls aged 11 to 13 (40% Black; 42% White) identified as being at risk for academic, social, and/or emotional problems Design Random assignment Outcomes *Social/relational*: youth report of victimization, interceding in bullying, social influence, and conflict resolution *Psychological/emotional*: youth report of depressive symptoms *Conduct problems:* youth report of substance use, bullying, discipline problems, and sexual activity *Academic/school*: youth report of grades and attendance *Physical health*: youth report of disordered eating	Youth characteristics *% male*: 0 *Single-parent family*: yes *Problem behavior involvement*: no *Individual/environmental risk*: high/high Mentor characteristics *Mentor education/ occupation fit with program*: no Mentor–youth matching *Same-race*: no *Similarity of interests*: no Mentor-role functions *Teaching/information provision*: yes *Advocacy*: no	Social/relational *Post-test*: –.03 Psychological/ emotional *Post-test*: –.01 Conduct problems *Post-test*: .09 Academic/school *Post-test*: .16 Physical health *Post-test*: –.08

[a]Effect sizes are Hedges' *g* and were computed as in the meta-analysis (see Appendix for details); effect sizes were calculated so that positive values indicate favorable effects on youth outcomes (e.g., higher grades, fewer symtoms of depression) and negative values indicate effects in an unfavorable direction.

weight of the evidence we have reviewed supports the value of mentoring as an intervention strategy for enhancing young people's development. We find it particularly noteworthy that mentored youth often have benefited in more than one broad area of their development (e.g., social and academic), that program effects have tended to reflect a combination of both forward gains and avoidance of decline on outcomes, and that areas of positive impact have encompassed not only outcomes that tend to be seen as "soft" or subjective (e.g., attitudes) but also those that typically are regarded as "harder" and more objective (e.g., behavior, academic performance) and thus are of greatest interest to policymakers. Equally significant, from our perspective, is the evidence suggesting the breadth and flexibility of mentoring as an intervention strategy. Illustratively, although most attention has focused on mentoring as a strategy for working with preadolescent children and adolescents, available findings suggest that its value extends to younger children as well. Likewise, despite prevailing conceptualizations of mentoring as involving a one-to-one relationship between a young person and an adult, it is clear that programs also have been effective when utilizing older peers as mentors and when mentors have worked with multiple youth in group contexts. The foregoing trends, taken as a whole, are consistent with the broad appeal that mentoring has enjoyed within the realm of youth programs and policymaking.

At the same time, other considerations point to a need for caution. These include a relative lack of attention in evaluations to assessment of key outcomes of policy interest (e.g., educational attainment, juvenile offending, substance use, obesity prevention). Furthermore, as in our prior review (DuBois, Holloway, et al., 2002), very few evaluations addressed the question of whether the benefits that youth derive from participation in mentoring programs are sustained at later points in their development. Such gaps in the current knowledge base make it difficult, if not impossible, to be confident that interventions relying on mentoring relationships as their "active ingredient" are capable of reliably producing the types of enduring and transformative results that typically have been central to the arguments of their most enthusiastic supporters.

Of further note is the overall effect size (.21) that we obtained when collapsing across studies and outcomes. This magnitude of program impact is comparable within a margin of error to the effect size (.18) that emerged in our prior review

Table 4. Comparison of Mean Post-Treatment Effect Sizes for Mentoring Programs in the Current Meta-Analysis to Effect Sizes Reported in Other Meta-Analyses of School- and Community-Based Interventions for Children and Adolescents

Type of outcome	Current	Other meta-analyses
Attitudinal/motivational	0.19	0.23[s], 0.25[b]
Social/relational	0.17	0.15[a], 0.17[i], 0.24[s], 0.29[b], 0.39[g]
Psychological/emotional	0.15	0.10[a], 0.17[q], 0.18[j], 0.19[d], 0.24[s], 0.37[b]
Conduct problems	0.21	0.02[k], 0.07[l], 0.14[h], 0.15[t], 0.21[a], 0.21[e], 0.22[s], 0.30[b], 0.30[c], 0.41[m]
Academic/school	0.21	0.11[a], 0.23[o], 0.27[s]
School attendance	0.19	0.14[b]
Grades	0.24	0.22[b]
Achievement-test scores	0.18	0.11[a], 0.20[b], 0.24[f], 0.30[c]
Physical health	0.06	0.08[n], 0.17[u], 0.29[r], 0.41[p]

Notes: Adapted from a similar table in Durlak, Weissberg, and Pachan (2010). Original results from other reviews were grouped in the outcome categories most comparable to those in the current one. Whenever possible, results used were derived from weighted random effects analyses based on post-test assessments conducted at the conclusion of programs.

[a]DuBois, Holloway, Valentine, and Cooper (2002; mentoring programs), [b]Durlak et al. (2010; after-school programs to enhance social and personal skills), [c]Durlak and Wells (1997; mental health prevention programs), [d]Haney and Durlak (1998; self-esteem treatment and prevention programs), [e]S. J. Wilson and Lipsey (2007; school-based aggressive/disruptive-behavior-prevention and intervention programs), [f]Hill, Bloom, Black, and Lipsey (2008; academic-achievement programs), [g]Lösel and Beelman (2003; antisocial-behavior-prevention programs), [h]Farrington and Ttofi (2009; school-based bullying-intervention programs; outcome: bullying), [i]Farrington and Ttofi (2009; school-based bullying-intervention programs; outcome: victimization), [j]Fisak, Richard, and Mann (2011; anxiety-prevention programs), [k]Park-Higgerson, Perumean-Chaney, Bartolucci, Grimley, and Singh (2008; universal school-based violence-prevention programs), [l]Park-Higgerson et al. (2008; selective school-based violence-prevention programs), [m]Mytton, DiGuiseppi, Gough, Taylor, and Logan (2009; school-based aggressive-behavior-intervention programs), [n]Stice, Shaw, and Marti (2006; obesity-prevention programs), [o]Ritter, Barnett, Denny, and Albin (2009; reading tutoring programs), [p]Corcoran and Pillai (2007; secondary teen pregnancy prevention programs—follow-up results measured at 19 months after program completion), [q]Horowitz and Garber (2007; prevention programs for depressive symptoms), [r]Katz, O'Connell, Njike, Yeh, and Nawaz (2008; school-based obesity prevention and intervention programs), [s]Durlak, Weissberg, Dymnicki, Taylor, and Schellinger (2011; universal school-based interventions to enhance social and emotional learning), [t]Tobler et al. (2000; school-based drug-prevention programs), [u]Gonzalez-Suarez, Worley, Grimmer-Somers, and Dones (2009; school-based obesity intervention programs).

(DuBois, Holloway, et al., 2002) and thus reflects a lack of discernible improvement in effectiveness over the earlier generation of programs. At least two potential explanations for this trend merit consideration. First, although research has significantly advanced understanding of factors contributing to the quality of mentoring relationships and the effectiveness of programs in this area, translation of available evidence into policy and practice has been a slow and still-evolving process. Illustratively, in only the latest edition of the field's most prominent guidelines for practice was there a concerted effort to base the recommendations on available research (MENTOR/National Mentoring Partnership, 2009). Second, as we have discussed, during the past decade, mentoring programs and organizations, as well as funders, have placed considerable emphasis on the goals of growth and expansion. As a result, limited resources often have been prioritized for serving more youth or launching new programs rather than to strengthening the quality of services (Rhodes & DuBois, 2006). In line with these observations, our data reveal no evidence of a trend toward greater use of theory and research to help guide program design within the time frame encompassed by our review. The need for accelerated efforts to enhance the evidence-based foundations of mentoring programs for young people is an issue that we return to in our discussion of implications for practice and policy.

It is useful also to consider the effectiveness of youth mentoring programs in comparison to other types of interventions for youth. Average effect sizes reported in meta-analyses of child and adolescent psychotherapy, for example, have been in the .50 range (Baskin, Slaten, Sorenson, Glover-Russell, & Merson, 2010; Weisz, Sandler, Durlak, & Anton, 2005) and thus are notably larger than those found for mentoring programs. Many of the studies included in these reviews were tightly controlled clinical efficacy trials conducted within academic centers using professionally trained therapists, however—a marked contrast to the volunteer- and community-based profile of the typical mentoring program. The effectiveness of other types of programs that, like mentoring, are offered to youth in school and community settings may provide a more appropriate point of comparison. As shown in Table 4, the

effect sizes we find for mentoring programs are generally within the range of those that have been reported in meta-analyses of these latter types of programs for corresponding types of outcomes. It is worth noting, too, that those interventions showing greater levels of effectiveness often have targeted the particular outcomes involved (e.g., antisocial behavior, obesity) and have not been demonstrated to have an impact on other types of outcomes. Mentoring programs thus still may compare favorably to such programs when a primary concern is strengthening outcomes across multiple domains.

The preceding discussion does not take into account differences among mentoring programs in their effectiveness. Relative to our earlier review (DuBois, Holloway, et al., 2002), the present analysis indicates a less marked degree of meaningful (non-chance) variability in effect sizes across studies and the programs evaluated (approximately 50% compared to 75% previously). This difference implies that the current review's point estimate (single best approximation) of the overall effectiveness of mentoring programs for youth can be regarded as more dependable (i.e., reliable; Raudenbush, 2009). From a more substantive standpoint, it also suggests that unevenness in the quality of mentoring programs may have become less pronounced in the interim between the two reviews. We see, in fact, a trend across the reviews toward increased use of several commonly recommended program practices. The percentages of programs described as having clearly communicated expectations for the frequency or amount of mentor–youth contact and as providing supervision to mentors, for example, increased from 69% to 89% and 51% to 69%, respectively. Our findings, when viewed from this perspective, suggest youth mentoring is maturing into a more cohesive field, at least with respect to adherence to minimum guidelines for practice that may be important for avoiding some of the most noteworthy disparities in program effectiveness (MENTOR/National Mentoring Partnership, 2003, 2009).

Moderators of mentoring-program effectiveness

Our findings do, however, highlight variability in several relatively more nuanced features of mentoring programs for youth as potentially important contributors to differences in their effectiveness. These features fall into four general categories: (a) the characteristics of youth who are targeted for participation in programs, (b) the recruitment and selection of appropriate mentors in relation to program goals, (c) the guidelines or criteria that are used by programs in matching individual youth with mentors, and (d) the expectations and supports that exist within programs for mentors assuming different types of roles in their work with youth. In the following sections we consider findings relating to each of these areas.

Characteristics of youth. We find a trend for mentoring programs to generally have been more effective when directed toward youth who have been identified as exhibiting behavioral difficulties such as delinquent behavior or discipline problems at school. As can be seen in Table 3, in some instances (Jones, Rhine, & Bratton, 2002; Wyman et al., 2010) such programs have yielded encouraging results when incorporating an intentional focus on promoting social skills through mentoring, whereas others (Rollin, Kaiser-Ulrey, Potts, & Creason, 2003) have had success with more indirect strategies such as work-based mentoring. Regardless of the specific strategies employed, the repercussions of engaging in problem behavior may tend to motivate youth to engage in programs and to respond constructively to the guidance and support offered by a mentor. We find evidence of effectiveness, too, for a broader group of programs that have been targeted toward youth who exhibit personal vulnerability as defined also by other indicators such as risk for academic failure (in Table 3, see Clarke, 2009). In our prior meta-analysis (DuBois, Holloway, et al., 2002), program effectiveness was more variable when participating youth showed behavioral or other individual manifestations of risk. It is possible that the newer generation of programs encompassed by the present analysis is better suited to addressing the challenges that can be associated with mentoring young people who have pre-existing problems. Relative to the programs included in our prior review, for example, those evaluated in the current meta-analysis were more likely to incorporate an instrumental (goal- or outcome-focused) orientation (82% vs. 64%) and to be situated within a specific site such as a school (86% vs. 51%). In the context of attempting to make inroads with a troubled young person, it may be especially advantageous for programs (and mentors) to have a clearly defined purpose and to be able to access institutional supports when necessary.

It is important to note, however, that the programs included in our review for the most part were not designed to target youth with deeply rooted difficulties, such as severe antisocial tendencies. Such youth are likely to be especially resistant to change (e.g., Connor, 2004; Vaughn & Howard, 2004) and present formidable challenges even within professional treatment milieus. Indeed, a recurring conclusion in the broader literature on youth mentoring is that programs with this focus should not be regarded as a substitute for more intensive therapeutic or educational services (Rhodes, 2002; Rhodes & DuBois, 2006; Zand et al., 2009). Furthermore, whereas as in our prior review (DuBois, Holloway, et al., 2002) we find some indication that participation in mentoring programs can be especially beneficial for youth who are exposed to relatively high levels of environmental adversity, this trend does not extend to those programs in which the youth involved also have exhibited markers of individual vulnerability. Conversely, the effectiveness of programs targeting youth with pre-existing problems has been greatest when indicators of environmental risk are limited. When youth are contending with the cumulative effects of relatively high levels of both personal and contextual risk, this may tend to stretch the resources of programs in ways that reduce their effectiveness. Our results suggest that more optimal conditions may entail directing programs toward youth who present mentors

with more intermediate levels of challenge. In line with this possibility, in a recent study based on data from the randomized trial of the BBBSA school-based mentoring program, youth who entered programs exhibiting moderate levels of relational difficulties derived greater benefits from involvement in the program than did youth for whom such difficulties were either severe or relatively absent (Schwartz, Rhodes, Chan, & Herrera, 2011).

Interestingly, programs that served greater proportions of female relative to male youth showed somewhat weaker effects. It is important to bear in mind that this finding does not reflect a direct comparison of outcomes for male and female youth and, therefore, could be attributable to other characteristics of studies or programs. Yet, as we were unable in supplementary analyses to account for the trend through control for any of the other program characteristics that we tested as moderators, we do see grounds for considering the possible contribution of factors that relate to the gender of participating youth. Girls referred to mentoring programs, for example, have been found to report significantly lower levels of trust and greater feelings of alienation in their relationships with parents than do boys (Rhodes, Lowe, Litchfield, & Samp, 2008), a tendency that could potentially generalize to their relationships with other adults such as mentor in ways that are counterproductive. Girls and their mentors also may be more likely to engage in emotionally focused interactions (Bogat & Liang, 2005). With relevance to this possibility, recent research has highlighted co-rumination (a gender-linked relationship process that entails a preoccupation with discussion of problems, their possible causes and consequences, and negative feelings) as being both more common in the friendships of girls and more detrimental to girls' well-being relative to that of boys (Rose & Rudolph, 2006). Mentoring programs serving girls that bring mentors and youth together in group contexts (see, e.g., de Blank, 2009, in Table 3) could be especially susceptible to such processes. These ideas are admittedly speculative. Nonetheless, our results do at the very least suggest that processes involving gender merit careful consideration as factors that may shape the ways in which youth respond to participation in a mentoring program.

Mentor recruitment and selection. The greater effectiveness of programs in which mentors' educational or occupational backgrounds were well matched to program goals points toward the additional importance of issues relating to mentor recruitment and selection. One of the programs rated high on this dimension had educational goals and utilized teachers or other school staff as mentors (see Clarke, 2009, in Table 3; see also Holt, 2007; Holt, Bry, & Johnson, 2008), whereas another engaged business professionals as mentors to facilitate workforce readiness and career exploration (see Rollin et al., 2003, in Table 3). Recent research on naturally occurring mentoring relationships has similarly pointed to close ties with adults at school and in the workplace as promoting positive educational and vocational outcomes, respectively (D. S. Black, Grenard, Sussman, & Rohrbach, 2010; Erickson et al., 2009; Van Ryzin, 2010; Vazsonyi & Snider, 2008). In view of the importance of interpersonal processes in youth mentoring (Rhodes, 2002, 2005), a further useful approach could be to recruit or select mentors whose backgrounds are especially well matched to program goals that are more relational in nature. Recently, for example, favorable results were reported for a multicomponent program in which social-work interns are used as mentors for youth in foster care to help ensure responsiveness to the interpersonal needs and sensitivities of this population (Taussig & Culhane, 2010). Available findings should not be taken to suggest that only those with specialized experience or backgrounds can be effective in achieving targeted objectives when mentoring youth. In many instances, it may be possible to provide mentors with training that prepares them for such roles (see, e.g., Wyman et al., 2010, in Table 3). A more fundamental consideration thus may be whether mentors, regardless of background, are prepared and supported effectively by programs for working with youth in ways that align with a program's objectives.

Criteria for matching youth with mentors. Even when an appropriate pool of mentors has been identified and engaged, programs still must grapple with the question of what criteria to utilize in pairing participating youth with specific mentors. In this regard, our synthesis of recent research points to the value of taking into account similarity of mentor and youth interests in matching decisions. Further support for this practice can be found in research suggesting that perceptions of similarity tend to foster higher-quality and longer-term relationships between mentors and youth (Ensher & Murphy, 1997; Herrera, Sipe, & McClanahan, 2000; Madia & Lutz, 2004). It also is in line with the more broadly established role of perceived similarity in interpersonal attraction (Montoya, Horton, & Kirchner, 2008) and processes of social influence (Burger, Messian, Patel, del Prado, & Anderson, 2004). A variety of specific strategies may be useful for programs to consider in this area. These include, for example, matching mentors and youth based on shared interests that are most relevant to program goals, such as career interests in the case of a work-based mentoring program (see, e.g., Rollin et al., 2003, in Table 3). Existing trends in program effectiveness clearly support the value of investing resources in the development and refinement of such approaches when designing mentoring interventions for youth.

As in our prior meta-analysis (DuBois, Holloway, et al., 2002), the other matching criteria we examined were not associated with differences in program effectiveness. Matching on the basis of race or ethnicity was, in fact, a predictor of less favorable effects within our best-fitting model. Given that such an association emerged only in this one area of our analyses, we are reluctant to place too great a weight of interpretation on it. It is worth noting, however, that although matching ethnic-minority youth with same-race mentors where possible is a common goal in mentoring programs, research has failed to reveal a consistent pattern of differences favoring these types of relationships (Sánchez & Colón, 2005). In line with

other literature on helping relationships (e.g., Flaskerud, 1990; Wintersteen, Mesinger, & Diamond, 2005), the available evidence suggests that optimal matching of youth and mentors goes beyond demographic characteristics to encompass deeper and more nuanced considerations of compatibility.

Mentor-role expectations. We also find evidence of stronger effects in programs that are designed for mentors to serve in an advocacy role as well as in those that are structured to facilitate mentors serving as teachers and sources of information. Together, these trends suggest the value of mentors offering active guidance to youth and making concerted efforts to ensure their overall welfare. Prior research provides good reason to be concerned with mentors becoming overly directive or task focused in their interactions with youth (Keller, 2005). Similarly, as we noted previously, it undoubtedly will be counterproductive to task volunteer mentors with quasi-therapeutic roles that they are ill-equipped to handle. It is clear, however, that programs aspiring to a more purposeful or intentional role for mentors often have been able to accomplish this in ways that enhance rather than detract from effectiveness (see, e.g., M. M. Black et al., 2010, Clarke, 2009, and Wyman et al., 2010, in Table 3). As we found in our prior meta-analysis (DuBois, Holloway, et al., 2002), 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 (i.e., SAFE programs as defined by Durlak, Weissberg, & Pachan, 2010; see Table 1). In this regard, we suspect that the distinctive potential of mentoring programs with respect to skill building and advocacy resides more in their capacity to leverage the flexibility and often potent processes of social influence that are inherent to close relationships (Rhodes, 2002, 2005).

Implications for practice and policy

Taking full stock of the current evidence, including comparisons to levels of effectiveness demonstrated for related types of child and adolescent programs, leads us to see value in continuing to invest in youth mentoring as an intervention strategy within the policy arena. The strongest argument can be made for utilization of mentoring when there is interest in promoting outcomes across multiple areas of a young person's development. For policy investments to yield optimal returns, however, we see a need for several concerns to be prioritized for attention. These include (a) sustained emphasis on implementation of practices that are foundational to program quality; (b) use of research as a basis for strengthening of programs to achieve stronger and more consistent levels of effectiveness; and (c) collaboration between practitioners and researchers in the design, implementation, and evaluation of programs.

Implementation of practices to ensure program quality. Several considerations lead us to emphasize the importance of programs adhering to what have become largely consensus guidelines for practice in the field, such as screening and training mentors, establishing clear expectations and guidelines, and providing ongoing professional support for relationships (MENTOR/National Mentoring Partnership, 2009). First, as discussed earlier, greater uniformity in such areas of programs may well have contributed to our finding of reduced variability in effectiveness relative to our earlier review (DuBois, Holloway, et al., 2002). Second, because of this trend, statistical power for detecting the potential contributions of the practices involved to effectiveness in the present analysis was substantially lower. Consequently, the lack of statistically significant associations of those practices with estimates of program impact should not be taken as an indication of their relative nonimportance. This is a key point of understanding, as it would be a mistake for programs to conclude that well-established practices, such as mentor training and supervision, are no longer necessary. Third, it should be kept in mind that the programs encompassed by our review are likely not fully representative of those currently in operation. A substantial proportion of mentoring programs, for example, operate on a very small scale, with limited resources, and are unlikely to attract the attention of evaluators. We suspect that a careful accounting of practices in many of these programs would reveal significant gaps in their alignment with the types of more foundational practices that we were able to link to variations in program effectiveness in our earlier review (DuBois, Holloway, et al., 2002). Finally, it is important to keep in mind that many practices that enjoy a wide base of support in the field, such as screening prospective mentors, offering group activities, and recognizing volunteer mentors for their contributions, clearly may be important for a variety of reasons other than effectiveness—including safety, efficiency of service delivery, and program sustainability (DuBois, 2007).

Refinement and strengthening of programs. Understandably, the growing base of evidence to support mentoring as an intervention strategy for youth is likely to make it tempting for those in practice and policy roles to focus their attention on goals of scale-up and dissemination so as to reach and benefit the largest numbers possible. Yet, as we have discussed, there are key gaps in the evidence base needed to support such initiatives. Furthermore, as is apparent in our findings, the typically observed effects of mentoring programs are modest in magnitude and leave ample room for improvement. The available evidence suggests in this regard that achieving effectiveness may hinge significantly on a range of important considerations, including the demographic characteristics and risk profiles of participating youth, the backgrounds and skill sets of mentors, strategies for matching individual youth with mentors, and the specific roles that mentors are asked to assume in working with youth. In the midst of an emphasis on the growth and expansion of mentoring as an intervention strategy for youth, our sense is that careful planning and refinement of programs along these types of dimensions often has not taken place. Indeed, despite the likely benefits of adherence to research-supported practices and measured expansion of program models, public policy in this area has in many respects

tended to run on a separate track, with enthusiasm for new approaches often outpacing the scientific knowledge base. Likewise, aggressive growth goals have necessitated that mentoring be delivered more efficiently—which, in many cases, has drawn resources away from the types of supports and practices that available research indicates could lead to stronger effects (Rhodes & DuBois, 2006).

The findings in this report can provide youth mentoring programs—many of which have gone to scale with models that lack specificity and nuance—with a useful point of departure in pursuing stronger and more consistent levels of effectiveness. For example, although programs vary widely in their approach to matching mentors and youth, our results suggest that the relatively straightforward strategy of prioritizing shared interests in this process has the potential to substantially improve program outcomes. Likewise, despite an understandable wariness of imposing excessive structure on mentoring relationships, current evidence suggests that judicious efforts to incorporate more systematic teaching or advocacy activities into the work that mentors do with youth could significantly enhance prospects for programs to achieve desired outcomes. For the next generation of programs to demonstrate improved impact, we expect it will be essential for research-informed innovations such as these to become more commonplace. Through a combination of research that helps to identify critical program elements and the institution of mechanisms for ongoing monitoring and support to ensure that such elements are faithfully implemented, it should be possible to scale up and disseminate mentoring interventions for youth without significantly compromising their quality or effectiveness. Several of the studies and programs included in our review are exemplary of the kind of initial efforts that are needed for the mentoring field to follow this path successfully (for examples, see Table 3).

Collaboration between practitioners and researchers. As the preceding considerations highlight, there appear to be significant unrealized opportunities for youth mentoring programs to incorporate research-based knowledge into their design and practices. Translational efforts to date have been focused on using available research to inform the development of lists of broadly defined guidelines for practice (e.g., MENTOR/National Mentoring Partnership, 2009). These types of initiatives have been well-suited to ensuring that mentoring programs for youth consistently reflect a basic level of quality and safety. To advance the effectiveness of programs significantly beyond currently observed levels, however, will likely require more direct and dynamic forms of communication and partnership between researchers and practitioners. Mentoring as an intervention strategy emerged historically largely within the context of grassroots activism outside of any particular profession or academic discipline (Baker & Maguire, 2005) and to a large extent it still retains this profile. Cultivation of stronger connections between research and practice within the field therefore may require strategic initiatives that are geared specifically toward this goal. Building requirements or incentives for research–practice collaborations into future federal funding streams for youth mentoring should, in our view, be one priority, especially when considering the disappointing results of several high-profile previous funding initiatives (e.g., Bernstein et al., 2009) which have lacked such mechanisms. Doing so would provide a necessary catalyst for evidence-based innovation in mentoring programs for youth and, more generally, would help to fuse research and practice together in a way that is better aligned with the burgeoning field of prevention science (Flay et al., 2005).

Implications for research

Compared to the extensive investigation that many other, more established forms of intervention (e.g., psychotherapy) have received, research on youth mentoring programs is clearly still in an early stage of development. There are thus numerous avenues available for strengthening the existing knowledge base. With specific relevance to supporting the above recommended directions for policy and practice, we see much to be potentially gained from advancements in each of the following areas: (a) program-evaluation methodology; (b) theoretical frameworks for specifying linkages between program practices, mentoring relationships, and youth outcomes; and (c) mechanisms for sharing and synthesizing the findings of available research.

Strengthening evaluations. From our previous discussion, it is clear that one key priority for future evaluations should be to clarify the impact that the involvement of young persons in a mentoring program can be expected to have on outcomes with high levels of policy interest. The question of the extent to which improvements in youth outcomes attributable to program participation are durable and thus sustained at later points in their development is equally pressing. In view of the central role that potential effects in areas such as educational attainment, employment, and risk for incarceration have had in arguments advanced in support of mentoring as an intervention strategy (Walker, 2005), the need for long-term follow-up into adulthood is particularly striking. Collection of this type of data would also provide a strong foundation for examining the cost effectiveness of mentoring programs, an issue that thus far has lacked sufficient attention (Foster, 2010).

Moving forward, the field also will be well served by the use of evaluation designs that go beyond simple comparisons between receiving mentoring or no services. Comparative tests of alternative program models or practices are likely to be especially useful, as these would offer a means of rigorously testing the types of potential influences on effectiveness that are suggested by the findings of our present analysis (Institute of Medicine, 2008; Tanenbaum, 2009). Although beyond the scope of the current review, there are encouraging examples of this type of research (e.g., Good, Aronson, & Inzlicht, 2003; Pryce, Silverthorn, Sanchez, & DuBois, 2010) and these could be used to inform further efforts in the same direction. A

similar need exists for evaluations that are appropriately designed for clarifying the unique contributions of mentoring within more complex, multicomponent interventions (e.g., Blechman, Maurice, Buecker, & Helberg, 2000). Such data will be essential for informing the increasingly common practice of integrating mentoring strategies into other types of youth programs (Kuperminc et al., 2005).

There clearly is also a need to better delineate profiles of personal and environmental circumstances that can shape how youth respond to involvement in different types of mentoring programs. Greater knowledge in this area will be required to facilitate the calibration of programs to be optimally effective for particular populations. We noted, too, at the outset of this report evidence that participation in a mentoring program can prove harmful to some youth. Such effects, even if rare, are critically important for the field to more fully understand but may be missed in evaluations unless analyses are carried out with the specific aim of detecting them.

Further development of theoretical frameworks. It is noteworthy that despite the now-substantial body of research on mentoring programs for young people there is not a well-developed or tested theoretical framework that delineates expected linkages between specific practices or processes and different types of participant outcomes or the ways in which such linkages may be dependent on the backgrounds and characteristics of youth and their mentors. The results of the present review are largely consistent with the major precepts and assumptions of the developmental model of mentoring relationships (Rhodes, 2002, 2005) that we used as a guiding framework in approaching our synthesis. Although further refinement of this model would no doubt be helpful, we see a need as well for development and testing of frameworks that more explicitly articulate links between processes occurring at the level of relationships and those operating at the level of programs. The program-related factors that we find to be associated with differences in effectiveness—such as risk profiles of participating youth, characteristics of mentors recruited, and facilitation of teaching or advocacy roles—presumably are important because of the implications they have for the relationships that are established between mentors and youth within programs, yet at present these connections are not well understood. Similarly, although we were limited in our ability to address them in the present analysis, the consequences that broader concerns—such as those relating to organizational capacity, staff training and development, commitments to innovation and evidence-based practice, and strategies for achieving sustainability and growth—may have for the effectiveness of programs seeking to offer mentoring services to youth merit careful scrutiny as well (Rhodes & DuBois, 2006; Wheeler et al., 2010).

Ongoing accumulation and synthesis of evidence. As in our prior meta-analysis (DuBois, Holloway, et al., 2002), the diverse academic disciplines and outlets in which studies of mentoring interventions for young people have appeared made it a formidable task to comprehensively identify and obtain the evaluations that were appropriate for inclusion in our review. We also were significantly hindered by inconsistencies and gaps in the information that was included in study reports. This was especially true with respect to the broad spectrum of program characteristics and practices that we sought to examine as potential moderators of effect size (see Table 1). Several of these factors could not be investigated because the needed information was for the most part missing entirely from reports. Unevenness in the quality and detail of much of the information that was available, furthermore, posed inevitable challenges for the accuracy of our coding. In view of the extensive set of variables that is of potential interest, we realize that it is unrealistic to expect information needs to be fully met within primary study reports. We recommend, as an alternative, that an independent registry of evaluations of youth mentoring programs be established (DuBois, Holloway, et al., 2002). Along with addressing the need for more complete and reliable study information, a repository of this type would facilitate more efficient synthesis of available findings and, we expect, synergy among investigations conducted across diverse areas.

Conclusion

Much remains to be understood concerning efforts to cultivate and support mentoring relationships in the lives of youth and the circumstances under which such efforts can most reliably make a meaningful and enduring difference in their trajectories of development. At this stage, however, we feel safe in concluding that mentoring is, by and large, an effective mode of intervention for young people. We see evidence in the most recent generation of programs evaluated that effects may hinge to a noteworthy extent on decisions regarding which youth and mentors are targeted and selected for the intervention as well as on the care with which mentoring relationships are then established and guided toward activities that are consistent with the goals of a program. From our vantage point, in assessing the evidence as it bears on the value of mentoring as an intervention approach, the consistency of favorable findings across a range of populations, settings, modalities, and outcomes stands out as a key strength, whereas the relatively modest and still-variable pattern of effectiveness for programs is a salient limitation. To more fully realize mentoring's potential as a strategy for strengthening our nation's youth, not only researchers and practitioners but also policymakers, advocacy organizations, and funders will need to become better coordinated in their efforts and uniformly committed to an ethic of scientifically informed advancement.

Appendix

This appendix describes each of the different steps involved in completing the meta-analysis of youth mentoring program effectiveness that is reported in this article, with the exception of determining the study inclusion and exclusion criteria, as

this information is provided in the text. Analyses were carried out using IBM SPSS Statistics 17.0 software and meta-analysis macros developed for use with IBM SPSS software (D. B. Wilson, 2005).

Literature search

A comprehensive search of the literature was conducted for eligible studies. No literature search can be assumed to identify all relevant studies. To help avoid the most problematic and systematic forms of bias, however, a combination of reference database searches and other strategies (e.g., personal contacts with researchers) is generally recommended (Cooper, 2010). In our meta-analysis, we searched several different databases (PsycINFO; Web of Science; ERIC; NIH's CRISP data base; clinicaltrials.gov; ProQuest, a data base that includes dissertations and theses; and Google Scholar) using terms relevant to mentoring (*mentor*, *big brother*, *big sister*, *buddy*, *role model*, *mentee*, *protégé*, *coach*, *leader*, *apprentice*) and evaluation (*intervention*, *program*, *evaluation*). As additional search strategies, we consulted prior literature reviews and recent scholarly handbooks on mentoring (T. D. Allen & Eby, 2007; DuBois & Karcher, 2005a), reached out to researchers in the area via personal communication and listserv postings, identified articles that had cited our prior meta-analysis on the topic (DuBois, Holloway, et al., 2002), and reviewed all articles and reports that were retrieved for citations to potentially eligible studies. Study abstracts were reviewed for potential relevance, with accompanying full articles, where appropriate, then evaluated for eligibility. All determinations of eligibility were made independently by at least two of the authors (DuBois, Portillo, and/or Silverthorn), with discrepancies resolved by conference. When necessary, study authors were contacted for additional information to assist with decisions regarding eligibility.

Coding study characteristics and effect-size information

Information was next extracted from each eligible study using a detailed coding guide. The information coded included report information (e.g., year of publication); evaluation methodology and sample size; mentoring program characteristics and practices; mentor characteristics; observed characteristics of the mentoring relationships (e.g., duration); sample size and other characteristics of participating youth; outcome-measure information; and statistical information, including effect size. The starting point in developing the guide was the coding guide utilized in the earlier meta-analysis (DuBois, Holloway, et al., 2002). Substantial new content was developed by the authors to provide increased refinement in coding of variables and to capture recent developments in mentoring practice. Selected variables also were drawn from coding guides used in recent meta-analyses on youth mentoring or related topics (Durlak et al., 2010; Lipsey & Wilson, 1998; Tolan et al., 2008). To facilitate assessment of study quality, the Study Design and Implementation Assessment Device (DIAD; Valentine & Cooper, 2008) was completed for each study. Operational definitions and decision rules were specified to enhance reliability of coding. Following an initial period of training and calibration, during which the coding guide underwent further refinement, each study was coded by one of two study authors (Portillo or Silverthorn) with ongoing consultation and oversight from the lead author. For studies published within the past 5 years, efforts were made to contact study authors when appropriate for additional information and/or data not included in study reports.

Effect sizes were computed as standardized mean differences (see Cooper, 2010, formula 5.11). In general, this involved taking the raw difference between treatment- and control-group means on the outcome measure at post-test and then dividing this difference by the pooled (weighted average) standard deviation of the measure for the two groups of mentored and nonmentored youth. We also incorporated an adjustment developed by Hedges (1981) to address bias that can arise with small samples (the resulting effect sizes are commonly referred to as being in the form of Hedges's *g*). When available, pretest means were subtracted from the posttest means to adjust for potential differences between program and comparison groups at baseline and thus enhance precision in the estimation of effect-sizes (Lipsey & Wilson, 2001). In most instances, effect sizes were able to be computed from means and standard deviations on outcome measures that were included in the study report or made available to us by study authors. Alternatively, effect sizes were estimated from relevant test statistics or their reported significance levels (see Rosenthal, 1994). In the case of findings for dichotomous measures that were reported as odds ratios (or simple proportions), we converted these to standardized mean difference effect sizes using the Cox index (i.e., the natural log of the odds ratio divided by 1.65; see Chinn, 2000; Sánchez-Meca, Marín-Martínez, & Chacón-Moscoso, 2003). When the information needed to derive an effect size was lacking entirely for a given outcome measure, we conservatively set that effect size to zero (Durlak et al., 2010). A total of 87 effect sizes associated with 11 studies were set to zero for this reason, representing approximately 9% of the total number of effect sizes.

Analyses of overall effect sizes and effect-size variability

For our analysis, the independent sample was the primary unit of analysis. Because effect-size information was reported for the overall sample in most reports, each report or study generally contributed one sample to the analysis. In some instances, however, studies only reported findings separately for different, nonoverlapping subgroups, such as consecutive cohorts of program participants. These studies contributed more than one sample to the analysis (i.e., one sample for each distinct subgroup; Cooper, 2010). In the special case of analyzing effect

sizes across different categories of outcomes, we also allowed studies to contribute information to each category for which effect-size information was available. If a study provided effect sizes for outcomes for both the psychological/emotional and conduct problems categories, for example, it contributed twice to our analysis of effect-size differences across outcome categories. For this reason, the numbers of samples reported for this analysis in Figure 2 sum to greater than the total number of independent samples that formed the basis for our other study analyses.

With respect to statistical modeling, we elected to conduct all analyses using a random-effects model (Hedges & Vevea, 1998). When a random-effects analysis is carried out, a study-level-variance component is assumed to be present as an additional source of random influence on effect sizes. The appropriateness of a random-effects model for the present analysis was supported by (a) the substantial variability in the characteristics of youth mentoring programs and their intended participants (and the potential for such differences to constitute significant sources of random error even after taking into account variance associated with known moderating variables) and (b) our interest in drawing inferences about all youth mentoring programs, not just those included in the present review (Hedges & Vevea, 1998).

Effect sizes for each independent study sample were coded so that positive values indicated differences in directions consistent with a favorable effect of the mentoring program on youth outcomes (e.g., higher grades, fewer symptoms of depression). Effect sizes that were more than three interquartile ranges above the 75th percentile or below the 25th percentile, and thus statistical outliers according to Tukey's definition (Tukey, 1977), were Winsorized by setting their values to the highest or lowest effect size, respectively, that did not qualify as an outlier. This process provided a safeguard against extreme effect sizes having undue influence on our findings. Effect sizes then were averaged to derive an overall effect size for that sample for use in study analyses. Each of these effect sizes was weighted by the inverse of its variance to provide more efficient estimation of true population effects (Hedges & Olkin, 1985). This procedure gives greater weight to effect sizes based on larger samples and is the generally preferred approach (Cooper, 2010). A small number of evaluations ($n = 6$) used cluster randomized designs in which assignment to condition was at a group or organizational level (e.g., school) or the approximate equivalent in the context of a quasiexperimental design. Although effect-size weights can be adjusted in meta-analysis to account for the nonindependence of observations within studies that make use of cluster-level assignment (Higgins & Green, 2008), the information required to make this adjustment was not available for the reports with this type of design that were included in our review. Following S. J. Wilson and Lipsey (2007), we did investigate cluster-level assignment as a methodological feature of studies to be potentially controlled for in our analyses but found no evidence of a need to do so.

We next computed an overall weighted mean effect size across all studies and its 95% confidence band. In addition, we computed mean effect sizes and associated confidence intervals for each category of youth outcomes and tested for differences in effect size across these categories using the procedure for testing other potential moderators of effect size that is described in the following section. We also conducted a homogeneity analysis using procedures described by Cooper (2010), to test whether there was variability in sample-level effect sizes greater than the extent of variation that would be expected to occur as a result of simply sampling error around a single population value. Results of this analysis were used to calculate I^2, a descriptive measure of the amount of the observed variability in effect sizes across studies that is attributable to study differences rather than sampling error (Higgins & Thompson, 2002). We computed this measure both before and after controlling for indicators of study quality (see below), so as to assess the extent to which variation in effect sizes remained after taking into account methodological factors.

To explore the potential effects of publication bias (Sutton, 2009), we applied the Trim and Fill method of Duval and Tweedie (2000a, 2000b) using the statistical software Comprehensive Meta-Analysis (Borenstein, Hedges, Higgins, & Rothstein, 2007). Seven studies were trimmed from the right of the mean effect size in this analysis, yielding the unbiased estimate of effect size that is reported in the body of the article.

To explore the underlying patterns of findings that contributed to program effects, we computed pre–post effect sizes separately for treatment (mentored) and control youth within each study. We then looked at the frequency with which these effect sizes reflected differing combinations of improvement, relative stability, or decline in outcomes for the treatment and control groups (effect sizes greater than .15, between –.15 and .15, or less than –.15, respectively). We also made a similar inspection of pre–post effect sizes averaged across all studies for both treatment and control youth. Pre–post effect sizes and their associated weights (for use when averaging effect sizes across samples), were calculated using the formula provided by Borenstein, Hedges, Higgins, and Rothstein (2009, p. 24). This formula requires an estimate of the correlation between pre- and post-test scores on the outcome measure. Because this information was generally not reported in studies, we assumed a plausible value of .50. Furthermore, because the focus was on pre–post effect sizes, these analyses were limited by necessity to studies that reported both pre- and post-test data.

Moderator analyses

Potential moderators of mentoring-program effect size were investigated using procedures described by Lipsey and Wilson (2001). These analyses again were conducted using a random-effects model and included weighting by the inverse of effect-size variances. Whenever feasible and appropriate, a potential moderator was tested with the moderator treated as a

continuous variable. These moderators are noted with an identifying superscript in Table 1. In the remaining instances, it was necessary to treat moderators as categorical variables either because of their inherently categorical nature (e.g., location of the program), because information reported in studies supported only categorical distinctions (e.g., size of the organization implementing the mentoring program), or because the distribution of the variable included small numbers of relatively extreme values that might have proved unduly influential within a continuous treatment of the variable (e.g., minimum expected length of mentoring relationships). As noted in Table 1, there were also several potential moderators of mentoring program effectiveness that could not be examined in the meta-analysis either because the required information was reported by only a small number of studies (<10) or because there was insufficient variation on the moderator among those studies for which it was able to be coded (DuBois, Holloway, et al., 2002).

In preliminary analyses, we examined whether a range of indicators of study quality were associated with significant differences in effect size (Valentine, 2009). These analyses highlighted the importance of the following five indicators (all of which are included on the DIAD, referred to above, except where indicated): (a) the study design (experimental/random assignment vs. quasi-experimental with adequate equating procedures vs. other quasi-experimental), (b) the degree to which important classes of outcomes were tested, (c) the degree to which outcome measures were susceptible to social-desirability bias (e.g., based on youth self-report versus archival records; Lipsey & Wilson, 1998), (d) the extent to which the study included variation in important characteristics of the target setting (a consideration that pertains to the degree to which results are likely to be generalizable and representative), (e) and the quality of statistical reporting. To avoid potential bias (i.e., attributing differences in effect size across studies to substantive factors such as program practices when they are actually attributable to differences in study quality), all study-level effect sizes were residualized on the preceding variables prior to conducting our primary moderator analyses (DuBois, Holloway, et al., 2002).

We elected to report moderators that either reached statistical significance at a conventional level ($p < .05$) or approached significance ($p < .10$). We also reported moderators approaching statistical significance in our earlier meta-analysis (DuBois, Holloway, et al., 2002). Doing so in the present analysis thus served to enhance consistency across the two reports.

Again following our earlier review (DuBois, Holloway, et al., 2002), we also used a stepwise regression procedure to construct a best-fitting model for predicting study effect sizes from moderator variables. The criterion used for variable entry was a significant or marginally significant ($p < .10$) contribution to the prediction of effect size independent of other variables already included in the model at any given step, with the variable making the largest contribution earning entry where more than one variable met the criterion for entry. Variables already included as predictors also were eligible for removal at later steps if their contributions no longer approached significance. Moderators that had reached or approached significance when tested individually were considered first. Next, all of the remaining variables that had been tested as moderators were made eligible for entry. When a moderator could not be coded for a portion of studies, the mean value of the moderator across all available studies was substituted for missing values to avoid reduction in the available sample size for these analyses. When the moderator was missing for more than one third of studies, however, it was not considered.

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